ASILUL DE ALIENATI
SOCOLA IAȘI
INSTALAT ȘI S'A DESCHIS DE
DOCTOR AL. BRĂESCU
MEDIC PRIMAR SI DIRECTOR
IN ANUL 1905 OCTOBRE 12

1-ère Année. Juin 1919. No. 1.

Bulletins et Mémoires de la Société de Neurologie, Psychiatrie et Psychologie de Jassy

SOMMAIRE:

Séance du 9 Septembre 1918.

Constitution de la Société et Statuts.

Séance du 7 Octobre 1918.

M. G. Préda: Remarques psychologiques sur notre guerre etc.
M. A. Stocker: La cholestérine dans la thérapie de l'épilepsie.
M. I. Scriban: L'involution de la queue du têtard et les myopathies.
MM. C. Parhon, Isanos et M-me H. Alistar: Contribution à l'étude de la démence sénile avec quelques remarques sur la vieillesse en général.

Séance du 4 Novembre 1918.

MM. G. Préda et J. Constantinesco: Un cas de sclérose latérale amyotrophique.
MM. C. Parhon et A. Stocker: Trois cas d'adenômes cortico-surrénaux.
M. P. Andrei: Psychologie du mensonge en temps de guerre.
M. G. Préda: Remarques psychologiques sur notre guerre etc. (suite)
M. D. Marinesco: Deux cas de tumeurs cérébrales.
M. C. Parhon: Essais de graphologie scientifique.

Séance du 2 Décembre 1918.

M. G. Préda: Suppléances dans les troubles neuro-psychiques.
MM. G. Préda et J. Constantinesco: Recherches sur le liquide céphalo-rachidien dans l'actuelle epidémie de grippe (dite espagnole).
M. C. Parhon: Remarques critiques sur un travail de M. Pitulesco.
MM. C. Popa-Radu et Jacques Goldner: Recherches sur les sourcils des aliénés.

Jassy.—Imprimerie «Progresul» A. Grünberg rue Stefan cel Mare 4.

Bulletin of Integrative Psychiatry

New series of “Bulletins et Mémoires de la Société de Neurologie, Psychiatrie et Psychologie de Iassy”, edited by “Socola” Hospital of Psychiatry Iaşi from 1919 to 1946

Editorial Board: "Socola” Institute of Psychiatry Iaşi
Address: Şoseaua Bucium nr. 36, cod poştal 700282, Iaşi, România

Images on the first page represent: Inaugural board of “Socola" Hospital of Psychiatry Iaşi
The cover of the first number of "Bulletins et Mémoires de la Société de Neurologie, Psychiatrie et Psychologie de Iassy”
The image on the first cover represents the main building of "Socola” Institute of Psychiatry Iaşi

Free images from: httpsfreephotos.onlineitemfree-high-res-geometric-polygon-background & Designed by rawpixel.com / Freepik

ISSN: 1453-7257

Copyright © 2017 INSTITUTUL DE PSIHIATRIE „SOCOLA" Iaşi, România
The papers published in "The Bulletin of Integrative Psychiatry" are protected by copyright. Their full or partial publication in other journal is allowed only with the written approval of “SOCOLA" Institute of Psychiatry Iaşi, Romania.

Published by "Socola” Institute of Psychiatry Iaşi, Romania

„Gr. T. Popa” Publisher
University of Medicine and Pharmacy Iaşi
16th Universităţii Str.

All rights of this work are reserved to the authors and „Gr.T. Popa" Publisher Iaşi. No part of this publication may be reproduced or transmitted by any means, electronical or mechanical, including photocopying without written permission from the authors or publisher.

Typeset by Tipografia Universităţii de Medicină şi Farmacie
"Gr. T. Popa" Iaşi, str. Universităţii nr. 16, cod. 700115, Tel. 0232 301678

Seria Nouă | New Series
An XXVII nr. 1 (88) | Year XXVII No. 1 (88)
Martie 2021 | March2021
Frecvența: Trimestrială | Frequency: Quarterly

BPI Bulletin of Integrative Psychiatry

Buletin de Psihiatrie Integrativă

Official Publication of
"SOCOLA" INSTITUTE OF PSYCHIATRY
Iași, Romania

PUBLISHER: "SOCOLA" INSTITUTE OF PSYCHIATRY IAȘI

EDITORIAL BOARD

Chief Editor:
Professor Roxana Chiriţă-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania

Scientific Editor:
Professor Vasile Chiriţă-MD, PhD
Honorary Member of the Romanian Academy of Medical Science

Managing Editors:
Alexandra Boloş-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Romeo P. Dobrin-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania

Deputy editors:
Prof. Cristinel Ştefănescu-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Prof. Călina Gogălniceanu
Al. I.Cuza University, Faculty of Letters, Iasi, Romania
Laura Pricop-researcher, PhD
Al. I. Cuza University –Interdisciplinary Research in Social-Human Sciences Iasi, Romania
Alin Ciobîcă-researcher, PhD
Al. I. Cuza University Iasi, Romania

Editors:
Radu Andrei-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania
Ovidiu Eugen Alexinschi-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania
Adrian Dumitru Cantemir- MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Gabriela Elena Chele-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Oana Crețu-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania
Ana Caterina Cristofor-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Irina Dobrin-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Tudor Florea-MD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Anton Knieling-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Ioan Mihalache-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania

Florin Mitu-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Petronela Nechita-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania
Matei Palimariciuc-MD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Elena Popescu-MD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Raluca Ioana Prepeliță-MD
Socola Institute of Psychiatry, Iasi, Romania
Dania Andreea Radu-MD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Irina Săcuiu-MD, PhD
Socola Institute of Psychiatry, Iasi, Romania
Laura Gheucă Solovăstru-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Andreea Silvana Szalontay-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Șerban Turliuc-MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Gabriela Ștefănescu- MD, PhD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania
Ilinca Untu-MD
Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania

Secretaries
Vlad Iacob-MD
Socola Institute of Psychiatry, Iasi, Romania
Bianca Georgiana Secrieru -MD
Socola Institute of Psychiatry, Iasi, Romania

PUBLISHER: "SOCOLA" INSTITUTE OF PSYCHIATRY IAȘI

ADVISORY BOARD:

ALLILAIRE J.F. (France)
ANDREI ELENA MIHAELA (Romania)
ASTĂRĂSTOAE VASILE (Romania)
BĂLĂCEANU-STOLNICI CONSTANTIN (Romania)
BILD WATER (Romania)
BURLEA(CIUBARĂ) ANA-MARIA (Romania)
BURLUI VASILE (Romania)
CÂȘLARU DIANA (Romania)
COSMAN DOINA (Romania)
COSMOVICI NICOLAE (Romania)
COŞCIUG ION (Republic of Moldavia)
CĂRUNTU IRINA (Romania)
DAFINOIU ION (Romania)
DAVIDSON MICHAEL (Israel)
DEHELEAN LIANA (Romania)
DI FIORINO MARIO (Italy)
ENĂTESCU VIRGIL (Romania)
ENĂTESCU VIRGIL RADU (Romania)
FODOREANU LIANA (Romania)
FORNA NORINA CONSUELA (Romania)
GABOŞ-GRECU IOSIF (Romania)
GEORGESCU ȘTEFAN OCTAVIAN (Romania)
GOGĂLNICEANU PETRUŢ (UK)
HABOT SIMON (Israel)
HULUBAŞ ADINA (Romania)
KAMPITS PETER (Austria)
KNIGHT BERNARD (USA)
LADEA MARIA (Romania)
LAZARESCU MIRCEA (Romania)
LEPPEE MARCEL (Croatia)
MANEA MIRELA (Romania)
MARINESCU DRAGOS (Romania)
MICLUŢIA IOANA (Romania)
NACU ANATOL (Republic of Moldavia)
NIREŞTEAN AUREL (Romania)
NISHARA BRIAN (Canada)
OPREA VALENTIN (Republic of Moldavia)
PRELIPCEANU DAN (Romania)
PIANI FRANCESCO (Italy)
PRUS ELENA (Republic of Moldavia)
REVENCO MIRCEA (Republic of Moldavia)
RUJESCU DAN (Germany)
SCRIPCARIU VIOREL (Romania)
SCRIPCARU CĂLIN (Romania)
STOCKMAN RENE (Belgium)
ŞERBAN IONELA LĂCRĂMIOARA (Romania)
TĂRCOVEANU EUGEN (Romania)
TIMOFTE DANIEL (Romania)
TUDOSE CĂTĂLINA (Romania)
NUNO VIEIRA DUARDE (Portugal)
YOUNG ALLAN (UK)

The Bulletin of Integrative Psychiatry tries to continue the tradition initiated at "Socola" Hospital in 1919, when a group of intellectuals, medical doctors and personalities from other professions founded the Society of Neurology, Psychiatry and Psychology in Iaşi. Even from its beginnings, the Society edited a journal entitled "Bulletins et Mémoires de la Société de Neurologie, Psychiatrie et Psychologie de Iassy", the first publication of the kind in Romania, which was unique also by its vision and opening towards biology, psychology, sociology and philosophy and by its prestigious board of editors: C. I. Parhon, Gh. Preda, Constantin Fedeleş, Arnold Stocker, P. Andrei, Corneliu Popa-Radu, I. A. Scriban, well known personalities, some of them being physicians of great culture and scientific qualification.

Starting from 1920, the Association and its Bulletin, born and edited at "Socola", due to their remarkable scientific activity have contributed to the organization of 18 congresses, which are mentioned in the description of "Socola" Hospital activities.

In 1947, the last number of "The Bulletin of the Society", edited in French, was banned as a result of the interdictions imposed by extremist tendencies. From its first number in 1919 and until 1947, "The Bulletin of the Society" published 2,412 articles.

The journal or "The Bulletin of the Society" has appeared under several titles: "Bulletin et Mémoires de la Société de Neurologie, Psychiatrie et Psychologie de Iassy" (between 1919 and 1922), then "Bulletin de l'Association des Psychiatres Roumains" and from 1923 it has changed its title several times.

After the year 1947, all publications at "Socola" Hospital were included in the "Medico-Surgical Journal of the Society of Physicians and Naturalists in Iaşi", another prestigious scientific journal which has been published without interruption since 1886.

Starting from 1994, Professor Dr. Tadeusz Pirozynski, Professor dr. Petru Boişteanu, Professor dr. Vasile Chiriţă, Conf. dr. Radu Andrei and Dr. M. E. Berlescu have revived the tradition of publications at "Socola" Hospital, editing the new "Bulletin of Integrative Psychiatry".

At the end of 2014, "Socola" Hospital became the "Socola" Institute of Psychiatry, which has increased its responsibilities regarding medical assistance, scientific research, didactic activity, professional training and also the development of editorial activity.

Journal B+ CNCS and Indexed IDB by Index Copernicus, DOAJ, Erih Plus, Gale Cengage, CEEOL, Crossref

Editorial contact: contact@buletindepsihiatrie.ro

Publisher contact:

„Gr. T. Popa" Publisher
University of Medicine and Pharmacy Iaşi
16th Universităţii Str.
Tel. 0232 301678
www.umfiasi.ro

Summary

Editorial / 11

Research in the times of COVID-19 / 13
Florea Tudor, Palimariciuc Matei

Articles / 17

Crossed eye-hand dominance in pupils with specific learning disabilities with impairment in mathematics / 19
Petru – Marian Călinescu

Depression as risk factor for sepsis / 27
Diana Georgiana Butură, Roxana Mihaela Barbu, Cristina-Maria Gavrilescu, Răducu Ionuț Popescu, Walther Bild

The impact of the COVID-19 pandemic in the psychiatric diseases / 33
Alexandra Sabina Cojocariu, Alexandra Maștaleru, Florin Mitu, Maria-Magdalena Leon-Constantin

Methods of internet addiction screening for teens and young adults in Primary Care / 41
Ana-Maria Slănină, Antoneta Dacia Petroaie, Claudia Năsăudean, Agnes Iacinta Bacușcă, Monica Ungureanu, Mihaela Boancă, Elena Popa, Adorata-Elena Coman

SARS-CoV-2 infection and mental disorders / 49
Roxana Mihaela Barbu, Luiza Pohaci-Antonesei, Cristina-Maria Gavrilescu, Cătălin Pohaci-Antonesei, Diana Georgiana Butura, Alexandra Butunoi, Ana-Maria Dumitrescu

A mini-review on the current connections that might exist between Alzheimer's disease and diabetes (can Alzheimer's disease be considered a type 3 diabetes?) / 55
Iuliana Simona Luca, Alin Ciobîcă, Daniel Timofte

New dimensions of child sexual abuse / 61
Călin Scripcaru, Alice-Evelina Sauciuc

Clinical-diagnostic and therapeutic landmarks of conversion disorder. Literature synthesis / 73
Mădălina Dumitrița Prihor, Alexandra Boloș, Ilinca Untu, Roxana Chiriță

The biochemical interaction between vitamin D and superoxide dismutase could influence anxiety and depressive-like manifestations / 81
Sorin Ungurianu, Constantin Truş, Roxana-Rosmary Enciu

Humanistic contributions / 91

Amphetamine-fuelled manic fornication. The case of Dean Cassady / 93
Amir Jalbă, Adrian Brunello, Bogdan C. S. Pîrvu

A new beginning, a great challenge: metamodern psychology Part I / 99
Mihai Șleahtițchi

Case reports / 113

The importance of an early and accurate diagnosis: behavioral variant of frontotemporal dementia (bvFTD). Clinical aspects / 115
Mădălina Ionela Grosu, Anina Rugină, Georgiana-Biatrice Bădii, Ana-Caterina Cristofor

Book review / 123

Psychiatry in crisis: at the crossroads of social sciences, the humanities, and neuroscience / 125
Vincenzo Di Nicola, Drozdstoj Stoyanov

Instructions for authors / 127

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Editorial

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Research in the times of COVID-19

Florea Tudor, Palimariciuc Matei

Florea Tudor – M.D. PhD student, Assistant professor, “Grigore T. Popa” University of Medicine and Pharmacy, Iași, Romania
Palimariciuc Matei - M.D. PhD student, Assistant professor, “Grigore T. Popa” University of Medicine and Pharmacy, Iași, Romania

The recent history caught us all left handed and although many wish for the pandemic lexicon to be removed from public and private discourse, we have to accept that its root effects influences us in ways that only now and definitely in the years to come we will realise. One of its not so obvious downside is that research, medical and beyond is suffering these days.

Counterintuitively, given the advances made in the field of genetics with the development of mRNA vaccines, which have proven themselves highly efficient, we could argue that research in general has taken a toll recently. We emphasize on counter-intuitiveness and we would like to stress that it is not a definite loss that research has suffered since the COVID-19 pandemic brought with itself new paradigm shifts that researchers embraced. The latter had to adapt to the norms of patient interaction and the new restrains.

It is a given in medicine that firstly you have to do no harm. This could be cynically seen as an impediment in the ways of medical research, and doing no harm is even more difficult these days. On top of exposing your patient to new, un- or partially proven therapies, as a researcher you have to weigh in the risk for your patient developing the SARS-CoV-2 infection as a consequence of participating in your studies. Furthermore, one other aspect to be taken into consideration is how research is possibly going to be invalidated if subjects develop the infection whilst participating in a study. On top of this ethical aspect that researchers have to consider, and even if we develop safe protocols of interaction, which greatly reduce the probability of infection, there is the issue with finding patients willing to participate. Besides the reluctance in participating, which can be justified by the fear of contracting the disease and the unwillingness to expose oneself to more than one type of novel therapy (i.e. mRNA

vaccines), there has to be taken into account the imposed judicial restraints which also affect medical practice.

In Romania, although not specifically law regulated, in the past year, individually, health care units with high addressability such as hospitals decided to reduce the services they provide, sometimes to the extent of only accepting emergencies. This decision has two consequences on the research act, suffering already in our geopolitical space. Firstly, it restrains the access for the researcher to certain pathologies that do not necessarily represent emergencies. Secondly, even if studies are developed with the intention to investigating one of the pathologies that could become medical emergencies, research imposes an interaction far greater than that of dealing with the emergency itself. As we state this, we would like to make it clear that we speak from our personal past years' experience in which our doctoral projects have seen a stall even before properly beginning and from the insight developed by our personal inquire into the opportunities for studying the pandemic's effects.

Starting with the Spanish flu in the 20th century, the world encountered several major pandemics with devastating outcomes ranging from loss of lives to varying economic impact and social unrest. The latest global health emergency has started on November 2019 in the Wuhan City, China, but subsequently spread around the world. The symptoms most common associated with COVID-19 are similar in most cases with the upper respiratory tract viral infection, including fever, cough, sore throat, muscle pain and headache more severe manifestations leading to acute respiratory distress and death. (1)

In clinical practice was observed that other related non-pulmonary symptoms had an important impact on the prognosis and could not be avoided in the therapeutically management of the patients. There are numerous reports of SARS-CoV-2 impacting the brain, with neurological and psychiatric symptoms being documented.(2) Even though the evidence for neurotropic propensities of the novel coronavirus is not conclusive, similarities with other epidemic such as SARS-CoV-1 can be useful in the current assessment of the mental manifestations of the coronavirus. Little is known of the mechanism by which the brain is affected; nonetheless, psychiatric symptoms such as anxiety, depression, post-traumatic stress and psychosis were reported during the latest SARS epidemic. (3,4) Measures taken by the governments during the COVID 19 pandemic to protect citizens and reduce the spread of the virus forced closure of many businesses, individual isolation and rise of the unemployment rate, having an impact on the mental health, every age group being affected. (2, 5) Previous studies conducted during the SARS and Ebola epidemics concluded that during the onset of a sudden life-threatening illness the healthcare workers (HCWs) are subjected to an increased amount of stress with dire consequences for the mental well-being. In addition to the burden felt by every individual during the pandemic, increased workload, inadequate personal equipment, the risk for transmission and proximity to life threatening disease, physical exhaustion and constant decision making, sometimes with ethical implication may put the medical personnel at risk for developing psychiatric disorders. (6)

The number of participants or the place that the study is taking place limits most of the

studies that explore the prevalence of anxiety among HKWs during the COVID-19 pandemic. A direct correlation was found for the medical personnel that had direct clinical contact with infected patients or those that found themselves in the worst affected areas. (7) Also, there is evidence that suggests that there is an increased risk for mood and sleep disturbances with prevalence rates of 23% for depression and 22% for anxiety. The prevalence for insomnia was assessed in a meta-analysis at 38.9%, the female population being at higher risk for developing psychiatric disorders in comparison with the male population. (4) Other papers presented a prevalence of 36.9% for a mental health disturbance of which 34.4% had mild manifestations and 6.2% presented severe symptoms. (8) One of the more discouraging studies conducted in Huber province, China, found a 50% prevalence for depression, 44.6% for anxiety and 34% for insomnia with 71% of participants reporting distress. (9) The time factor and overall knowledge regarding the new coronavirus were important in the development of mental disorders. Some aspects played an important role in the dynamic of the symptomatology for the HKWs, such as moment of onset, total number of patients per day, capacity of the healthcare system to provide security and logistics. (10)

In consequence, compared with the general population, the medical personnel had an increased risk due to its proximity to the infected patients and the excessive workload and other deficiencies. (11, 12)
Our yet to be published inquiry on the subject, assessing the anxiety and depression levels among the HKWs in the hope of identify the risk factors such as field of activity, age and proximity to the infected patients. Conclusive data regarding this topic is of great importance in order for the government and healthcare system to develop strategies meant to protect the medical personnel during the COVID-19 pandemic and afterwards. Publishing has increased by orders of magnitude at the beginning of the pandemic, and even if most of the published papers were editorials and expert opinions, scientific data collection and analysis pushed to uncover the true extent of the pandemic's burden. All this being said, very few articles, as a percentage, focused on how the pandemic impacted the ones in the first line of defence, HKWs, and furthermore, no data seemed to be appearing from Romania, even though we know that multiple teams around the country were keen to jump on the publishing highway, us being no different.

We developed our own questionnaire, adapted for online usage and we distributed it through the major Facebook health related groups, many of them having in extent of thirty thousand members, expecting high engagement and multiple replies to our questionnaire. To our disbelief, the results after four months of the questionnaire being shared we only received little above one hundred replies, still enough to deduce broad observational tendencies in how the pandemic is affecting HKWs but shy as to perform multiple regression analysis which would have aided the forthcoming measures needed to prevent the development of psychiatric symptoms among our peers. More so, in some instances we found our initiative being blocked by what we can only describe as other teams' effort to get ahead in the publishing frenzy, disregarding the fact that topics differed significantly and that there is enough publishing space for all, especially in these uncharted waters.

Our ability to work together, to learn from each other and improve each other, along with the technological improvement of the last decades contributed to a virtuous cycle that pushed medical advance into its highest growth period ever. Taking into consideration all of the above and having surmounted the first year of living in the times of COVID-19 we would also like to add that the stress accumulated by our peers throughout the year has left us estranged, demotivated and less likely to cooperate. However, this is nothing new and we know now, more than ever, that there are means to recover even stronger especially because of the collaboration in different fields that led to the development and rapid acceptance of the new generation of mRNA vaccines.

In the fast shifting world of SARS-CoV-2 research found itself fragmented, in more than one case isolated, with a dire need to be re-envisioned. This can only be achieved with a change of mentality from individualism to an intense cooperation between researchers. If the current pandemic taught us something, is the fact that only through working together we can achieve our end goal, development of science for the benefit of the entire society.

.

REFERENCES

1. Cascella, M., Rajnik, M., Cuomo, A., Dulebohn, S. C., Di Napoli, R. (2020). Features, evaluation and treatment coronavirus (COVID-19). StatPearls Publishing.
2. Vindegaard, N., Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: systematic review of the current evidence. Brain, Behavior, and Immunity.
3. Cheng, S. K. W., Tsang, J. S. K., Ku, K. H., Wong, C. W., Ng, Y. K. (2004). Psychiatric complications in patients with severe acute respiratory syndrome (SARS) during the acute treatment phase: a series of 10 cases. The British Journal of Psychiatry, 184(4), 359-360.
4. Chua, S. E., Cheung, V., McAlonan, G. M., Cheung, C., Wong, J. W., Cheung, E. P., Lee, P. W. (2004). Stress and psychological impact on SARS patients during the outbreak. The Canadian Journal of Psychiatry, 49(6), 385-390.
5. Holmes, E. A., Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L. Ford, T. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. The Lancet Psychiatry.
6. Wu, P., Fang, Y., Guan, Z., Fan, B., Kong, J., Yao, Z., Hoven, C. W. (2009). The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. The Canadian Journal of Psychiatry, 54(5), 302-311
7. Liu, C. Y., Yang, Y. Z., Zhang, X. M., Xu, X., Dou, Q. L., Zhang, W. W., Cheng, A. S. (2020). The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. Epidemiology & Infection, 1-17.)
8. Kang, L., Li, Y., Hu, S., Chen, M., Yang, C., Yang, B. X., Chen, J. (2020). The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. The Lancet Psychiatry, 7(3), e14.).
9. Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Tan, H. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA network open, 3(3), e203976-e203976.
10. Bojdani, E., Rajagopalan, A., Chen, A., Gearin, P., Olcott, W., Shankar, Festin, F. E. D. (2020). COVID-19 Pandemic: Impact on Psychiatric Care in the United States, a Review. Psychiatry Research,113069.
11. Gianluca, S., Bianca, P., Andrea, A., Andrea, A., Leo, S., Mario, A. (2020). The psychological impact of COVID-19 on the mental health in the general population. QJM: monthly journal of the Association of Physicians, hcaa201.
12. Spoorthy, M. S., Pratapa, S. K., Mahant, S. (2020). Mental health problems faced by healthcare workers due to the COVID-19 pandemic–A review. Asian journal of psychiatry, 51, 102119.

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Articles

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

Crossed eye-hand dominance in pupils with specific learning disabilities with impairment in mathematics

Petru – Marian Călinescu

Petru-Marian Călinescu – PhD Student, Psychology and Education Sciences Faculty, Alexandru-Ioan Cuza University of Iaşi

ABSTRACT

Crossed laterality is a recurent subject in the scientific literature, and its ties with achievement are not fully explained. In solving mathematical problems, peoples use exact and approximate calculation strategies, having as neuronal substrat an exact number system, respectively an approximate one. Some persons suffer of specific learning disabilities with impairment in mathematics, also called developmental dyscalculia. Multiple brain dysfunctions or dysfunction in central brain areas, as well as negative educational influences cause developmental dyscalculia. In the present study, the occurencies of cross eye-hand dominance were compared in normal and adapted curriculum pupils, aged 8- 15. In order to identify the dominant hand and the dominant eye, a simplified V-scope test was used. χ squared association test revealed that adapted curriculum pupils suffer significantly more often of cross eye-hand dominance compared to normal curriculum pupils. Despite more of the adapted curriculum pupils exhibited a left eye prefference, statistical results require caution. Crossed eye-hand dominance occurs more frequently in case of adapted curriculum pupils, supporting the fact that the etiology of developmental dyscalculia is represented of brain dysfunctions. In case of adapted curriculum pupils, left eye preference seems to sustain the presence of some left hemisphere damages, fact that explains the difficulties these pupils encounter in solving arithmetic problems. Remains for the future research to estabilish the validity of the „monocle method" in the screening of special learning disabilities persons.

KEYWORDS:

Crossed eye-hand preference, developmental dyscalculia, specific learning disability (SLD) with impairment in mathematics.

INTRODUCTION

Crossed dominance describes the situation when an individual's dominant hand and dominant eye are on opposite sides of the body (1). In a meta-analisys, Bourassa (2) found no evidence that incidence of eyedness or the association between eyedness and handedness differed between sexes. Also, no differences between cultures were highlighted (3). Despite the fact that some authors found no relationship between crossed laterality and intelligence or achievement (4), nor significant difference in reading achievement between unilateral and crossed eye – hand pupils (5), however crossed dominance seems to negatively affect some individual's abilities, like that to accurately aim and fire long-barreled guns (1).

Specific learning disabilities with impairment in mathematics. In solving mathematical problems, peoples use two different types of mental strategies: exact calculation strategies, in these ones language playing a crucial role, and approximate calculation strategies (6). Neurological bases for these strategies are an exact numer system, implicated in mental activities like subitizig, counting and calculation, respectively an approximate number system, responsible for contextual and perceptual estimations (7). The above made distinction is in accord with the triple code model (8). People use three codes or formats to represent the numbers. First of them is an analogical system of representation of quantities, and it conceives the numbers as a distribution of activation on a mental number line. This system is bilaterally localized in the inferior parietal region. The second code is a verbal one (phonological and graphical), representing the numbers in sequences of words syntactically organized. This representation is correlated with the perisylvian cortex, implicated in the verbal processing. The third code is a visual arabical one, with an ideographical character, in which numbers are represented as series of digits; it allows a spatial manipulation of numbers. This type of representation is related to the temporo-occipital cortex of both cerebral hemispheres. The first code, namely the analogical representation of quantities, is the equivalent of the approximate number system, while the second and the third codes can be assimilated with the exact number system. Unfortunately, some peoples encounter difficulties in acquiring the basic mathematical skills, and this condition represents a learning disability called dyscalculia (9). Since 2013, once with DSM-V published, the phrase *specific learning disability (SLD) with impairment in mathematics* tended to replace the old term of *dyscalculia,* but in the actual scientific literature, both terms coexist. In order to reduce the confusion with consecutive to a cerebral trauma dyscalculia, most authors prefere the phrase *developmental dyscalculia* to name SLD with impairment in mathematics (10, 11; 9; 12). Developmental dyscalculia is a heterogeneos disorder (13; 14), including impairments of the number sense, difficulties in memorizing arithmetical facts or in reasoning. SLD is frequently associated with comorbities (alexia, agraphia, attention deficit with hyperactivity disorder, impairments of executive functions), suggesting that multiple brain dysfunctions or dysfunction in central brain areas cause appearence of developmental dyscalculies (14). More than that, educational intervention negatively influences evolution of SLD persons when some important aspects are neglected, such as the fact that humans exhibit behavioral inclination towards more utility of one side of the body, in relation with the dominant hemisphere of the brain (15). A different hemispheric specialization seems to be sustained by tehniques of brain imagery (electroencefalography, functional magnetic resonance imagery, transcranian magnetic stimulation). Given that visual information from the left hemicamp is projected in the right hemisphere, and the last mentioned has neither verbal reprezentation for numbers, nor procedures for exact calculation (16), determing the eye prefference might be an important diagnostic step in evaluation of persons suffering of specific learning disabilities with impairment in mathematics.

OBJECTIVES

In order to provide, in the one hand, a possible neuropsychological explanation for the installation of some specific cases of specific learning disabilities with impairment in mathematics, and, in the other hand, to allow a larger and comprehensive approach in the construction of remedial plans for children with special educational needs, the occurence of crossed eye- hand dominance was measured. The above mentioned exploratory approach was part of a larger study, designed to enable making comparisons of the number sense in case of normal and adapted curriculum pupils integrated in the mass school, respectively.

HYPOTHESIS

The hypothesis of the study was that crossed eye – hand dominance occurs significantly more frequent in case of adapted curriculum pupils compared to normal curriculum pupils. The occurences of left hand and left eye dominances were also compared in the groups of normal and adapted curriculum pupils.

PARTICIPANTS

The sample consisted of 120 school children and adolescents, aged 8 to 15 years (M=12,26, std=1,85), 60 of them special educational needs children, with adapted curriculum, and 60 children with normal curriculum. After data colection, 111 participants remained only, because of technical problems during recording (lack of sound or image, that made impossible calculation of reaction times), and the new distribution was 56 normal curriculum children and 55 adapted curriculum children. Gender distribution was 63,9% males and 36,1% females. 72, 97% of the responents learn in a rural school, while 24,32% learn in an urban school (in case of 5 respondents this information is not available). 80,18 % of the participants were right handed, while 17,11% of them were left handed. In the exploratory approach here presented, 98 participants with complete data about type of curriculum and eye, respective hand dominance have remained only.

PROCEDURE

In order to identify the dominant eye, a simplified V-scope test (5) was used. Participants were asked to look through a monocle. The first hand they grabed the tool and the first eye they tended to gaze with were noticed. The tool was standardizedly positioned on the table, exactly in front of the participant, equally positioned to left and to the right hand. The task was standardized too: „There you have an monocle. Please, take it and look through it!"

RESULTS

Both situations, that in which pupils took the monocle with right hand and positioned this in front of the left eye, as well as that in which the monocle was taken with left hand and seated in front of the right eye were considered as crossings of eye – hand prefferences. 64,7% of adapted curriculum pupils suffers of crossed eye – hand dominance, compared to 35,3% of the normal curriculum only (Table I). χ squared association test revealed a statistical interdependence between the variables eye – hand crossing and type of curriculum, χ^2 (1) = 5,850, p = 0,016 (Table II). Adjusted standardized reziduums are not situated in the interval [-2; 2] (Table III), thus adapted curriculum pupils suffer significantly more often of crossed eye – hand dominance compared to normal curriculum pupils.

Tab I. Comparison between normal and adapted curriculum pupils in terms of crossed eye-hand dominance: type of curriculum * crossed preferences Crosstabulation

			Incrucisare		Total
			fara incrucisare	cu incrucisare	
curriculum	Normal	Count	39	12	51
		Expected Count	33,3	17,7	51,0
		% within incrucisare	60,9%	35,3%	52,0%
		Adjusted Residual	2,4	-2,4	
	Adaptat	Count	25	22	47
		Expected Count	30,7	16,3	47,0
		% within incrucisare	39,1%	64,7%	48,0%
		Adjusted Residual	-2,4	2,4	
Total		Count	64	34	98
		Expected Count	64,0	34,0	98,0
		% within incrucisare	100,0%	100,0%	100,0%

Tab II. Comparison between normal and adapted curriculum pupils in terms of crossed eye-hand dominance: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,850[a]	1	,016		
Continuity Correction[b]	4,868	1	,027		
Likelihood Ratio	5,909	1	,015		
Fisher's Exact Test				,020	,013
Linear-by-Linear Association	5,790	1	,016		
N of Valid Cases	98				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 16,31.
b. Computed only for a 2x2 table

Tab III. Comparison between normal and adapted curriculum pupils in terms of crossed eye-hand dominance: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,244	,016
	Cramer's V	,244	,016
N of Valid Cases		98	

Type of curriculum – dominant hand association. Association chi squared test revealed no significant differences between normal and adapted curriculum pupils regarding the dominant hand. χ^2 (1) = 0,163, p = 0,686 (Tables IV, V and VI)

Tab IV. Comparison between normal and adapted curriculum pupils in terms of hand preference: type of curriculum * dominant hand Crosstabulation

			mana		Total
			mâna dreaptă	mâna stângă	
curriculum	Normal	Count	44	9	53
		Expected Count	43,2	9,8	53,0
		% within mana	50,0%	45,0%	49,1%
		Adjusted Residual	,4	-,4	
	Adaptat	Count	44	11	55
		Expected Count	44,8	10,2	55,0
		% within mana	50,0%	55,0%	50,9%
		Adjusted Residual	-,4	,4	
Total		Count	88	20	108
		Expected Count	88,0	20,0	108,0
		% within mana	100,0%	100,0%	100,0%

Tab V. Comparison between normal and adapted curriculum pupils in terms of hand preference: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,163[a]	1	,686		
Continuity Correction[b]	,024	1	,876		
Likelihood Ratio	,163	1	,686		
Fisher's Exact Test				,806	,439
Linear-by-Linear Association	,162	1	,688		
N of Valid Cases	108				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 9,81.
b. Computed only for a 2x2 table

Tab VI. Comparison between normal and adapted curriculum pupils in terms of hand preference: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,039	,686
	Cramer's V	,039	,686
N of Valid Cases		108	

Type of curriculum – dominant eye association. 58,6% of normal curriculum pupils exhibit a right ocular dominance, while 63,3% of the adapted curriculum pupils show a left eye dominance (Table VII). Although chi squared association test revealed a statistical interdependence between the variables eye dominance and type of curriculum, χ^2 (1) = 4,037, p = 0,045 (Table VIII), however adjusted standardized reziduums are the limits of [-2; 2] interval (Table IX), thus the tendency of adapted curriculum pupils to show more often left eye dominance compared to normal curriculum pupils should be treated with caution.

Tab VII Comparison between normal and adapted curriculum pupils in terms of eye preference: type of curriculum vs. eye crosstabulation

			ochi		Total
			ochi drept	ochi stâng	
Curriculum	Normal	Count	41	11	52
		Expected Count	36,4	15,6	52,0
		% within ochi	58,6%	36,7%	52,0%
		Adjusted Residual	2,0	-2,0	
	Adaptat	Count	29	19	48
		Expected Count	33,6	14,4	48,0
		% within ochi	41,4%	63,3%	48,0%
		Adjusted Residual	-2,0	2,0	
Total		Count	70	30	100
		Expected Count	70,0	30,0	100,0
		% within ochi	100,0%	100,0%	100,0%

Tab VIII Comparison between normal and adapted curriculum pupils in terms of eye preference: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,037[a]	1	,045		
Continuity Correction[b]	3,207	1	,073		
Likelihood Ratio	4,067	1	,044		
Fisher's Exact Test				,052	,036
Linear-by-Linear Association	3,997	1	,046		
N of Valid Cases	100				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 14,40.
b. Computed only for a 2x2 table

Tab IX Comparison between normal and adapted curriculum pupils in terms of eye preference: Symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,201	,045
	Cramer's V	,201	,045
N of Valid Cases		100	

DISCUSSION

Presence of crossed eye-hand dominance is significant greater in case of adapted curriculum pupils compared to normal curriculum ones. This finding is in accord with the idea that multiple brain dysfunctions or impairments in the functioning of central brain areas are possible etiologic factors in dyscalculia. The crossed eye-hand preference might be the result of an ontogenetic adaptative process. Due the fact some cerebral areas suffered damages, when possible, the controlateral regions of the opposite hemisphere takes over the functions. This idea might be related to another finding. Despite no statistically significant differences between normal curriculum and adapted curriculum children emerged when hand dominance was assessed (however, in this case the educational factor plays an important role, because some parents and teachers still force their children to write with their right hand), things are different in the case of oculo-visual prefference. Adapted curriculum

pupils seem to prefere more often to use the left eye, but, taking into account that the visual information of the left hemicamp is projected in the occipital lobe of the right hemisphere, which has neither verbal reprezentation for numbers, nor procedures for exact calculation (16), this might explain the difficulties encountered by the pupils with SLD with impairment in mathematics when deal with arithmetic problems.

CONCLUSION

Adapted curriculum pupils seem to suffer more often of crossed eye-hand dominance than their normal curriculum peers.

Left eye dominance seems to appear more often in case of adapted curriculum pupils, sustaining a right hemisphere dominance and implicitly the use of the approximate number system to the detriment of the exact number system.

The *monocle method* might represent a simple and rapid screening method in determining the presence of crossed eye-hand preference, as well as the presence (or the risk of installation) of SLD with impairment in mathematics.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflicts of interest to disclose

REFERENCES

1. Luken, M., Yancosek, K. E. (2017). Effects of an Occupational Therapy Hand Dominance Transfer Intervention for Soldiers With Crossed Hand –Eye Dominance. Journal of Motor Behaviour, 49, pp. 78-87.
2. Bourassa, D.C. (1996) Handedness and Eye-dominance: A Meta-analysis of Their Relationship, Laterality, 1:1, 5-34, DOI: 10.1080/713754206.
3. Teng, E. L., Lee, P. H., Yang, K. S., Chang, P. C. (1979). Lateral preferences for hand, foot and eye, and their lack of association with scholastic achievement, in 4143 Chinese, Neuropsychologia,Vol. 17 (1): pp 41-48. https://doi.org/10.1016/0028-3932(79)90020-4.
4. Sulzbacher, S., Thomson, J., Farwell, J. R., Temkin, N. R., Holubkov, A. L. (1994) Crossed dominance and its relationship to intelligence and academic achievement, DevelopmentalNeuropsychology, 10:4, 473-479, DOI: 10.1080/87565649409540596
5. Boos, R., Hillerich, R. (1967). A Study of the Possible Distinction Between "Controlling Eye" and "Dominant Eye" and the Effect of Both, with Hand Dominance, on Reading Achievement. ERIC Number**:** ED033018.
6. Rousselle, L., Noel, M.P. (2008). Mental Arithmetic in Children with Mathematics Learning Disabilities: The Adaptive Use of Approximate Calculation in an Addition Verification Task. Journal of Learning Disabilities, 41 (6): 498 -513.
7. Olkun, S., Altun, A., Şahin, S., and Denizli, Z. (2015). Deficits in Basic Number Competencies May Cause Low Numeracy in Primary School Children. Education and Science, vol. 40, no. 177, pp 141-159.
8. Dehaene, S., Cohen, L. (1995). Towards an Anatomical and Functional Model of Number Processing. Mahematical Cognition, 1, 83-120.
9. Raja, W., Kumar, P. (2011). Findings of Studies on Dyscalculia – a Synthesis. Journal on Educational Psychology, vol. 5, no. 3, pp. 41-50.
10. Aster, M. Shalev R. (2007). Number Development and Developmental Dyscalculia. Developmental Medicine and Child Neurology, 49 (11): 868 – 873.
11. Evans, T., Flowers, L., Napoliello, E., Olulade, O:, Eden, G. (2014). The Functional Anatomy of Single-Digit Arithmetic in Children with Developmental Dyslexia. NeuroImage 101: 644 – 652.
12. Shalev, R., Auerbach, J., Manor, O. Gross-Tsur, V. (2000). Developmental Dyscalculia: Prevalence and Prognosis. European Child Adolescent Psychiatry, 9: II / 58 – II / 64.
13. David, C. Roșan, A. (2017). Repere diagnostice bazate pedovezi științifice în tulburările specifice de învățare, Ed. Argonaut Limes, Cluj-Napoca.
14. Kucian, K. (2016). Developmental Dyscalculia and the Brain, Development of Mathematical Cognition, http://dx.doi.org/10.1016/B978-0-12-801871-2.00007-1

15. Khamnei, S., Sadat – Ebrahimi, S.-R., Salarilak, S., Oskoee, S. S., Houshyar, Y., Shakouri, S. K., Salekzamani, Y., Zamanlu, M. (2019). Manifestation of hemisferic laterality in chewing side preference and handedness, Bioimpacts, 9(3):189-193. doi: 10.15171/bi.2019.23.
16. Dehaene, S. (2000). Cerebral Bases of Number Processing and Calculation. Cognitive Neurosciences, 68, 987 – 999.

Correspondence

Petru-Marian Călinescu,
PhD Student, Psychology and Education Sciences Faculty, Alexandru-Ioan Cuza University of Iasi,
str Toma Cozma no 3, Iasi, arterapiaudio@gmail.com

Submission: 05 jan 2021
Acceptance: 07 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

Depression as risk factor for sepsis

Diana Georgiana Butură, Roxana Mihaela Barbu,
Cristina-Maria Gavrilescu, Răducu Ionuț Popescu, Walther Bild

Diana Georgiana Butură - PhD student in Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Specialist in Hematology, Romania.
Roxana Mihaela Barbu - MD, PhD, Department of Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Specialist in Clinical Pharmacology, Romania.
Cristina-Maria Gavrilescu - Lecturer, MD, PhD, „Grigore T. Popa" University of Medicine and Pharmacy, Iași, Ist Medical Department, Senior in Internal Medicine, specialist în Geriatrics, specialist în Clinical Pharmacology, Romania.
Răducu Ionuț Popescu - MD, PhD, Department of Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Romania.
Walther Bild - MD, PhD, Professor Department of Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Romania.

ABSTRACT
Sepsis continues to be one of the most challenging problems in medicine. Unfortunately, after thirty years of clinical trials, no disease-specific therapy has been discovered, the overall incidence of sepsis continues to rise and mortality remains unacceptably high. Sepsis is an often fatal condition, killing 20% to 50% of patients with this diagnosis. It is the second leading cause of death among patients in non-coronary intensive care units and the tenth leading cause of death in the world. In addition, the quality of life of patients surviving sepsis is significantly reduced. The present article highlights the hypothesis that depressive symptoms of presepsis are associated with the risk of cognitive impairment in patients with severe sepsis. Thus, depression is closely linked to impaired immune function and a pro-inflammatory state, frequently coexisting with stress, and has plausible connections to the risk of sepsis. These mechanisms have been involved in increasing the risk of infection reported among people with depression and other mood disorders. Conclusion: Substantial depressive symptoms are independently associated with cognitive impairment post-sepsis. Elderly people with depression may be at particular risk of developing cognitive impairment after a severe illness.

KEYWORDS:
Risk factor, sepsis, neuropsychological disorder.

INTRODUCTION

Sepsis, the clinical syndrome of microbial infection complicated by the systemic inflammatory response, is a major public health problem. Severe sepsis is associated with approximately 750,000 hospitalizations, 570,000 visits to emergency services and more than 215,000 deaths annually in Europe, and the national cost of sepsis care exceeds 16.7 billion euros. Despite a thorough understanding of the pathophysiology of sepsis, relatively little is known about the associated clinical or demographic risk factors (1).

Psychological stress and depression are thought to greatly affect initial health and have been associated with the onset and progression of diseases such as cardiovascular disease, acquired immunodeficiency syndrome, autoimmune diseases and respiratory tract infections (2). The interaction between stress and the immune system is complex, with different types of stressors elucidating various natural and specific responses (3). This is relevant for sepsis, as down-regulation of cellular or humoral immunity could lead to increased susceptibility to infection, but regulation of pro-inflammatory cells and cytokines could lead to a state of increased inflammation (4). Current evidence indicates a relationship between psychosocial stress, depression and chronic inflammation, which may be responsible for the observed associations between stress and disease, which are not fully explained by the hypothalamic-pituitary-adrenal axis and changes in the sympathetic nervous system (5).

Substantial symptoms of depression are independently associated with incidental postsepsis cognitive impairment. Depressed elderly adults may be at particular risk of developing cognitive impairment after severe chronic illness (6). Systemic inflammatory response syndrome (SIRS) is characterized by an inflammatory systemic response to external injuries and is characterized by at least two of the following conditions: temperature> 38˚Celsius or <36˚ Celsius; heart rate> 90 beats / minute; respiratory rate> 20 breaths per minute or PaCO <32mmHg, white blood cell count> 12,000 / mmc, <4000 / mmc, or> 10% immature forms (7). Sepsis is the systemic response to infection, manifested by at least two SIRS conditions, secondary to infection. Severe sepsis is sepsis associated with organ dysfunction, hypoperfusion, or hypotension. Abnormalities of hypoperfusion may include lactic acidosis, oliguria, or a change in the mental state. Septic shock is defined as the phenomenon of sepsis that presents circulatory, cellular and metabolic abnormalities that are associated with a higher risk of mortality than septicemia alone (8).

Cognitive impairment is a serious public health problem, so that the elderly with cognitive impairments have a higher risk of mortality (9). Emerging evidence suggests that the elderly are at greater risk of developing cognitive impairment as a consequence of concomitant chronic diseases (10). Severe sepsis is the most common non-cardiac cause of chronic diseases. At the same time, it has been shown to be independently associated with substantial and persistent cognitive impairment in surviving patients with sepsis (11), but it is not known which people with severe sepsis have the highest risk of becoming cognitively affected.

A growing body of research has found that end-of-life depression is associated with the risk of dementia (12), with an association between depression and cognitive decline in Alzheimer's disease. Thus, depression may

increase the risk of cognitive impairment due to behavioral factors, such as smoking, sedentary lifestyle, and low adherence to the treatment of chronic medical conditions (13).

Depression, cognitive impairment, and sepsis are all associated with higher levels of proinflammatory markers, suggesting plausible physiological and behavioral links between depression and cognitive impairment following severe sepsis (14). So a plausible cause of depression, severe sepsis, and subsequent cognitive decline in elderly patients is inflammation. Depression has been associated with the release of proinflammatory cytokines, which have been thought to lead to end-of-life neuro-degenerative changes. Thus, depression could potentiate the harmful inflammatory effect of sepsis on the brain. Another plausible cause of the link between depression, sepsis and cognitive impairment is through delirium. Delirium is common in the elderly with sepsis, then in people with severe conditions, it has been associated with long-term cognitive impairment (15).

In addition, previous studies have found that depression is an independent risk factor for delirium during hospitalization for severe illness in the elderly (20). Thus, the delirious effects of depression could potentiate long-term cognitive dysfunction, but further studies are needed to confirm this cause (16).

It has been identified that depression, which precedes severe sepsis, has independently three times increased the chances of incidental cognitive impairment in patients surviving post-sepsis. Because most survivors of severe sepsis with cognitive impairment in this cohort had moderate to severe impairment, depression in older adults before severe sepsis may increase the risk of adverse outcomes (17). There are also biologically plausible links between depressive symptoms and the stress-sepsis relationship. Depressive conditions can lead to an increase in pro-inflammatory cytokines, such as C-reactive protein and interleukin-6, which are prominent in the pathophysiology of sepsis. At the cellular level, clinical depression has been associated with decreased lymphocyte function, manifested by reduced proliferative responses and immune cell activity. These mechanisms have been involved in the increased risk of infection in people with depression and other mood disorders (18).

DISCUSSIONS

Studies suggest connections between stress, depression and a number of health risks to the body (18, 19). Chronic stress, through various effects on immunity, can increase the risk of infection, so it has been shown that stress disrupts innate immunity, antibody production and T cell responses. This immunomodulation is evident in studies highlighting the increased risk of viral reactivation and increased risk of respiratory infections among those with existing chronic conditions. Alternatively, psychosocial stress has also plausible connections to chronic increased inflammation, which could be linked to sepsis. Specifically, previous histories of childhood abuse, as well as social isolation, anger, hostility, and depression, have been shown to be positively correlated with elevated plasma concentrations of inflammatory markers with strong associations with sepsis (20).

While numerous studies have characterized the evolution of acute sepsis episodes (21), few studies have evaluated the association of initially perceived stress with future sepsis episodes (22). Stress has plausible links to short-term health effects, but there is also evidence of its long-term health effects. Draper and his colleagues found that physical

and sexual abuse in childhood was associated with poor physical health (23). It was also shown that acute stress can lead to depression (24), so an increased incidence of sepsis may result as connected both to stres and depression. Several studies describe the coexistence of stress and depression, up to 80% of cases of depression having been associated with previous stressful events (25), suggesting an additional risk of infection in this population.

These studies support the hypothesis that the risk of future sepsis of a patient can be potentially predicted by his initial characteristics and preexisting condition. This knowledge has clinical relevance, so that for people at estimated risk of increased sepsis, clinicians may start with lower thresholds for antibiotic treatment of minor infections or for hospitalization in response to more serious infections.

.

CONCLUSIONS

In conclusion, substantial depressive symptoms before hospitalization for severe sepsis are independently associated with higher chances of new cognitive disorders. Depressed elderly adults have a special risk of developing cognitive impairment due to a severe illness. Thus, the association between stress and the incidence of sepsis is significant, but this association can be reduced by adjusting for depressive symptoms.

Future research might identify the mechanisms linking depression to sepsis and cognitive impairment, along with interventions that prevent or slow the cognitive decline after severe sepsis. The importance of understanding all the connections between depression and the severity of sepsis has a high impact not only on the elderly, but also on their families and on the health care system.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors state that they are no declared conflicts of interest regarding this paper.

REFERENCES

1. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis3), Jama, 2016.
2. T Wheeler AP, Bernard GR. Treating Patients with Severe Sepsis. N Engl J Med. 1999; 340 (3) : 207–14.
3. Parrillo JE, Parker MM, Natanson C, Suffredini AF, Danner RL, Cunnion RE, et al. Septic shock in humans: Advances in the understanding of pathogenesis, cardiovascular dysfunction, and therapy. In: Annals of Internal Medicine, 1990.
4. Raison CL, Capuron L, Miller AH. Cytokines sing the blues: inflammation and the pathogenesis of depression. Trends in immunology. 2006;27:24–31.
5. Martin GS, Mannino DM, Moss M. The effect of age on the development and outcome of adult sepsis. Crit Care Med. 2006;
6. Rohleder N. Stimulation of systemic low-grade inflammation by psychosocial stress. Psychosomatic medicine. 2014;76:181–189.
7. lavich GM, Irwin MR. From Stress to Inflammation and Major Depressive Disorder: A Social Signal Transduction Theory of Depression. Psychological bulletin. 2014
8. Mosovich SA, Boone RT, Reichenberg A, Bansilal S, Shaffer J, Dahlman K, Harvey PD, Farkouh ME. New insights into the link between cardiovascular disease and depression. International journal of clinical practice. 2008;62:423–432.
9. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. Journal of health and social behavior. 1983;24:385–396.
10. Kiecolt-Glaser JK, McGuire L, Robles TF, Glaser R. Psychoneuroimmunology: psychological influences on immune function and health. Journal of consulting and clinical psychology. 2002;70:537–547.
11. Aneshensel CS, Stone JD. Stress and depression: a test of the buffering model of social support. Arch Gen Psychiatry. 1982;39:1392–1396.

12. Washyna TJ, Ely EW, Smith DM et al. Long-term cognitive impairment and functional disability among survivors of severe sepsis. JAMA 2010; 304: 1787– 1794.
13. Ehlenbach WJ, Hough CL, Crane PK et al. Association between acute care and critical illness hospitalization and cognitive function in older adults. JAMA 2010; 303: 763– 770.
14. Milbrandt EB, Eldadah B, Nayfield S et al. Toward an integrated research agenda for critical illness in aging. Am J Respir Crit Care Med 2010; 182: 995– 1003.
15. Ownby RL, Crocco E, Acevedo A et al. Depression and risk for Alzheimer's disease: Systematic review, meta-analysis, and metaregression analysis. Arch Gen Psychiatry 2006; 63: 530– 538.
16. Li G, Wang LY, Shofer JB et al. Temporal relationship between depression and dementia: Findings from a large community-based 15-year follow-up study. Arch Gen Psychiatry 2011; 68: 970– 977.
17. Opal SM, Girard TD, Ely EW. The immunopathogenesis of sepsis in elderly patients. Clin Infect Dis 2005; 41: S504– S512.
18. Jacob A, Brorson JR, Alexander JJ. Septic encephalopathy: Inflammation in man and mouse. Neurochem Int 2011; **58**: 472– 476.
19. Girard TD, Jackson JC, Pandharipande PP et al. Delirium as a predictor of long-term cognitive impairment in survivors of critical illness. Crit Care Med 2010; **38**: 1513– 1520.
20. Pompei P, Foreman M, Rudberg M et al. Delirium in hospitalized older persons: Outcomes and predictors. J Am Geriatr Soc 1994; **42**: 809– 815.
21. Muscatell KA, Slavich GM, Monroe SM, Gotlib IH. Stressful life events, chronic difficulties, and the symptoms of clinical depression. The Journal of nervous and mental disease. 2009;197:154–160.
22. Bogdan R, Nikolova YS, Pizzagalli DA. Neurogenetics of depression: a focus on reward processing and stress sensitivity. Neurobiology of disease. 2013;52:12–23.
23. Draper B, Pfaff JJ, Pirkis J, Snowdon J, Lautenschlager NT, Wilson I, Almeida OP for the D, Early Prevention of Suicide in General Practice Study G. Long-Term Effects of Childhood Abuse on the Quality of Life and Health of Older People: Results from the Depression and Early Prevention of Suicide in General Practice Project. Journal of the American Geriatrics Society. 2008;56:262–271.
24. Muscatell KA, Slavich GM, Monroe SM, Gotlib IH. Stressful life events, chronic difficulties, and the symptoms of clinical depression. J Nerv Ment Dis. 2009;197:154–160.
25. Andrews G. Should depression be managed as a chronic disease? BMJ. 2001;322:419–421.

Correspondence:

Cristina-Maria Gavrilescu,
Lecturer, MD, PhD, „Grigore T. Popa" University of Medicine and Pharmacy, Iași, Ist Medical Department, Iași, Romania, senior in Internal Medicine, specialist în Geriatrics, specialist în Clinical Pharmacology,cristina.gavrilescu@umfiasi.ro

Submission: 19 feb 2021
Acceptance: 16 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

The impact of the COVID-19 pandemic in the psychiatric diseases

Alexandra Sabina Cojocariu, Alexandra Maștaleru, Florin Mitu, Maria-Magdalena Leon-Constantin

Alexandra Sabina Cojocariu – M.D., Ph. D. student, "Grigore T Popa" University of Medicine and Pharmacy – Iasi, Romania, Faculty of Medicine, Department of Medical Specialties (I), Institute of Cardiovascular Diseases
Alexandra Maștaleru - "Grigore T Popa" University of Medicine and Pharmacy – Iasi, Romania, Faculty of Medicine, Department of Medical Specialties (I), Clinical Rehabilitation Hospital – Cardiovascular Rehabilitation Clinic
Florin Mitu - "Grigore T Popa" University of Medicine and Pharmacy – Iasi, Romania, Faculty of Medicine, Department of Medical Specialties (I), Clinical Rehabilitation Hospital – Chief of Cardiovascular Rehabilitation Clinic
Maria-Magdalena Leon-Constantin - "Grigore T Popa" University of Medicine and Pharmacy – Iasi, Romania, Faculty of Medicine, Department of Medical Specialties (I), Iasi, Romania; Clinical Rehabilitation Hospital – Cardiovascular Rehabilitation Clinic

ABSTRACT
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the COVID-19 pandemic. Psychiatric symptoms and disorders can appear both in patients that suffer from the SARS-Cov-2 or in health care workers who take care of the patients diagnosed with this disease. Regarding the pathogenesis of the psychiatric manifestations and diseases that can appear while being infected with COVID-19 or after the disease, we can talk about biological and psychosocial factors, like: physical distancing, loneliness, fear of infecting the family and friends, increasing the workloads, lack of access for testing (at least in the initial months of the pandemics), lack of protective equipment, lack of vaccination (or the impossibility of vaccination earlier), different opinions regarding the pandemics and infection on different media channels (television, internet), insecurity, economic problems regarding the food and drugs availability (in the first months of the pandemics), uncertainty surroundings. Our article wants to draw attention among the psychiatric community about the long-term occurrence of a considerably higher number of cases of PTSD, anxiety, and depression than in previous infections. Recent cross-sectional studies described the fact that many patients with various psychiatric manifestations manage very hard the pandemics and

are very rapidly deteriorating. It requires careful and continuous monitoring of former patients to ensure adequate support.

KEYWORDS:
SARS-Cov-2, MERS, psychiatric illness.

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the COVID-19 pandemic because of its high transmissibility and virulence. The disease can develop by a direct, indirect or close contact with an infected person by secretions like saliva or respiratory droplets that are expelled through a cough, sneeze, talk or even when the infected person sings (1). The publications regarding SARS-CoV-2 are increasing exponentially in time, the information being updated and expanded every day.

Psychiatric symptoms and disorders can appear both in patients that suffer from the SARS-Cov-2 or in health care workers who take care of the patients diagnosed with this disease (2, 3). There are few studies that report the prevalence of psychiatric disorders associated with COVID-19 infection. Patients diagnosed with psychiatric diseases before December 2019 may have a higher predisposition to develop the infection with COVID-19, because of aspects like poor understanding in keeping the physical distancing, realizing the importance of the handwashing or the high contagiosity of the virus (4, 5, 6).

PATHOGENESIS OF PSYCHIATRIC MANIFESTATIONS

Regarding the pathogenesis of the psychiatric manifestations and diseases that can appear while being infected with COVID-19 or after the disease, we can talk about biological al psychosocial factors. An important one that should be mentioned is the fact that COVID-19 can alter the normal function of the central nervous system.

In 2020 was published a systematic review that studied the previous epidemics and pandemics and discovered the fact that patients who underwent those infections had neuropsychiatric manifestations (encephalopathy, psychosis, mood changes, but also demyelination and neuromuscular dysfunction). The symptoms appeared not only in the acute phase, but also the weeks, months or even after a longer period of time after the infection (7).

A recent cross-sectional study included 125 hospitalized patients that were diagnosed with COVID-19 and had described for the first-time psychiatric manifestations. Out of these, the authors reported that 62% presented cardiovascular events, 9% had neurological manifestations and 31% had acute changes regarding the consciousness, behavior, personality and cognition (8).

For a better understanding of the pathogenesis of the psychiatric manifestations of the infected patients with COVID-19, many authors indicate the fact that this disease presents an associated inflammatory immune response. In addition, a correlation between the inflammation and the medical interventions can influence mainly indirect the central nervous system (9, 10, 11). Patients with severe acute respiratory syndrome coronavirus 2 infection usually have serum high levels of C-reactive protein and pro-inflammatory cytokines and a low level of blood lymphocyte count (7).

PSYCHOSOCIAL FACTORS

Psychiatric disorders that appear in the COVID-19 pandemics affect the worldwide population, not only the health care workers or the patients with severe acute respiratory

syndrome coronavirus 2 infection. Multiple factors can be implicated, such as: physical distancing, loneliness, fear of infecting the family and friends, increasing the workloads, lack of access for testing (at least in the initial months of the pandemics), lack of protective equipment, lack of vaccination (or the impossibility of vaccination earlier), different opinions regarding the pandemics and infection on different media channels (television, internet), insecurity, economic problems regarding the food and drugs availability (in the first months of the pandemics), uncertainty surroundings (3, 12, 13, 14, 15).

A recently published research that used an online survey described the fact that in the pandemic the alcohol consumption and smoking increased significantly. The regular drinkers had an 32% increase, the regular smokers had an 20% increase, persons that stopped drinking had a recurrence of 19% and for people who quitted smoking had a recurrence of 25% (16).

HEALTH CARE WORKERS

This special category of workers is more predisposed to the SARS-cov-2 infection, leading to all the psychiatric complications that may appear. On the one hand, the risk for infection is much higher because of the longer and closer contact with infected patients and on the other hand they need to stay more shifts in hospital and unfortunately, they don't have all the time the necessary equipment for prevention.

Two recent cross-sectional studies evaluated the front-line physicians and nurses from China (more than 1200) (2) and Italy (more than 1300) (17). These studies described the development of traumatic distress prevalence from 35 to 49%, depression appeared in 15 to 25%, anxiety in 12 to 20% and insomnia in 8% of the included personnel. In 2020 was also published another study that included more than 500 Canadian health care workers that responded to an online survey. The study described the fact that 47% required support from a psychologist (18). Moreover, front-line health care workers in COVID-19 departments can develop psychiatric symptoms or disorders due to the long shifts and accumulated stress in the last year (3, 19).

PATIENTS DIAGNOSED WITH COVID-19

Up until now, a very small studies included patients that had the severe acute respiratory syndrome coronavirus 2 infection and had associated a psychiatric illness. However, previous epidemics and pandemics demonstrated through rigorous studies that many patients will develop psychiatric symptoms and disorders (12, 20). Figure 1 describes the population at risk for COVID-19 infection in psychiatric patients.

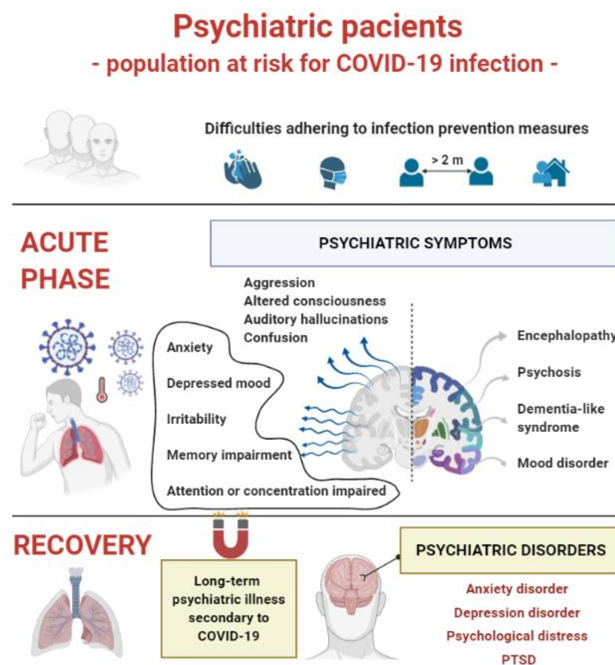

Fig. 1. Population at risk for COVID-19 infection in psychiatric patients

IN THE ACUTE PHASE OF THE ILLNESS

A recently published systematic review included patients hospitalized for SARS (severe acute respiratory syndrome) or Middle East respiratory syndrome (MERS) that were diagnosed also with psychiatric diseases. The study included more than 2500 cases from 60 studies and demonstrated that while the patients had the infection, almost 20-40% described insomnia (42%), impaired attention or concentration (33%), anxiety (36%), memory impairment (34%), depression (33%), confusion (28%), altered consciousness (21%) (9).

LONG-TERM PSYCHIATRIC ILLNESS SECONDARY TO COVID-19

Rogers et al. published in 2020 a systematic review that included 6 studies with more than 500 patients hospitalized for MERS and SARS. The authors evaluated the presence of psychiatric diseases after 3 to 46 months after recovery and they described the presence of PTSD (posttraumatic stress disorder) in 32% of the patients and anxiety and depression in 15% (9). The same systematic review evaluated the psychiatric manifestations in more than 1300 patients from 40 studies who were infected with SARS (in the 2003 epidemics) and MERS (from the 2012 epidemics) that appeared after a period of 2 months up until 12 years after the healing. 30% of the included cases declared traumatic memories, while other symptoms like anxiety, depression, insomnia, impaired attention, memory loss or irritability were present in a lower percentage. The study described also stigma from health care professionals, relatives and colleagues as a long-term psychiatric outcome (9).

Multiple studies describe the fact that patients who made a severe form of COVID-19 are much predisposed to develop a psychiatric disease (9, 21, 22).

EFFECT OF COVID-19 ON PACIENTS WITH PRE-EXISTING PSYCHIATRIC DISORDERS

COVID-19 PANDEMIC

The COVID-19 pandemic has an important psychological influence on patients with pre-existing psychiatric disease. Recent cross-sectional studies described the fact that 20 to 25% of patients with various psychiatric manifestations manage very hard the

pandemics and are very rapidly deteriorating. An online survey conducted in China that included more than 1400 patients with psychiatric diseases described the association between the deterioration of the patients and the pandemics in 21% of the participants. The psychosocial factors regarding the infections and restrictions lead to an increase percentage of developing anxiety, insomnia or depression (23).

Also, the pandemic had a considerable effect upon patients diagnosed with eating disorders. For example, in 2020 was conducted a study within an online survey in Australia, that included 88 participants who self-considered as having anorexia nervosa. Approximately 60% of the participants considered as having moderate to severe depression and anxiety. Also, about 50% considered they have increased their exercise and about 65% have imposed a strict control over their diet (24).

Recent studies described another psychiatric disease seriously affected by the pandemics. This is schizophrenia. The isolation associated with loneliness and different fears regarding the infection can lead them to smoke and go through chronic diseases that can lead to a higher risk if an infection occurs (4, 25, 26, 27).

The COVID-19 pandemic can also raise the rate of suicidal ideation, fact that was also seen in the past pandemics (28). The psychosocial factors like physical distancing, loneliness, insecurity, stigma of being infected with COVID-19 and uncertainty regarding the pandemic can lead to an increase suicidality (14, 23, 28, 39).

COVID-19 INFECTION

Latest research that includes patients with psychiatric diseases that were diagnosed before the pandemics demonstrate that their illness can be exacerbated in these times (20). Patients with schizophrenia that get infected with COVID-19 may develop psychotic relapses due to the administered drugs for the viral infection. Important to mention is the fact that some of them include the virus in their delusions, for example they believe that the health care workers are trying to infect them. Also, cognitive disfunction associated with psychotic manifestations may lead to a decrease capacity in applying correctly measures for decreasing the risk of infection (25, 30).

CONCLUSIONS

The findings from studies of survivors of the SARS and MERS epidemics may not be reliable predictors of the prevalence of psychiatric complications that may occur in the COVID-19 pandemic, but they are an important warning signal among the psychiatric community about the long-term occurrence of a considerably higher number of cases of PTSD, anxiety, and depression than in previous infections. It requires careful and continuous monitoring of former patients to ensure adequate support.

In conclusion, people who encounter psychiatric manifestations like depression, insomnia, anxiety or PTSD should talk to a mental health professional and they should receive materials for a better understanding of their disease, in case they have low level symptoms. Patients with moderate and severe manifestations should receive treatment from a mental health professional (face to face if possible, if not by telehealth).

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. World Health Organization. Director-General's remarks at the media briefing on 2019-nCoV on 11 February 2020. http://www.who.int/dg/speeches/detail/who-director-general-s-remark s-at-the-media-briefing-on-2019-ncov-on-11-february-2020 (Accessed on January 20, 2021).
2. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, Wu J, Du H, Chen T, Li R, Tan H, Kang L, Yao L, Huang M, Wang H, Wang G, Liu Z, Hu S. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020;3(3):e203976. doi: 10.1001/jamanetworkopen.2020.3976.
3. Xiang YT, Jin Y, Cheung T. Joint International Collaboration to Combat Mental Health Challenges During the Coronavirus Disease 2019 Pandemic. JAMA Psychiatry. 2020;77(10):989-990. doi: 10.1001/jamapsychiatry.2020.1057.
4. Benson NM, Öngür D, Hsu J. COVID-19 testing and patients in mental health facilities. Lancet Psychiatry. 2020;7(6):476-477. doi: 10.1016/S2215-0366(20)30198-X.
5. Yao H, Chen JH, Xu YF. Patients with mental health disorders in the COVID-19 epidemic. Lancet Psychiatry. 2020;7(4):e21. doi: 10.1016/S2215-0366(20)30090-0.
6. Zhu Y, Chen L, Ji H, Xi M, Fang Y, Li Y. The Risk and Prevention of Novel Coronavirus Pneumonia Infections Among Inpatients in Psychiatric Hospitals. Neurosci Bull. 2020;36(3):299-302. doi: 10.1007/s12264-020-00476-9.
7. Troyer EA, Kohn JN, Hong S. Are we facing a crashing wave of neuropsychiatric sequelae of COVID-19? Neuropsychiatric symptoms and potential immunologic mechanisms. Brain Behav Immun. 2020;87:34-39. doi: 10.1016/j.bbi.2020.04.027.
8. Varatharaj A, Thomas N, Ellul MA, Davies NWS, Pollak TA, Tenorio EL, Sultan M, Easton A, Breen G, Zandi M, Coles JP, Manji H, Al-Shahi Salman R, Menon DK, Nicholson TR, Benjamin LA, Carson A, Smith C, Turner MR, Solomon T, Kneen R, Pett SL, Galea I, Thomas RH, Michael BD; CoroNerve Study Group. Neurological and neuropsychiatric complications of COVID-19 in 153 patients: a UK-wide surveillance study. Lancet Psychiatry. 2020;7(10):875-882. doi: 10.1016/S2215-0366(20)30287-X.
9. Rogers JP, Chesney E, Oliver D, Pollak TA, McGuire P, Fusar-Poli P, Zandi MS, Lewis G, David AS. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. Lancet Psychiatry. 2020;7(7):611-627. doi: 10.1016/S2215-0366(20)30203-0.
10. Helms J, Kremer S, Merdji H, Clere-Jehl R, Schenck M, Kummerlen C, Collange O, Boulay C, Fafi-Kremer S, Ohana M, Anheim M, Meziani F. Neurologic Features in Severe SARS-CoV-2 Infection. N Engl J Med. 2020;382(23):2268-2270. doi: 10.1056/NEJMc2008597.
11. Romero-Sánchez CM, Díaz-Maroto I, Fernández-Díaz E, Sánchez-Larsen Á, Layos-Romero A, García-García J, González E, Redondo-Peñas I, Perona-Moratalla AB, Del Valle-Pérez JA, Gracia-Gil J, Rojas-Bartolomé L, Feria-Vilar I, Monteagudo M, Palao M, Palazón-García E, Alcahut-Rodríguez C, Sopelana-Garay D, Moreno Y, Ahmad J, Segura T. Neurologic manifestations in hospitalized patients with COVID-19: The ALBACOVID registry. Neurology. 2020;95(8):e1060-e1070. doi: 10.1212/WNL.0000000000009937.
12. Galea S, Merchant RM, Lurie N. The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention. JAMA Intern Med. 2020;180(6):817-818. doi: 10.1001/jamainternmed.2020.1562.
13. Pfefferbaum B, North CS. Mental Health and the Covid-19 Pandemic. N Engl J Med. 2020;383(6):510-512. doi: 10.1056/NEJMp2008017.
14. Reger MA, Stanley IH, Joiner TE. Suicide Mortality and Coronavirus Disease 2019-A Perfect Storm? JAMA Psychiatry. 2020. doi: 10.1001/jamapsychiatry.2020.1060.
15. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin GJ. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. 2020;395(10227):912-920. doi: 10.1016/S0140-6736(20)30460-8.
16. Sun Y, Li Y, Bao Y, Meng S, Sun Y, Schumann G, Kosten T, Strang J, Lu L, Shi J. Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China. Am J Addict. 2020;29(4):268-270. doi: 10.1111/ajad.13066.
17. Shechter A, Diaz F, Moise N, Anstey DE, Ye S, Agarwal S, Birk JL, Brodie D, Cannone DE, Chang B, Claassen J, Cornelius T, Derby L, Dong M, Givens RC, Hochman B, Homma S, Kronish IM, Lee SAJ, Manzano W, Mayer LES, McMurry CL, Moitra V, Pham P, Rabbani L, Rivera RR, Schwartz A, Schwartz JE, Shapiro PA, Shaw K, Sullivan AM, Vose C, Wasson L, Edmondson D, Abdalla M. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. Gen Hosp Psychiatry. 2020;66:1-8. doi: 10.1016/j.genhosppsych.2020.06.007.

18. Rossi R, Socci V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, Rossi A. Mental Health Outcomes Among Frontline and Second-Line Health Care Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy. JAMA Netw Open. 2020;3(5):e2010185. doi: 10.1001/jamanetworkopen.2020.10185.

19. Potloc and Canadian Public Health Association. Perception of Canadian health workers around the COVID-19 outbreak. https://potloc.com/blog/en/potloc-study-canadian-health-workers-insights-front-lines-covid-19-pandemic/ (Accessed on December 18, 2020).

20. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L, Ballard C, Christensen H, Cohen Silver R, Everall I, Ford T, John A, Kabir T, King K, Madan I, Michie S, Przybylski AK, Shafran R, Sweeney A, Worthman CM, Yardley L, Cowan K, Cope C, Hotopf M, Bullmore E. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. Lancet Psychiatry. 2020;7(6):547-560. doi: 10.1016/S2215-0366(20)30168-1.

21. Roy-Byrne P, Stein MB. PTSD and Medical Illness. In: Post Traumatic Stress Disorder, Ne meroff CB, Marmar C (Eds), Oxford University Press, New York 2017.

22. Stam HJ, Stucki G, Bickenbach J; European Academy of Rehabilitation Medicine. Covid-19 and Post Intensive Care Syndrome: A Call for Action. J Rehabil Med. 2020;52(4):jrm00044. doi: 10.2340/16501977-2677.

23. Zhou J, Liu L, Xue P, Yang X, Tang X. Mental Health Response to the COVID-19 Outbreak in China. Am J Psychiatry. 2020;177(7):574-575. doi: 10.1176/appi.ajp.2020.20030304.

24. Phillipou A, Meyer D, Neill E, Tan EJ, Toh WL, Van Rheenen TE, Rossell SL. Eating and exercise behaviors in eating disorders and the general population during the COVID-19 pandemic in Australia: Initial results from the COLLATE project. Int J Eat Disord. 2020;53(7):1158-1165. doi: 10.1002/eat.23317.

25. Kozloff N, Mulsant BH, Stergiopoulos V, Voineskos AN. The COVID-19 Global Pandemic: Implications for People With Schizophrenia and Related Disorders. Schizophr Bull. 2020;46(4):752-757. doi: 10.1093/schbul/sbaa051.

26. Druss BG. Addressing the COVID-19 Pandemic in Populations With Serious Mental Illness. JAMA Psychiatry. 2020;77(9):891-892. doi: 10.1001/jamapsychiatry.2020.0894.

27. Tsai J, Wilson M. COVID-19: a potential public health problem for homeless populations. Lancet Public Health. 2020;5(4):e186-e187. doi: 10.1016/S2468-2667(20)30053-0.

28. Gunnell D, Appleby L, Arensman E, Hawton K, John A, Kapur N, Khan M, O'Connor RC, Pirkis J; COVID-19 Suicide Prevention Research Collaboration. Suicide risk and prevention during the COVID-19 pandemic. Lancet Psychiatry. 2020;7(6):468-471. doi: 10.1016/S2215-0366(20)30171-1.

29. Pfefferbaum B, North CS. Mental Health and the Covid-19 Pandemic. N Engl J Med. 2020;383(6):510-512. doi: 10.1056/NEJMp2008017.

30. American Psychiatric Association. Geller JL, Daou MAZ. Patients With SMI in the Age of COVID-19: What Psychiatrists Need to Know. https://www.psychiatry.org/psychiatrists/covid19-coronavirus (Accessed on December 18, 2020).

Correspondence:

Alexandra Maștaleru,
“Grigore T Popa” University of Medicine and Pharmacy – Iasi, Romania, Faculty of Medicine, Department of Medical Specialties (I), address: University street nr 16, Iasi, Romania; Clinical Rehabilitation Hospital – Cardiovascular Rehabilitation Clinic, Pantelimon Halipa street nr 14, Iasi, Romania, alexandra.mastaleru@gmail.com

Submission: 20 jan 2021
Acceptance: 03 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

Methods of internet addiction screening for teens and young adults in Primary Care

Ana-Maria Slănină, Antoneta Dacia Petroaie, Claudia Năsăudean, Agnes Iacinta Bacuşcă, Monica Ungureanu, Mihaela Boancă, Elena Popa, Adorata-Elena Coman

Ana Maria Slănină - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Antoneta Dacia Petroaie - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Claudia Năsăudean – MD, senior psychiatrist, Child and Teenager Psychiatry Office Iași
Agnes Iacinta Bacușcă - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Monica Ungureanu - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Mihaela Boancă - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Elena Popa - MD, PhD, assistant of professor, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi
Adorata-Elena Coman - MD, PhD, senior internist, lecturer, Discipline of Family Medicine, Grigore T.Popa University of Medicine and Pharmacy Iaşi

ABSTRACT
Introduction: Considering the generalized Internet access as well as the electronic communication, teens and young adults are at risk for a new type of dependency, the Internet addiction, with a high impact on the personal and professional life, as well as on the school performance. Objective: The current paper aims to introduce in the clinical practice a validated diagnosis tool for this new condition, allowing the proper identification of the problem cases for counselling and specific approach by the Family Physician and the Child Psychiatrist. Method: The IAT (Internet Addiction Test), created by Kimberly Young, was selected and applied on two small groups of patients from a Family Medicine practice (Group A) and a Child Psychiatry practice (Group B) from an urban setting, city of Iași. Results: Accordingly to the test standard interpretation, the patients have been divided in: average user (20-49p) – 28 cases (70%), occasional or frequent problem-presenting user (50-79p) – 11 cases (27,5%), significant problem-presenting user (80-100p) – 1 case (2,5%). The group of patients presenting to the Child Psychiatry practice for other issues had a higher incidence of

Internet addiction problems. Conclusions: The Family Physician must screen for Internet-associated problems to discover early stage excessive users. The validated screening tools are useful in the current practice and the specialty counselling is extremely important for this specific population.

KEYWORDS:
Internet, screening test, teenagers, young adults.

INTRODUCTION

The contemporary society is witnessing an incredible multi-level transformation – globalization, speeding-up of the life-rhythm, redefinition of the interpersonal relationships and their content as well as the life plans and structures changes. Perhaps nothing else had such an impact on the forementioned domains as the World Wide Web – shortly, the Internet. Its many capacities to enlarge the knowledge field, to offer means of fast communication and practical solutions to everyday problems made it a necessary part of our existence. Still, there is a hidden part, the dangers related to the security, especially for children, as well as the tendency to become a mirage for some, alluring them far from the "real" life, leading to family and friends relationship alterations as well as work field or school problems.

There is a lot of controversy regarding the expression "Internet addiction" and the inclusion in the 5th edition of *Diagnosis and Statistic Manual of Mental Disorders*. The relationship between "addiction" and various compulsive and impulsive behaviors is also a source of confusion. Many psychiatrists have claimed that the Internet addiction presents with specific features of excessive use, withdrawal symptoms, tolerance and negative repercussions defining the substance abuse. It is not clear if the Internet addiction is a symptom of a certain disorder or a true pathology by itself (1).

Beard (2) recommends five criteria to be filled in to diagnose the Internet addiction:

1. The subject is obsessed with the Internet (thinks of the on-line activity and anticipates the next on-line session);
2. Needs to use the Internet more and more to be satisfied;
3. Has made efforts to control, cut down or stop the Internet use;
4. Is impatient, moody, depressed or irritable when trying to cut down or stop the Internet use;
5. Spend time on-line more than initially forecast;

At least one of the following criteria must be present:

6. Has impacted or endangered a significant relationship, a job, a career or educational opportunity due to Internet abuse;
7. Has lied family members, therapists or other people to hide the extension of Internet involvement;
8. Uses Internet as a way to escape problems or to release a dysphoric mood (e.g. feelings of guilt, anxiety, helplessness, depression)[2].

The high rate of prevalence rate variation reported for Internet Addiction Disorder (IAD) (between 0.3% and 38%) (3) may be explained by the different diagnosis criteria and evaluation tests in different countries and by the studies using highly selected pools of patients, mainly conducted on-line (4). In their metanalysis, Weinstein and Lejoyeux report studies from United States and Europe pointing to a prevalence rate between 1.5% and 8.2% (5). Other reports indicate values between 6% and 18.5% (6).

The etiology of IAD need to take into consideration the social and cultural factors (demography, the access and acceptance of Internet), the biological frailty (genetics, neurochemical anomalies), psychological predisposition (personality traits, low mood) and specifics of Internet to explain the excessive involvement in on-line activities. It is well-known that addictions activate multiple brain sites involved in generating pleasure, the "reward center" or the "pleasure pathways". When they are activated,

dopamine is released, as well as endogenous opiates and other neurotransmitters. In time, the receptors involved may be damaged, leading to tolerance and to a higher need for stimulation of the reward center, to induce well-being and specific behavior in order to avoid withdrawal. The Internet use may also specifically lead to dopamine release in the accumbens nucleus (7,8), one of the brain reward structures involved in other addictions too.

Mounting evidence shows the genetic conditioning of addictive behaviors (9,10). This theory points out that individuals at risk do not have the proper number of dopamine receptors or do have a low quantity of serotonin/dopamine (11, 12), facing difficulties in reaching normal pleasure states in activities that average individuals find rewarding.

OBJECTIVE

The aim of this paper was to verify the usefulness of introducing in the clinical practice of a validated diagnosis tool for the new condition of IAD, disturbing the children, teens and young adults. These diagnosis tools allow a fast and easy identification of the problem cases in order to submit them to proper counselling and care by the Family physician or the Child psychiatrist. We also intended to compare the Internet addiction traits in two groups of patients coming to a Family doctor or to the Child psychiatrist for other issues, to record the association with other conditions, Last, but not least, our scope was to raise awareness regarding the prevalence of this phenomenon in youngsters, to offer work tools and to underline the need for interdisciplinary approach in the out-patient setting.

METHOD

Over 3-month time, October-December 2019 we did an analysis of the diagnosis tools regarding Internet addiction or excessive use and selected IAT (Internet Addiction Test), created by Kimberly Young (13). The test has been applied on two small groups of patients from a Family Medicine office (Group A) and a Child Psychiatry office (Group B). The age of the patients varied between 14 and 22 years of age, and the basic criteria in applying the questionnaire was their effective wish to participate in the study and to self-evaluate regarding Internet use. The patient or the parent has signed an Informed Consent Form. The data has been collected by the physician, and the patients with high-risk scores were offered specific counselling.

After counting the points scored for each item, the patients have been divided, accordingly to the test instructions in:

- Average (on-line) user (20-49p)
- Occasional of frequent-problem user (because of the Internet) (50-79p)
- Significant-problem user (because of the Internet) (80-100p)

The demographics of the two groups of patients (age, gender and background) have also been analyzed. The associated conditions have been recorded, as a major area of interest, being divided into categories.

After quantifying the results, we calculated the average score for each level of Internet use, as well as the average score for each group.

The significant or frequent-problem users have been offered the possibility of counselling, and the IAT will be used again in order to evaluate the improvement of the global score.

RESULTS

Group A, presenting to the Family Medicine office included 25 patients. Group B, presenting to the Child Psychiatry office included 15 patients with specific disorders.

From the background point of view, all the teens and youngsters came from an urban setting.

The age groups are structured as follows:

- Group A: 14 – 18 years – 10 patients, 18 – 22 years – 15 patients
- Group B: 14 – 18 years – 15 patients

- Global: 14 – 18 years – 25 patients (62%), 18 – 22 years – 15 patients (38%) (fig. 1)

The average age of the patients in group A was 18,8 years. The average age of the participants in group B was 16,8 years. The average global age was 18,05 years.

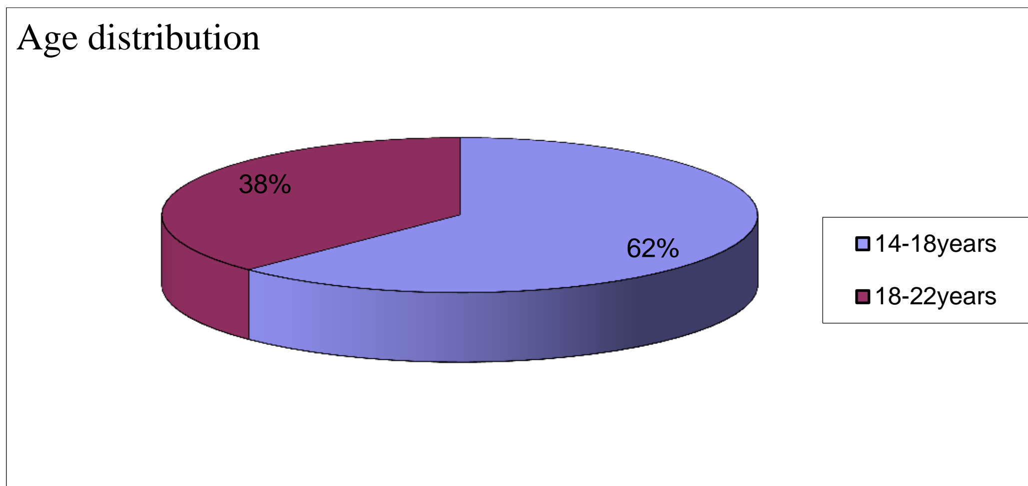

Fig. 1 Patients age distribution

The gender analysis shows a higher proportion of girls, in both offices. The teenage girls and young adult females represent 55% (22 cases) while the boys account for 45% (18 cases).

The associated pathology for group A is represented by: respiratory conditions – 3 cases (12%), urinary conditions – 1 case (4%), dermatological conditions – 2 cases (8%), no other disease – 19 cases (76%) (fig. 2).

The associated conditions for group B are represented by: emotional disorders (anxious, depressive, somatoform) – 9 cases (60%), behavioral problems (ADHD) – 3 cases (20%), autistic spectrum disorders (Asperger sdr.) – 3 cases (20%) (fig. 3).

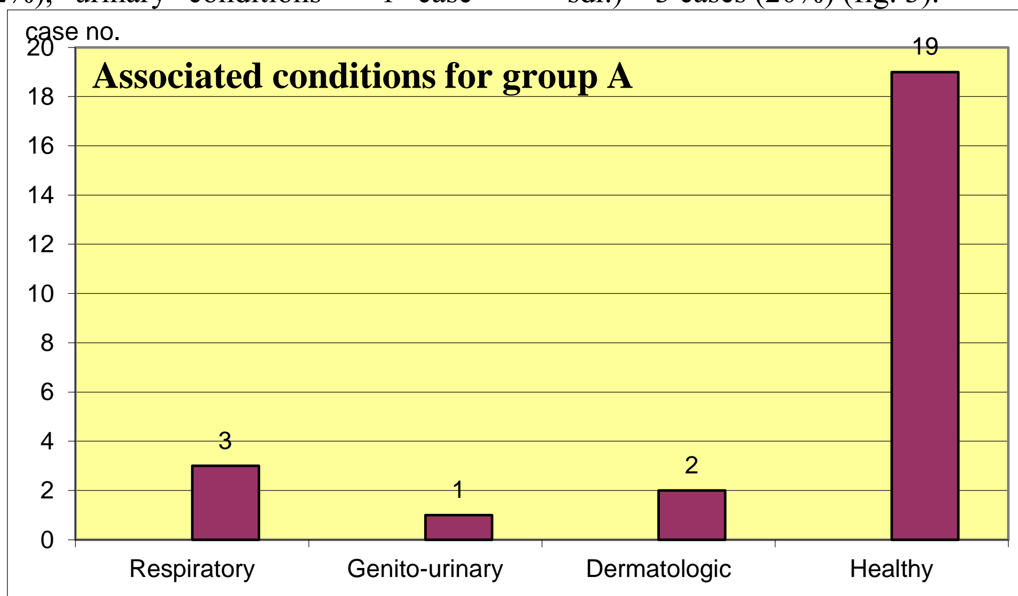

Fig. 2 Associated conditions for group A

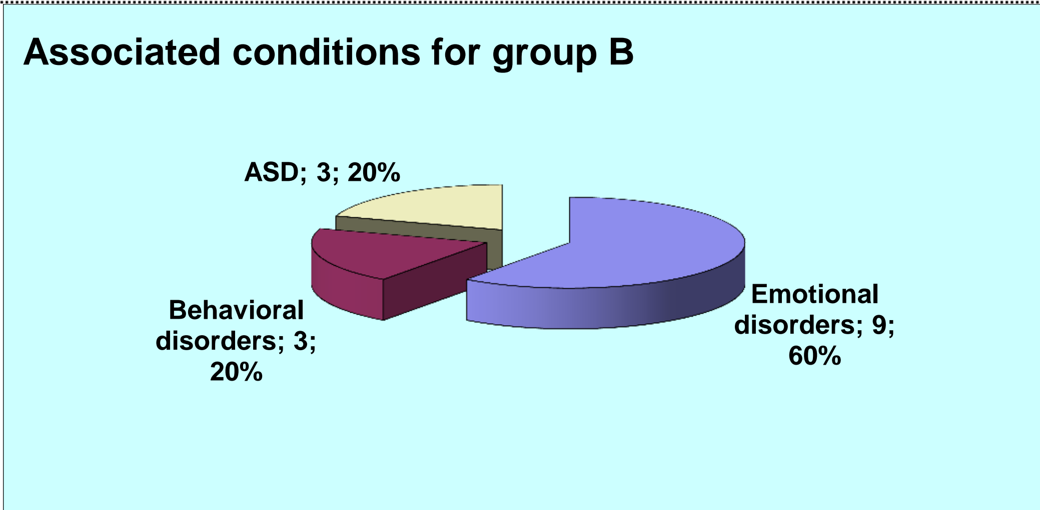

Fig. 3 Associated conditions for group B

The total members of group A, accordingly to the IAT scores, have been divided as follows: average user (20-49p) – 20 cases (80%), occasional or frequent-problem user (50-79p) – 5 cases (20%), significant-problem user (80-100p) – 0 cases (fig. 4).

The average score for the patients in group A was 28 points.

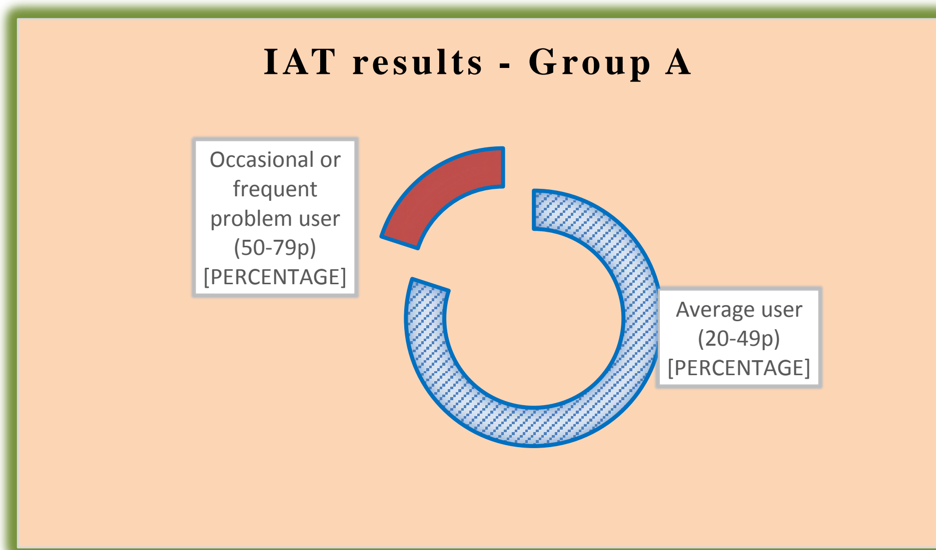

Fig. 4 IAT results - group A

The members of group B have been divided in: average user (20-49p) – 8 cases (53,3%), occasional or frequent-problem user (50-79p) – 6 cases (40%), significant-problem user (80-100p) – 1 case (6,7%) (fig. 5).

The average score for the patients in group B was 48,5 points.

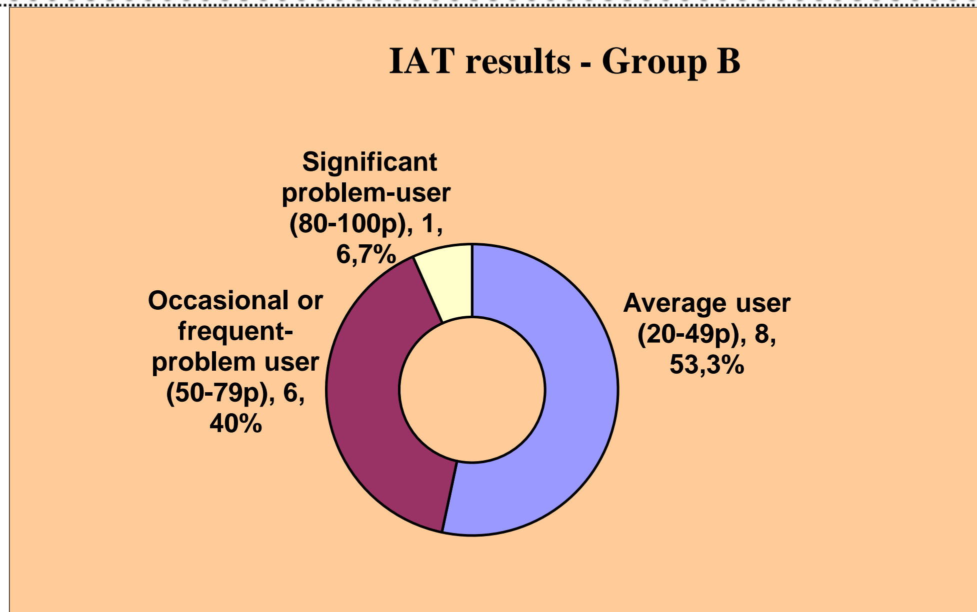

Fig. 5 IAT results – group B

As we notice, the proportion of patients with frequent or significant problem due to Internet addiction is higher among the teens presenting to the Child psychiatry office. This fact shows a higher psychological frailty, behavioral compulsions finding an area of expression through excessive use of social media, gaming or other elements from the Internet domain.

Therefore, we notice that the average score of the patients in group B (48,5 points) is higher than the score of the patients in group A (28 points), correlating the specific symptoms with the excessive Internet use as a “runaway” or discharge method.

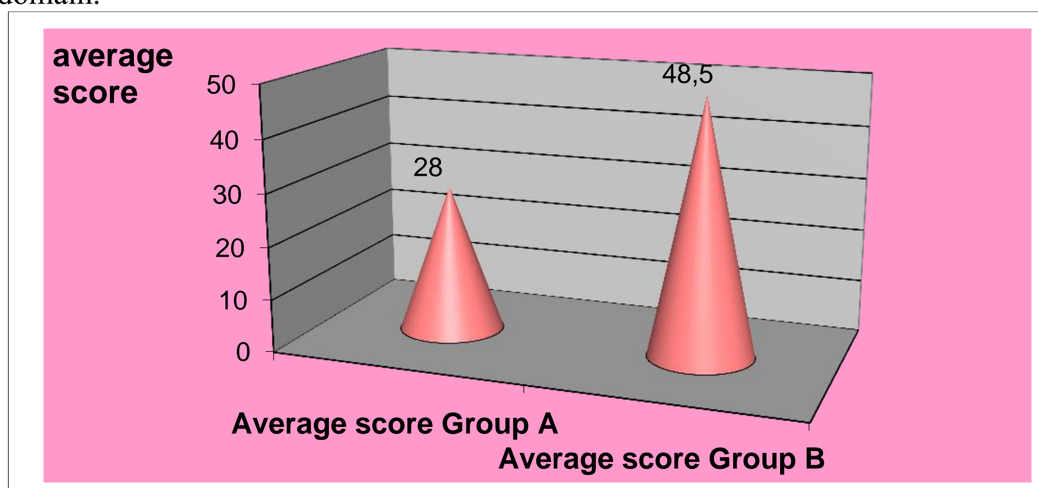

Fig. 6 Average IAT scores of the two groups.

Globally, the distribution of results shows the following proportions: average user (20-49p) – 28 cases (70%), occasional or frequent-problem user (50-79p) – 11 cases (27,5%), significant-problem user (80-100p) – 1 case (2,5%).

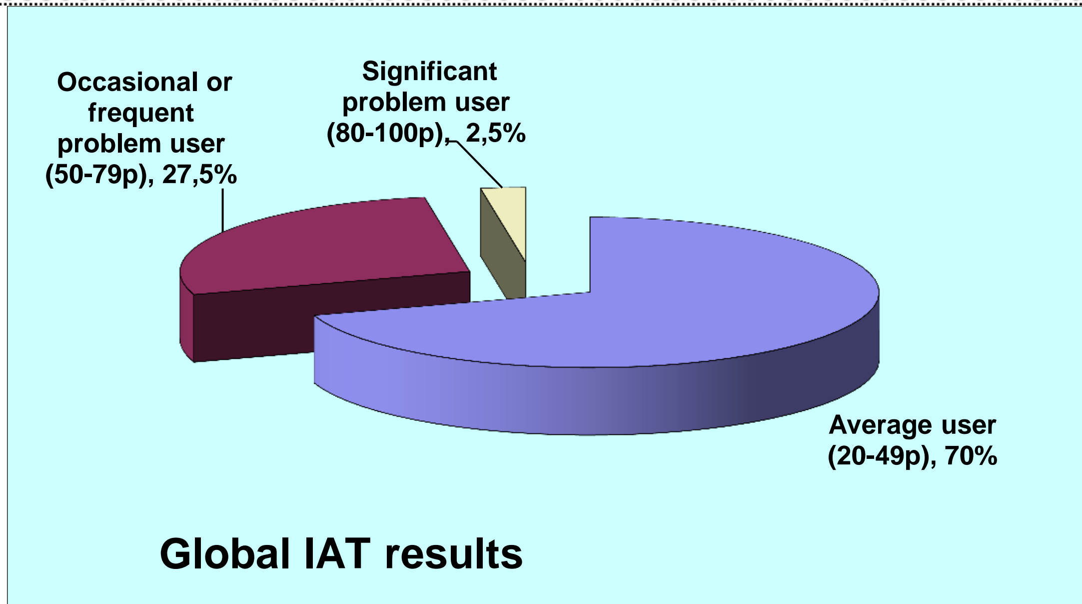

Fig.6 Global IAT results

The global data of the two groups confirm a relatively low proportion of the significant-problem users (2,5%), as it is found in the literature, where there are major variations, depending of the study (0.3% and 38%, 1.5% and 8.2%, 6% and 18.5%) (3,5,6). Certainly, the number of users with frequent of significant problems is higher among the patients with psychiatric associated conditions, being also recorded in youngsters with no associated pathology.

Extending these methods of evaluation and scoring Internet addiction may offer an image of higher accuracy and may identify in an early stage the cases where the impact on the social functioning is significant, needing support and counselling.

CONCLUSIONS

Nowadays, the Internet use is indispensable for the activity of modern humans. It provides information, contributes to solving the daily problems, facilitates the social interaction as well as the communication.

Regarding the teenagers and young adults, there is a danger in overusing these virtual methods, leading to long-term dependencies of variable intensity that may have an impact on the lifestyle, relation with peers and social functioning.

The family physician has the responsibility of adding to the routine evaluation of youngsters aspects related to the Internet use, to early uncover the excessive users, to offer counselling and to guide them to the Child Psychiatry Office.

The validated screening tools in this field may prove extremely useful in daily practice, quantifying the results and allowing the long-term monitoring process.

The specialty counselling is extremely important for this population area, especially for the youth with associated psychiatric disorders due to their increased vulnerability and frailty in front of addictive temptations.

Family physician – psychiatrist – psychologist triad is the uttermost important pillar of action focused on controlling this new area of diagnosis needing further defining and detailing.

ACKNOWLEDGEMENTS AND DISCLOSURES
The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Ronald Pies, Should DSM-V Designate Internet Addiction" a Mental Disorder? Psychiatry (Edgmont) 2009; 6(2): 31–37.
2. Beard KW. Internet addiction: a review of current assessment techniques and potential assessment questions. CyberPsychology Behavior. 2005;8(1):7–14.
3. Chakraborty K, Basu D, Kumar K. Internet addiction: Consensus, controversies, and the way ahead. East Asian Archives of Psychiatry. 2010;20(3):123–32.
4. Peukert P, Sieslack S, Barth G, Batra A. Internet- and computer game addiction: Phenomenology, comorbidity, etiology, diagnostics and therapeutic implications for the addictives and their relatives. Psychiatrische Praxis. 2010;37(5):219–24.
5. Weinstein A, Lejoyeux M. Internet addiction or excessive Internet use. The American Journal of Drug and Alcohol Abuse. 2010;36(5):277–83.
6. Young KS, Nabuco de Abreu C. Internet Addiction: A handbook and guide to evaluation and treatment. New Jersey: John Wiley Sons Inc; 2011.
7. Bai Y-M, Lin C-C, Chen J-Y. Internet Addiction Disorder Among Clients of a Virtual Clinic. Psychiatric Services. 2001;52(10):1397.
8. 36. Ko C-H, Liu G-C, Hsiao S, Yen J-Y, Yang M-J, Lin W-C, et al. Brain activities associated with gaming urge of online gaming addiction. Journal of Psychiatric Research. 2009;43(7):739–47.
9. Eisen S, Lin N, Lyons M, Scherrer J, Griffith K, True W, et al. Familial influences on gambling behavior: an analysis of 3359 twin pairs. Addiction.1998:1375–84.
10. Grant JE, Brewer JA, Potenza MN. The neurobiology of substance and behavioral addictions. CNS Spectrums. 2006. 2006 Dec;11(12):924–30.
11. Beard KW. Internet addiction: a review of current assessment techniques and potential assessment questions. CyberPsychology Behavior. 2005 Feb;8(1):7–14.
12. Hilarie Cash, Cosette D Rae, Ann H Steel, Alexander Winkler. Internet Addiction: A Brief Summary of Research and Practice Curr Psychiatry Rev. 2012 Nov; 8(4): 292–298.
13. Young KS. Internet addiction: the emergence of a new clinical disorder. CyberPsychology Behavior. 1998 Fal ;1(3):237–44.

Correspondence:

Antoneta Dacia Petroaie,
MD, PhD, assistant of professor, Discipline of Family Medicine
Grigore T.Popa University of Medicine and Pharmacy Iasi, Str. Universitatii 16, 700115,
pantoneta@yahoo.com

Submission: 05 jan 2021
Acceptance : 04 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

SARS-CoV-2 infection and mental disorders

Roxana Mihaela Barbu, Luiza Pohaci-Antonesei, Cristina-Maria Gavrilescu, Cătălin Pohaci-Antonesei, Diana Georgiana Butura, Alexandra Butunoi, Ana-Maria Dumitrescu

Roxana Mihaela Barbu - MD, PhD, Department of Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Specialist in Clinical Pharmacology, Romania
Luiza Pohaci-Antonesei - MD, PhD, Department of Physiology, University of Medicine and Pharmacy „Grigore T. Popa" , Iaşi, Specialist in Pediatric, Romania
Cristina-Maria Gavrilescu - Lecturer, MD, PhD, „Grigore T. Popa" University of Medicine and Pharmacy, Iași, Ist Medical Department, Senior in Internal Medicine, specialist în Geriatrics, specialist în Clinical Pharmacology, Romania
Cătălin Pohaci-Antonesei - MD, PhD, Department of Physiology ,University of Medicine and Pharmacy „Grigore T. Popa", Iaşi, Specialist in Occupational Medicine, Romania
Diana Georgiana Butura - PhD student in Physiology, University of Medicine and Pharmacy „Grigore T. Popa", Iași, Specialist in Hematology, Romania
Alexandra Butunoi - Specialist in Geriatrics-Gerontology, UMS Răducăneni, Romania
Ana-Maria Dumitrescu - MD, PhD, Departament of Anatomy, University of Medicine and Pharmacy „Grigore T. Popa" , Iaşi, Romania

ABSTRACT
The occurrence of SARS-CoV-2 infection has led to a change in lifestyle and the reality in which we live. We performed a narrative analysis of studies that have investigated the impact of SARS-CoV-2 on mental health in infected patients and subsequently treated for this new infection. Coronavirus is not only a danger to physical health, but also to mental health. SARS-CoV-2 has affected and is likely to affect people in many countries, in many geographical areas. Thus, the SARS-CoV-2 pandemic created fear, anxiety and depression among the population, but the most exposed were the people who already suffered from a mental disorder. The effects of anxiety and stress continue to affect a person's ability to look hopefully to the immediate and distant future. There has been shown to be a link between SARS-CoV-2 infection and mental disorders. The citokine storm is the basic connection between the two diseases, being involved in the immune response to coronaviruses, causing certain psychiatric symptoms, precipitating neuroinflammation and producing brain infiltration. Symptoms related to mood disorders, psychotic disorders and post-traumatic

stress disorder may occur in patients infected with SARS-CoV-2. Patients who survived SARS-CoV-2 infection had a high prevalence of emerging psychiatric sequelae, with a pathological score for at least one disorder. Thus, in this category of patients, a higher incidence of cases with post-traumatic stress disorder, major depression and anxiety is expected. Conclusions: Given the alarming impact of SARS-CoV-2 infection on mental health, the psychopathological assessment of SARS-CoV-2 survivors is needed, in order to proper diagnose and treate the emerging psychiatric disorders.

KEYWORDS
Coronavirus, mental disorders, neurological impairment.

INTRODUCTION

The impairment of the immune system triggered by infection with SARS-CoV-2 induces psychopathological conditions, and psychiatric disorders are present for a long time after healing. It has been shown that coronaviruses can first invade peripheral nerves and then enter the central nervous system by a transsynaptic pathway (1, 2). The brainstem appears to be the main target for SARS-CoV-2 through the nucleus of the solitary tract and the nucleus ambiguus (3). SARS-CoV-2 is a new coronavirus, which has an RNA genome, with a typical resemblance to other types of coronaviruses that produce mainly respiratory damage. Most coronaviruses have a similar pathway of infection (4), the neurotropism being one of the common features of coronaviruses (5). Genomic analysis has shown that SARS-CoV-2 shares structural and biological similarity with other types of coronaviruses, such as MERS (Middle East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome), but the impact of SARS -CoV-2 on the central nervous system and on the mental state remains unclear (6).

Thus, this new infection affects the brainstem causing an increase in the level of cytokines, responsible for the appearance of neurological and psychiatric symptoms (7). The cytokine release, characterized by increased production of interleukin -2, interleukin-7, granulocyte colony stimulating factor, interferon-γ inducible protein 10, monocyte chemotherapeutic protein, macrophage inflammatory protein 1α, and tumor necrosis factor-α, brings the risk for a severe form of Covid-19 infection (8). Another pathway of neuronal invasion is through the systemic circulation (9), the angiotensin 2 conversion enzyme receptor being responsible for the cell penetration by SARS-CoV-2 infection. These neuroanatomical interconnections suggest that the death of infected patients might be due to dysfunction of the cardiorespiratory center in the brainstem.

Scientists draw attention to the neuro-psychiatric manifestations that may occur after COVID-19 infection, especially among patients with severe forms of mental illness, hospitalized and treated in intensive care units. High levels of cytokines secreted by T-helper-2 cells have been found in the fight against SARS-CoV-2 infection, unlike SARS and MERS, (10). These higher concentrations of cytokines suggest a more severe clinical course (11), and cytokine disorder involves factors that we associate with psychiatric disorders (12).

The psychiatric consequences of SARS-CoV-2 infection can be caused either by the immune response to the virus itself or by psychological stressors such as social isolation, the psychological impact of a new

serious and potentially fatal disease, and concerns about infecting others and stigma. The immune response to coronaviruses induces the local and systemic production of cytokines, chemokines and other inflammatory mediators (13). The main links between the immune system and the psychopathological mechanisms leading to psychiatric disorders are: neuroinflammation, disruption of the blood-brain barrier, invasion of peripheral immune cells in the central nervous system, impaired neurotransmission, hypothalamic-pituitary adrenal dysfunction, microglia activation and induction of indoleamine 2,3-dioxigenase (IDO) (14).

A recent meta-analysis describes the conclusions of studies on patients infected with various types of coronaviruses regarding neuropsychiatric manifestations and mental disorders both in the acute phase of SARS, MERS and SARS-CoV-2 infections, as well as in long-term. Delirium was the constant symptom present in the acute phase of all the three epidemics. According to the research, in the acute stage of infection with SARS and MERS, confusion was reported in 28% of patients, 33% had depressive mood, 36% had anxiety, 34% had memory disorders and 42% insomnia. In patients with SARS-CoV-2 infection there were also frequently reported confusion -27.9%, depression - 32.6%, memory impairment - 34.1%, insomnia - 41.9%, psychosis -0.7% and sometimes mania - 0.2% induced by steroid administration. Long-term effects on mental health include depression, insomnia, anxiety, irritability, severe chronic fatigue and post-traumatic stress disorder (15, 16).

Patients with psychiatric disorders prior to infection with Covid-19 are more susceptible to this infection due to their impaired mental health, self-control and self-care (17). In the long run, they may be unable to practice infection control, thus being more vulnerable to COVID-19 and its complications (18). The baseline index of the immune-inflammatory system, reflecting the immune response and systemic inflammation, and based on the number of peripheral lymphocytes, neutrophils and platelets, is associated with high scores of depression, anxiety, post-traumatic stress disorder, and sometimes obsessive-compulsive disorder (19). Data from another study in patients with severe SARS-CoV-2 showed that 65% of them experienced confusion in the acute phase of the disease, 69% presented psychomotor agitation at the cessation of sedation and 21% of cases presented an alteration of the state of consciousness (20).

Another study of inpatients showed that 33% of them had dysexecutive syndrome, characterized by inattention, disorientation or poorly coordinated movements in response to a command. Anxiety and stress in relation to COVID-19 infection and their state of health have led almost 47% of people to seek the help of a specialist to maintain their mental health (21).

DISCUSSIONS

The mechanisms of neuro-psychic complications following SARS-CoV-2 infection could be expained by the direct result of infection on the central nervous system by encephalopathy or the cerebrovascular damage secondary to pro-coagulant status or by the indirect consequencies of hypoxia or of the immune response and drug treatment. An important role in the pathogenesis of psychiatric disorders is played by prolonged isolation or emotional stress in response to an unknown pathogen with severe potential or the fear of not infecting yourself and others, and, last but not least, of the stigma (22).

According with the epidemiological studies, it was found that patients with previous psychiatric diagnoses suffered more in all the psychopathological dimensions (23). Moreover, outpatients showed increased anxiety and sleep disorders, while hospitalization was inversely correlated with post-traumatic stress disorder, depression, anxiety, and obsessive-compulsive symptoms. Given the lower severity of COVID-19 in hospitalized patients, this observation suggests that less care could have increased social isolation and loneliness, thus inducing more psychopathology after remission (24). Patients diagnosed with mental illness had higher levels of depression, anxiety and sleep disorders following Covd-19 infection (25).

To avoid a widespread mental health crisis, people with or without mental illness who have been hospitalized with COVID-19 need support and monitoring after recovery to ensure that they do not develop mental illness and that they may have access to treatment if necessary. Thus, the fear of coronavirus remains a guarantee of our protection, which must not be turned into a disruptive factor.

Patients who develop neurological symptoms during SARS-CoV-2 infection are more likely to have severe disease progression. Subsequently, they may also present psychiatric symptoms, through changes in cytokines that are recognized as being frequently responsible for mood and psychotic disorders. In addition to the potential contribution of SARS-CoV-2 to the development of mood and psychotic disorders, the adverse effects of drugs used in the treatment of SARS-CoV-2 infection should also be considered (15).

CONCLUSIONS

Given the alarming impact of SARS-CoV-2 infection on mental health, the psychopathological assessment of SARS-CoV-2 survivors is needed, in order to proper diagnose and treate the emerging psychiatric disorders.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Andries K., Pensaert M.B. Immunofluorescence studies on the pathogenesis of hemagglutinating encephalomyelitis virus infection in pigs after oronasal inoculation. Am. J. Vet. Res. 1980;41(9):1372–1378.
2. Li Y.C., Bai W.Z., Hirano N. Neurotropic virus tracing suggests a membranous-coating-mediated mechanism for transsynaptic communication. J. Comp. Neurol. 2013;521:203–212.
3. Netland J., Meyerholz D.K., Moore S. Severe acute respiratory syndrome coronavirus infection causes neuronal death in the absence of encephalitis in mice transgenic for human ACE2. J. Virol. 2008;82:7264–7275.
4. Hulswit R.J., de Haan C.A., Bosch B.J. Coronavirus spike protein and tropism changes. Adv. Virus Res. 2016;96:29–57.
5. Xu Z., Shi L., Wang Y., Zhang J., Huang L., Zhang C. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. Lancet Respir. Med. 2020 Apr;8(4):420–422
6. Cuijpers P., Vogelzangs N., Twisk J. Is excess mortality in depression generic or specific? A comprehensive meta-analysis of community and patient studies. Am. J. Psychiatry. 2014.
7. Clark I.A., Vissel B. The meteorology of cytokine storms, and the clinical usefulness of this knowledge. Semin. Immunopathol. 2017;39(5):505–516.
8. Huang, C., Wang, Y., Li, X., et al., 2020a. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China [published correction appears in lancet. 2020 Jan 30;:]. Lancet. 395 (10223), 497–506.

9. Baig A.M., Khaleeq A., Ali U., Syeda H. Evidence of the COVID-19 virus targeting the CNS: tissue distribution, host−virus interaction, and proposed neurotropic mechanisms. ACS Chem. Neurosci. 2020;11:995–998.
10. Baig A.M., Khaleeq A., Ali U., Syeda H. Evidence of the COVID-19 virus targeting the CNS: tissue distribution, host−virus interaction, and proposed neurotropic mechanisms. ACS Chem. Neurosci. 2020;11:995–998.
11. Huang H., Liu Q., Zhu L. Prognostic value of preoperative systemic immune-inflammation index in patients with cervical cancer. Sci. Rep. 2019;9:3284.
12. Kohler C.A., Freitas T.H., Maes M. Peripheral cytokine and chemokine alterations in depression: a meta-analysis of 82 studies. Acta Psychiatr. Scand. 2017;135:373–387.
13. Cameron M.J., Bermejo-Martin J.F., Danesh A. Human immunopathogenesis of severe acute respiratory syndrome (SARS) Virus Res. 2008;133:13–19.
14. Jones K.A., Thomsen C. The role of the innate immune system in psychiatric disorders. Mol. Cell. Neurosci. 2013;53:52–62.
15. Rogers J.P., Chesney E., Oliver D. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. Lancet Psychiatry. 2020.
16. Dantzer R. Neuroimmune interactions: from the brain to the immune system and vice versa. Physiol. Rev. 2018;98:477–504
17. Yao H., Chen J.-H., Xu Y.-F. Patients with mental health disorders in the COVID-19 epidemic. Lancet Psychiatry. 2020;7(4) .
18. Kim S.W., Su K.P. Using psychoneuroimmunity against COVID-19. Brain Behav. Immun. 2020;87:4–5.
19. Fineberg N.A., Van Ameringen M., Drummondf L., Hollander E., Steinh D.J., Geller D. How to manage obsessive-compulsive disorder (OCD) under COVID-19: a clinician's guide from the International College of Obsessive Compulsive Spectrum Disorders (ICOCS) and the obsessive-compulsive and related disorders research network (OCRN) of the European College of Neuropsychopharmacology. Compr. Psychiatry. 2020;100:152- 174.
20. Helms, J., Kremer, S., Merdji, H., et al., 2020. Neurologic features in severe SARS-CoV-2 infection. N. Engl. J. Med. https://doi.org/10.1056/NEJMc2008597.
21. Debnath M., Berk M., Maes M. Changing dynamics of psychoneuroimmunology during the COVID-19 pandemic. Brain, Behav. Immun. Health. 2020;5:100096.
22. Andries K., Pensaert M.B. Immunofluorescence studies on the pathogenesis of hemagglutinating encephalomyelitis virus infection in pigs after oronasal inoculation. Am. J. Vet. Res. 1980;41(9):1372–1378.
23. Vindegaard N., Eriksen Benros M. COVID-19 pandemic and mental health consequences: systematic review of the current evidence. Brain Behav. Immun. 2020.
24. Pappa S., Ntella V., Giannakas T. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. Brain Behav. Immun. 2020.
25. Brooks S.K., Webster R.K., Smith L.E. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. 2020;395:912–920.

Correspondence:

Cristina-Maria Gavrilescu,
Lecturer, MD, PhD, „Grigore T. Popa” University of Medicine and Pharmacy, Iași, Ist Medical Department, Iași, Romania, senior in Internal Medicine, specialist în Geriatrics, specialist în Clinical Pharmacology,cristina.gavrilescu@umfiasi.ro

Submission: 04 feb 2021
Acceptance: 15 mar 2021

BPI Bulletin of Integrative
Psychiatry
Buletin de Psihiatrie Integrativa

A mini-review on the current connections that might exist between Alzheimer's disease and diabetes (can Alzheimer's disease be considered a type 3 diabetes?)

Iuliana Simona Luca, Alin Ciobîcă, Daniel Timofte

Iuliana Simona Luca -Department of Research, Faculty of Biology, Alexandru Ioan Cuza University, Iasi, Romania
Alin Ciobîcă - PhD, Department of Research, Faculty of Biology, Alexandru Ioan Cuza University, Iaşi, Romania Academy of Romanian Scientists, Bucuresti, Romania,Center of Biomedical Research, Romanian Academy, Iaşi, Romania
Daniel Timofte - MD, PhD, professor, "Grigore T. Popa" University of Medicine and Pharmacy, Iaşi, Romania

ABSTRACT
Lately it was showed in Alzheimer's disease patients that although they did not have type 1 or type 2 diabetes, they tend to have the same abnormalities as in diabetes, leading to some preliminary theories that Alzheimer's disease could be considered in some conditions a type 3 diabetes. Finding that patients diagnosed with type 2 diabetes have deposits of beta-amyloid proteins in the pancreas, deposits that resemble those in the brains of patients with Alzheimer's disease, also increased the interest in this direction of research. Thus, in this review we aimed to draw attention to the commune characteristics of Alzheimer's disease, diabetes, and to highlight the link between diabetes and cognitive decline in Alzheimer's disease (can Alzheimer's disease be considered a type 3 diabetes?), as well as shortly introducing the relevance of zebrafish studies in this research context.

KEY WORDS:
Diabetes, Alzheimer's disease, insulin, cognitive function, amyloid beta deposits.

ALZHEIMER'S DISEASE

Alzheimer's disease is a progressive neurodegenerative disease, a type of progressive dementia that, correlated with the aging process is characterized by memory loss, impaired thinking, speech, behavioral and personality changes, affecting 4.68 million people globally(1). According to the American Diabetes Association, diabetes is the second highest risk factor for developing Alzheimer's disease after old age (2).

Alzheimer's disease has some specific histopathological features, molecular and

biochemical abnormalities, including cell loss, abundant neurofibrillary tangles, dystrophic neuritis, amyloid precursor protein(3) , amyloid beta deposits, mitochondrial dysfunction (4), impaired energy metabolism, chronic oxidative stress (5), increased gene activation signalling pathways and DNA damage (6) The literature currently supports insulin deficiency and insulin resistance as the main mediators in Alzheimer's neurodegeneration (7). Extensive disorders of cerebral insulin and insulin-like growth factor (IGF), signalling mechanisms are progressive abnormalities that could represent most molecular, biochemical and histopathological lesions in Alzheimer's disease (8).

Regarding the aetiology of Alzheimer's disease, there are three hypotheses in this regard, namely: the cholinergic hypothesis (9), the amyloid beta accumulation hypothesis (10), the τ protein alteration and accumulation hypothesis (11).

The major components of senile plaques and neurofibrillary tangles are beta-amyloid and τ protein, respectively (12). Beta-amyloid is generated from amyloid precursor protein (APP) by beta cleavage and gamma secretase. T protein is a neuronal cytoskeletal protein and responsible for the polymerization and stabilization of microtubulin (13,14) Also the hyperphosphorylation of τ protein stimulates its aggregation forming neurofibrillary tangles (11)

Insulin / IGF signalling deficits and energy metabolism push in the direction of cholinergic deficiency mediated by impaired metabolism and low expression of ChAT, all of which are key features in Alzheimer's disease (15).

DIABETES

Diabetes is a prolonged condition of high blood glucose. The hormones responsible for maintaining blood sugar levels in the optimal range are insulin, glucagon and somatostatin released by the endocrine part of the pancreas. Insulin is a polypeptide hormone that maintains glucose homeostasis by reducing large amounts of glucose in the blood by acting on muscle and adipose tissue (16). Glucose transporter 4 (GLUT 4), an insulin-dependent transporter, is present in these tissues. GLUT 4 was later found in the brain to suggest a potential metabolic impact of the GLUT 4 brain, although brain glucose transporters were independent insulin transporters, GLUT1 and GLUT 3 (17). A study that used brain-specific GLUT 4 demonstrated that deletion of GLUT 4 in the brain led to glucose intolerance and hepatic insulin resistance with reduced glucose absorption in the brain (17).

Diabetes can cause complications, primarily by increasing the risk of heart disease and stroke, leading to damage to blood vessels causing brain damage caused by reduced blood flow or blocked to the brain, so diabetes can be considered a risk factor for vascular dementia (18). Secondly, by leading to an excess of insulin that can alter the condition of other neurochemicals that reach the brain, an imbalance that can cause Alzheimer's. disease (19). And last but not least, through the high blood sugar result that causes an inflammatory process, which can damage brain cells, thus triggering Alzheimer's disease (20). Type 1 diabetes is characterized by the (autoimmune) destruction of the beta cells of the pancreatic islet accompanied by insulin deficiency. Beta cells are attacked by the body's own immune system, causing glucose levels to rise in the bloodstream (21). Type 2 diabetes develops when insulin becomes less sensitive to glucose and less

effective in removing glucose from the bloodstream, which causes it to accumulate rather than reach the cells to be used for energy. Type 2 diabetes is the most common and is due to insulin resistance in peripheral tissues, obesity, aging, the existence of a family history of diabetes with the main symptoms of hyperglycemia and hyperinsulinemia (22), (23). Insulin resistance is due to reduced insulin receptor expression, insulin receptor tyrosine kinase activity, insulin receptor substrate type 1 (IRS) expression and / or phosphatidyl-inositol-3 (PI3) kinase activation in skeletal muscle and adipocytes. (24)

THE LINK BETWEEN DIABETES AND ALZHEIMER'S DISEASE

The researchers noted, studying the brains of patients with Alzheimer's disease, that although they did not have type 1 or type 2 diabetes, they found the same abnormalities as those of diabetes, leading them to conclude that Alzheimer's disease can be a type 3 diabetes (25).

Glucotoxicity induces damage to hepatocytes and pancreatic cells by molecular mechanisms of endoplasmic reticulum stress, oxidative stress and mitochondrial damage. Prolonged exposure to hyperglycaemia leads to impaired cognitive function (26). Insufficient cognitive function due to elevated blood glucose is considered to be a cerebral complication of diabetes (27).

There is evidence that hyperglycaemia is a potential risk factor for developing a mild cognitive impairment or Alzheimer's disease (28),(29),(30),(31). Basically, hyperglycaemia increases beta amyloid accumulation on brain lesions, exacerbates oxidative stress, neurological inflammation and mitochondrial dysfunction affecting neuronal integrity causing neurodegeneration specific to Alzheimer's disease (32),(33),(34),(35).

Regarding the link between diabetes and Alzheimer's disease, groups of researchers have reached a common remark in Alzheimer's disease, namely that if a person's blood sugar becomes too high or too low, there is a gradual deterioration, over time, of the brain's ability to use and metabolize glucose while noting a cognitive decline in the brain including memory impairment, difficulty finding words, behavioral and personality changes (36).

Chronic exposure to the diabetic environment, meaning diets rich in fat and sugar, along with physical and mental stress leads to hyperglycaemia, one of the characteristics of insulin resistance, metabolic syndrome and diabetes (37). Hyperglycaemia also affects organogenesis, namely heart failure in utero, being a risk factor for the development of metabolic diseases in adults. Prolonged exposure to hyperglycaemia impairs cognitive function and other aspects of mental health, thus suggesting a cause-and-effect relationship between hyperglycaemia and dementia. Moreover, scientists have established that as insulin function in the brain worsens, not only does the cognitive capacity of the brain decrease, but also the size and structure of the brain deteriorate - all of which occur as Alzheimer's disease progresses (38).

ZEBRAFISH MODEL AS A MODEL FOR METABOLIC DISORDERS

Recently, zebrafish has been used to research metabolic diseases, focusing on obesity and diabetes. Obesity occurs due to energy imbalance. In regulating the intake and expenditure of energy involved several organ systems including the brain, intestines, skeletal muscles and adipose tissue. With zebrafish having all these important organs in

regulating energy homeostasis and metabolism in mammals, it may be a suitable model for the study of metabolic dysfunction.

Zebrafish are a well-established model system for developmental biology, human genetics, and human disease (Dooley and Zon, 2000). Anatomically, genetically and physiologically it is a vertebrate that closely resembles humans. Among the characteristics that recommend it as a model fish for diabetes are: high degree of fertilization, easy maintenance, as a vertebrate organism, zebrafish, has many organs and cell types similar to those of mammals; organogenesis occurs rapidly, and major organs are present 5 to 6 days after fertilization; fish embryos develop outside the mother and are transparent allowing easy visualization of tissues and organs. The normal amount of glucose in the blood of fish (50-70 mg /dl) is similar to the normal amount of glucose in human blood (70-120 mg/dl) an aspect not to be neglected when it comes to using zebrafish as a diabetic model.

Also, division of the pancreas into two segments: exocrine and endocrine along with the ability of zebrafish to transcribe all genes related to gluconeogenesis and lipolysis and the possibility of high-fat and glucose diets to induce type 2 diabetes make all of this a fish that can be used successfully to experience diabetes and its link to Alzheimer's disease.

CONCLUSIONS

Affecting 46.8 million people globally, the high prevalence of diabetes and Alzheimer's disease is giving greater attention to diseases related to aging and mental health. Also, the high costs of resources and medical care of these patients and the impact of this disease on the patient's quality of life make it desirable to improve the understanding of this disease, identify and develop effective treatments, and discover the existence of a common, basic mechanism, between type 2 diabetes and Alzheimer's disease that predisposes to the island and amyloid. The motivation for this review was primarily to understand if Alzheimer's disease is a form of diabetes that selectively affects the brain.

Lately it was showed in Alzheimer's disease patients, that although they did not have type 1 or type 2 diabetes, they tend to have the same abnormalities as in diabetes, leading to some preliminary theories that Alzheimer's disease could be considered in some conditions a type 3 diabetes. Thus, although type 2 diabetes and Alzheimer's disease were long ago considered to be two different and independent metabolic disorders. Currently, in the recent literature, we find that there are common pathophysiological changes and signalling pathways, neuronal stress signalling and inflammatory pathways that together constitute a link between these two pathologies under the name of type 3 diabetes.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflict of interest to disclose.

REFERENCES

1. Calsolaro V, Edison P. Alterations in glucose metabolism in alzheimer's disease. Recent Pat Endocr Metab Immune Drug Discov. 2016;10(1):31-39.
2. Arvanitakis Z, Wilson RS, Bienias JL, Evans DA, Bennett DA. Diabetes mellitus and risk of Alzheimer disease and decline in cognitive function. Arch Neurol. 2004;61(5):661-6.
3. Jalbert JJ, Daiello LA, Lapane KL. Dementia of the Alzheimer Type. Epidemiol Rev. 2008.

4. Moreira PI, Santos MS, Seiça R, Oliveira CR. Brain mitochondrial dysfunction as a link between Alzheimer's disease and diabetes. J Neurol Sci. 2007;257(1-2):206–214.
5. de la Monte SM, Wands JR. Molecular indices of oxidative stress and mitochondrial dysfunction occur early and often progress with severity of Alzheimer's disease. J Alzheimers Dis. 2006;9(2):167–181.
6. Revill P, Moral MA, Prous JR. Impaired insulin signaling and the pathogenesis of Alzheimer's disease. Drugs Today (Barc) 2006;42(12):785–790.
7. Craft S. Insulin resistance syndrome and Alzheimer disease: pathophysiologic mechanisms and therapeutic implications. Alzheimer Dis Assoc Disord. 2006;20(4):298–301.
8. Steen E, Terry BM, Rivera EJ, Cannon JL, Neely TR, Tavares R, Xu XJ, Wands JR, de la Monte SM. Impaired insulin and insulin-like growth factor expression and signaling mechanisms in Alzheimer's disease—is this type 3 diabetes? J Alzheimers Dis. 2005;7(1):63–80.
9. Dunnett SB, Fibiger HC. Role of forebrain cholinergic systems in learning and memory: relevance to the cognitive deficits of aging and Alzheimer's dementia. Prog Brain Res. 1993;98:413–420.
10. Lorenzo A, Yankner BA. Amyloid fibril toxicity in Alzheimer's disease and diabetes. Ann N Y Acad Sci. 1996;777:89–95.
11. Armstrong RA. The molecular biology of senile plaques and neurofibrillary tangles in Alzheimer's disease. Folia Neuropathol. 2009;47:289–299.
12. Arvanitakis Z, Wilson RS, Bienias JL, Evans DA, Bennett DA. Diabetes mellitus and risk of Alzheimer disease and decline in cognitive function. Arch Neurol. 2004;61(5):661-6.
13. . R.J. Schulingkamp, T.C. Pagano, D. Hung, R.B. Raffa.Insulin receptors and insulin action in the brain: review and clinical implications .Neurosci. Biobehav. Rev., 24 (2000), pp. 855-872.
14. K. Siddle, B. Urso, C.A. Niesler, D.L. Cope, L. Molina, K.H. Surinya, M.A. Soos Specificity in ligand binding and intracellular signalling by insulin and insulin-like growth factor receptors Biochem. Soc. Trans., 29 (2001), pp. 513-525.
15. Rivera EJ, Goldin A, Fulmer N, Tavares R, Wands JR, de la Monte SM. Insulin and insulin-like growth factor expression and function deteriorate with progression of Alzheimer's disease: link to brain reductions in acetylcholine. J Alzheimers Dis. 2005;8(3):247–268.
16. González-Reyes RE, Aliev G, Ávila-Rodrigues M, Barreto GE. Alterations in glucose metabolism on cognition: a possible link between diabetes and dementia. Curr Pharm Des. 2016;22:812–818.
17. . Vannucci SJ, Koehler-Stec EM, Li K, Reynolds TH, Clark R, Simpson IA. GLUT4 glucose transporter expression in rodent brain: effect of diabetes. Brain Res. 1998;797:1–11.
18. González-Reyes RE, Aliev G, Ávila-Rodrigues M, Barreto GE. Alterations in glucose metabolism on cognition: a possible link between diabetes and dementia. Curr Pharm Des. 2016;22:812–818.
19. Moheet A, Mangia S, Seaquist ER. Impact of diabetes on cognitive function and brain structure. Ann N Y Acad Sci. 2015;1353:60-71.
20. Rom S, Zuluaga-Ramirez V, Gajghate S, Seliga A, Winfield M, Heldt NA, Kolpakov MA, Bashkirova YV, Sabri AK, Persidsky Y. Hyperglycemia-driven neuroinflammation compromises BBB leading to memory loss in both diabetes mellitus (DM) type 1 and type 2 mouse models. Mol Neurobiol. 2018 Forthcoming.
21. Virkamäki A, Ueki K, Kahn CR. Protein-protein interaction in insulin signaling and the molecular mechanisms of insulin resistance. J Clin Invest. 1999;103(7):931–943.
22. Nicolls MR. The clinical and biological relationship between type II diabetes mellitus and Alzheimer's disease. Curr Alzheimer Res. 2004;1(1):47–54.
23. Whitmer RA. Type 2 diabetes and risk of cognitive impairment and dementia. Curr Neurol Neurosci Rep. 2007;7(5):373–380.
24. . Kulik G, Klippel A, Weber MJ. Antiapoptotic signalling by the insulin-like growth factor I receptor, phosphatidylinositol 3-kinase, and Akt. Mol Cell Biol. 1997;17(3):1595–1606.
25. . Kandimalla R, Thirumala V, Reddy PH. Is Alzheimer's disease a Type 3 Diabetes? A critical appraisal. Biochim Biophys Acta Mol Basis Dis. 2017;1863(5):1078-1089.
26. . Overman MJ, Pendleton N, O'Neill TW, Bartfai G, Casanueva FF, Forti G, Rastrelli G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Lee DM, Correa ES, Ahern T, Laurent MR, Verschueren SM, Antonio L, Gielen E, Rutter MK, Vanderschueren D, Wu FC, Tournoy J EMAS study group. Glycemia but not the metabolic syndrome is associated with cognitive decline: findings from the European Male Ageing Study. Am J Geriatr Psychiatry. 2017;25:662–671.

27. Dolan C, Glynn R, Griffin S, Conroy C, Loftus C, Wiehe PC, Healy ML, Lawlor B. Brain complications of diabetes mellitus: a cross-sectional study of awareness among individuals with diabetes and the general population in Ireland. Diabet Med. 2018;35:871–879.
28. Rojas-Carranza CA, Bustos-Cruz RH, Pino-Pinzon CJ, Ariza-Marquez YV, Gomez-Bello RM, Canadas-Garre M. Diabetes-related neurological implications and pharmacogenomics. Curr Pharm Des. 2018;24:1695–1710.
29. Pruzin JJ, Nelson PT, Abner EL, Arvanitakis Z. Review: relationship of type 2 diabetes to human brain pathology. Neuropathol Appl Neurobiol. 2018;44:347–362.
30. Gaspar JM, Baptista FI, Macedo MP, Ambrósio AF. Inside the diabetic brain: role of different players involved in cognitive decline. ACS Chem Neurosci. 2016;7:131–142.
31. González-Reyes RE, Aliev G, Ávila-Rodrigues M, Barreto GE. Alterations in glucose metabolism on cognition: a possible link between diabetes and dementia. Curr Pharm Des. 2016;22:812–818.
32. Macauley SL, Stanley M, Caesar EE, Yamada SA, Raichle ME, Perez R, Mahan TE, Sutphen CL, Holtzman DM. Hyperglycemia modulates extracellular amyloid-β concentrations and neuronal activity in vivo. J Clin Invest. 2015;125:2463–2467.
33. Kim DJ, Yu JH, Shin MS, Shin YW, Kim MS. Hyperglycemia reduces efficiency of brain networks in subjects with type 2 diabetes. PLoS One. 2016;
34. Rom S, Zuluaga-Ramirez V, Gajghate S, Seliga A, Winfield M, Heldt NA, Kolpakov MA, Bashkirova YV, Sabri AK, Persidsky Y. Hyperglycemia-driven neuroinflammation compromises BBB leading to memory loss in both diabetes mellitus (DM) type 1 and type 2 mouse models. Mol Neurobiol. 2018 Forthcoming.
35. Silzer TK, Phillips NR. Etiology of type 2 diabetes and Alzheimer's disease: exploring the mitochondria. Mitochondrion. 2018 Forthcoming.
36. . Calsolaro V, Edison P. Alterations in glucose metabolism in alzheimer's disease. Recent Pat Endocr Metab Immune Drug Discov. 2016;10(1):31-39.
37. R.B. Singh, S. Gupta, P. Dherange, F. De Meester, A. Wilczynska, S.E. Alam, D. Pella, D.W. Wilson. Metabolic syndrome: a brain disease. Can. J. Physiol. Pharmacol., 90 (2012), pp. 1171-1183.
38. Moheet A, Mangia S, Seaquist ER. Impact of diabetes on cognitive function and brain structure. Ann N Y Acad Sci. 2015;1353:60-71.

Correspondence:

Daniel Timofte,
MD, PhD, professor, "Grigore T. Popa" University of Medicine and Pharmacy, 16 Universitatii Street, 700115, Iasi, Romania, dantimofte@yahoo.com

Submission: 01 oct 2020
Acceptance: 03 dec 2020

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

New dimensions of child sexual abuse

Călin Scripcaru, Alice-Evelina Sauciuc

Călin Scripcaru - Professor, PhD, MD, "Ștefan cel Mare" University of Suceava, Faculty of Law and Administration Sciences, Suceava, Romania
Alice-Evelina Sauciuc - Student, "Ștefan cel Mare" University of Suceava, Faculty of Law and Administration Sciences, Suceava, Romania

ABSTRACT
In order to limit the alarming number of cases which is increasing day after day, there is a necessity for a meaningful analysis of sexual abuses of children all over the world. From all kinds of abuses suffered by juvenile, the sexual abuse has a major impact, affecting children's lives. Additionally, the trauma they sustained can lead to permanent repercussions.This article reveals how significant the phenomenon is and besides, it shows the method of forensic examination of the victim. More often than not, the victims come tardily to prove the sexual abuse they endured. Nonetheless, there is a set of criteria reffered to this review, criteria which determines the existence or non-existence of the molestation. By the same token, the consequences suffered by juvenile were revealed. Therefore, the diagnosis for post-traumatic stress disorder (PTSD) can be demonstrated by Diagnostic and Statistical Manual of Mental Disorders, 4th Edition. At the end of the article it was shown a case of a minor who was sexually abused along with the stages he followed during the medical evaluation and his social reintegration. Following the traumatic event and the manner in which the youth responded to treatment, the process of adaptation had in-depth analysis.

KEYWORDS:
Pedophilia, sexual abuse, anxiety.

INTRODUCTION

Today's society is witnessing a constant attack on the sexual integrity of a considerable number of children. Although such an issue doesn't have an immediate effect over the victims, it does leave a mark on their psyche. The victims are predisposed to a series of irreparable psychological issues, persistent nightmares, suicidal thoughts and substance abuse, all to end the memories and images of sexual traumas. All those "fixes" may seem a fake solution for the problem I am about to talk about in this article.

Despite all this information, no one really knows the magnitude of this phenomenon, as all of the studies are based on the sources of the reported cases. In fact, there are numerous

child abuse cases which are not reported, either because of fear or other reasons. Hence, for years, children suffer abuses unseen and unheard by anyone, basically destroying any chance for social reintegration, respectively for a harmonious physical and mental development. Besides all these consequences, the aggressors usually get away unpunished or are relatively hard to identify, all this giving them the opportunity to act on new victims or to traumatize the first victims indefinitely.

In order to reduce the worrying number of child sexual abuse and to provide effective help to victims who have gone through such trauma, a collaboration between legislation and medicine is needed. The forensic report is necessary to discover both elements regarding the sexual integrity of the minor, and also regarding the impact that a traumatic episode can have on the minor's psyche. To help and do justice to sexually abused victims, forensic medicine is the one that provides key information about the event, the physical and mental state of minors, playing a key role in finding the truth. Thus, the present article's thesis encompasses in four chapters the phenomenon of pedophilia, capturing worrying statistics, the pedophile profile, the role of forensic medicine, national and European legislation and the impact suffered by a victim of sexual abuse.

METHODS AND MATERIALS

The medico-legal examination of a person is the evidentiary procedure by which the forensic doctor or a commission ascertains the traces and consequences of a crime. Following this procedure a medico-legal act is drawn up which serves as a means of proof in the criminal process.(1)

The medical evaluation is just a small part of the multidisciplinary evaluation when it comes to sexual abuse of a child. Therefore, the medical data should be correlated with the results obtained from different investigations. Such situations have a very high degree of complexity, so their management doesn't belong exclusively to the doctor. Of course, the role of child psychiatrist is also important but he must take into account the results obtained from examinations performed by proctologists, gynecologists, psychologists, forensic doctors and immunologists, respectively. In other words, the medical evaluation is complex, the victim goes through multiple medical offices.(1) Also, the victim meets the police officer, the prosecutor and sometimes the representative of a protection center, only if it is necessary to take him from the family.

The following table shows the four classes in which the examined child can be situated, depending on the presence or absence of medical aspects that reveal the existence or non-existence of sexual abuse, as well as its severity. In the medical field, these classes are known under the title of the "Adams Classification - 2003"(2) and include clinical and laboratory findings on child sexual abuse.

Analized Zone	1st Class Normal/Unrelated to Abuse	2nd Class Nonspecific	3rd Class Concerning for Abuse	4th Class Confirmed sexual Abuse
Female genitalia	- periurethral or vestibular bands; - hymenal tags; - hymenal bump or mound; - hymenal cleft/notchin the anterior (superior) half of thehymenal rim;	- increased vascularity; - superficial abrasions of the labia; - vaginal discharge; - "vaginal" bleeding; - vesicular lesions or ulcers in the genitalarea;	- acute lacerations or bruising of labia, fossa, posterior fourchette or perihymenal tissues; - sucker/hickey markson inner thighs near genitalia; - bruises or bites to upper or inner thighs near genitalia;	-patial or complete tear of the hymen; -ecchymosis (bruising) on the hymen; -vaginal laceration; -no hymenal tissue remaining between the vaginal wall and the fossa or vestibular wall.
Anus	- tag at 6 o'clock from redundant perinealraphe; - thickening of perineal raphe; - blue tint from underlying veins;	- bruises on the buttocks; -bleeding from the anus; - anal dilation without stool visible; - vesicles or ulcers inthe anal area or on the buttocks;	- marked bruising and edema of the perianal tissues, as distinguished from venous pooling; - perianal scar;	-perianal lacerations extending deep to the external anal sphincter; -obvious penetration.
Penis/ Scrotum	- circle of brown pigment around shaft of penis from healed circumcision; - raised, dark line along penis/scrotum;	- erythema of penis, lower abdomen or inner thighs; - edema of penis/scrotum; - warty lesions;	- bite or pinch marks on penis, scrotum, or inner thighs near genitalia; - banding of penis with child's hair or other objects;	-
Others	- Candida infections; - urinary tract infections; - vaginitis caused by enteric or respiratory organisms;	- herpes type I or II in achild who requires caretaker assistance with toileting or hygiene, or who may have self-innoculated from an oral lesion;	- herpes type I or II lesions in the genital area in a child who has no oral lesions and requires no assistance with toileting or hygiene; - HIV; - trichomonas;	-pregnancy; -sperm or semen found in or on child's body; -video or photo documentation of child being abused; -sexually transmitted diseases: gonorrhea, clamydia, HIV.

„Adams Classification - 2003" (from Monica Plahteanu's paper)(2)

Impediments in performing forensic expertise

All cases of sexual assault on children require a forensic examination that can be difficult for various reasons. The main difficulties encountered are the mental state of the victim, the time and repetitiveness of its realization, respectively ethical and moral impediments.

The coexistence of physical and mental sexual assaults involves performing the examination by a complex team that must be composed not only of forensic doctors, but also child psychiatrists, endocrinologists, sexologists, gynecologists and many others depending on the specifics of the case.

Lately, the knowledge regarding children has progressed a lot, especially from a clinical point of view: children can develop PTSD, even at a very low level; they do not reflect parental deficiency but, as in adults, the consequences of exposure to a catastrophic event are indispensable for this diagnosis. These conditions are the most common complications in case of physical or sexual abuse and may lead to other disorders, thus aggravating the diagnosis; the incidence is, in fact, higher than one might think.(3)

Carrying out forensic expertise at variable intervals related to the occurrence of the traumatic event involves determining a series of vulnerabilities due to aggression, knowing the condition prior to the trauma suffered by the victim and assessing the child's development under the influence of posttraumatic symptoms.

Other difficulties encountered in performing forensic expertise concern the judicial request that focuses on the criminal side, regarding the adult or minor aggressors, respectively on civil and administrative aspects. In some cases, there is interference related to judicial and ethical issues.

The traumatic event is considered a drawback to the victim’s psychological development which can influence the victim’s behavior, thoughts and everyday life. Both mentally and psychologically, the consequences of sexual assault can be verified in a variety of time intervals. According to the french medical school, sexual assault does not only involve post-traumatic stress disorder, in contrast to the vision of the american experts. The consequences of psycho-sexual trauma in children and adolescents involve a psycho-dynamic assessment that takes into account the child's personal history.

In order to establish a diagnosis and to determine the bodily injury, both the triggering factors and the factors of mental or physical vulnerability are taken into account. Because of this, the examination of minors encounters an obstacle due to the fact that neither the previous condition nor the level of development of the child at the time of the trauma intervention is known. Given the fact that the level of development varies from individual to individual, close attention must be paid to the relational state, cognitive development, respectively the intrapsychic functioning of the subject when reconstructing the facts. Therefore, it is necessary to identify the events and their impact on the child's life in terms of his development. It cannot be ignored that determining the level of development also involves other elements such as socio-cultural conditioning.

In the next evaluation stage, the medical examination aims to recognize the moments of transitive vulnerability that occur in some cases in the moments of sexual assault. Based

on the transition of that moments of vulnerability, the sexual aggression becomes, the factor influencing the development of the child, the moment being considered a rupture.

When it comes to forensic psychiatric expertise, one of the problems comes when sexual abuse of a minor takes place over a long period of time or in the situation where the child has suffered other sexual assaults that are not subject to the expertise in question. In other words, the victim is not at his first sexual abuse, and this can have a major impact on current expertise.

The diagnosis of post-traumatic stress disorder (PTSD) is based on to the criteria established by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

First of all, it must be taken into consideretion the situation in which the subject was exposed to a traumatic event, which generated a state of fear, a feeling of horror or helplessness. Also, it must be taken into account the situations where the subject witnessed a traumatic event in which his physical integrity or that of another person was endangered and could have lost his or her life or been seriously injured.

Intrusive symptoms aim at reliving the traumatic event through repeated memories or dreams that determine the establishment of a state of distress. Also, any element, such as internal or external clues, that generate intense reliving of traumatic memories fall into this category. Reliving the trauma is, in most cases, an intrusive, unpredictable and uncontrollable experience that generates an increased level of anxiety and distress for the individual.(4)

In order to establish the traumatic diagnosis, the symptoms of avoidance regarding thoughts, actions or feelings that could arouse in the child's mind the possibility of reliving the event, even on a mental level, are known. For these reasons, some children are reluctant to show affection to others through tender gestures. Most of the time, they rely on a future without any perspective in terms of starting a family or achieving them professionally.

Post-traumatic stress disorder falls into the category of anxiety disorders that are known by the coexistence of conditions for an indefinite period of time, but which can not be less than a month. Patients with PTSD have experienced a severe catastrophic event that is beyond the limits of human experience and would cause suffering to anyone. The patient persistently relives the event, having recurring dreams or nightmares or has a subtle feeling that the event would resume. Determining the diagnosis implies the existence of the mentioned symptoms, respectively their attribution, either to a specific traumatic episode or to a series of traumas. This attribution has not only a chronological character, but is based on the revocations of the traumatic event in the symptomatic picture, through the intrusive and disturbing relives of the trauma and the avoidance of the mental or real scenarios that produces the horror. Usually, the diagnosis is not difficult to find, and its initial determination is available to all practitioners who are guided by american (DSM IV) or european (ICD10) criteria. For the expert psychologist it is useful to understand the natural course of development of post-traumatic stress syndrome in children, from initial trauma to psychological processing and clinical manifestation. This understanding may substantiate the determination of the presence, nature and cause of post-traumatic stress disorder.(4)

RESULTS

Case Study

The present case concerns the named C.C.G., aged 15, the son of N. and V. C., born on 04.22.2004, who was accompanied by the chief police officer V.M. and grandma C.A. The examination took place between 09.12.2019 and 09.27.2019. The expertise was carried out in compliance with the individual rights of the victim, namely the right to health care, defense, privacy and protection of personal data, respecting the rights of the mentally ill and detainees, as well as derivatives of the Conventions to which Romania is a party.

The purpose of the forensic psychiatric examination is to establish whether the person subject to the examination has mental disorders, as a result of the psychological trauma suffered.

The victim's statement from 07.04.2018

The victim C.C.G. declares that for many years now, his mother has had an outside marriage relationship with so-called P.C. and together with him and his other brothers they all live in a house situated around Viforeni, Ungureni, county of Bacău. He explains that his mother's partner is away most of the time and returns home only for short periods of time. The minor states that about 5 years ago P.C. tried to rape him, stripping him of his pants and setting him aside. The aggressor tried to insert his penis in the victim's anus, a fact that materialized only once, that action causing a real pain to the child. This episode was repeated 5 times over one year period. The aggressor P.C. reassured his victim by telling him that this event was for his own good and that he should stay voluntarily. The minor was aware of what was happening, but always chose not to resist out of fear, as P. C. was a violent person hitting his other children and his concubine. However, when he had sexual intercourse with the C.C.G., he did not show violence, but threatened to kill him. These events took place over a period of one year and only when the aggressor returned from abroad. After a short while, P.C. stopped having anal sex with the minor and started to suck the victim's penis. The so-called P.C. was always careful not to be caught by the minor's mother. Thus, he took him to safe places: either in the stable, or in the house, or sometimes in the woods. In order to get the victim an erection, the aggressor stroked his genital area, then stripped him of his pants and gave him oral sex, which sometimes led to ejaculation. The oral sex event took place over 4 years, totaling a number of 20 such episodes. The minor states that he was always forced to accept the aggression, as he was threatened with death.

Between 06.01.2018 and 06.27.2018, P.C. came back in the country and under the threat of death determined the minor to accept to have oral sex 3 times. During June 2018, when P.C. had oral sex with the minor in the stable, the victim bled in the genital area. Being afraid of P.C. and too ashamed to tell his mom, until 07.03.2018, the minor never told anyone about these events. On the same day, the minor C.C.G. acknowledged that his younger brother had also been abused by P.C. who is the biological father of that minor. This hearing took place in the presence of the ex officio appointed lawyer and the psychologist from the D.G.A.S.P.C. Bacău, respectively of the minor's mother.

On 11.12.2018, the minor returns to continue his statement as an injured person and expresses his consent to appear to be subjected to a psychiatric forensic examination. Currently, both he and his siblings are in the care of their maternal grandmother who will accompany them to the expertise. Regarding the so-called P.C.,

nothing is known from the moment when the victim's mother made the notification.

Non-psychiatric personal pathological history

Following the pediatric surgical examination, it was found that the minor has no clinical marks of physical or sexual aggression, the anus being normally conformed, lacking any post-traumatic injuries. There are no signs of violence on the body at the examination day, attached medical documents confirming the same, therefore the minor C.C.G. does not require days of medical care. The reality of a possible sexual assault attempt, as described by the minor and the data evoked by him, cannot be objectively proven from a forensic point of view, remaining exclusively the responsibility of the investigation.

Admittance to the Socola, Institute of Psychiatry, Iași

Between 09.12.2019 and 09.27.2019, the minor C.C.G. was held under observation at the Socola Institute of Psychiatry in Iași, in order to make an examination of his current mental state.

From the socio-familial anamnesis, a clinically healthy mother is identified and a biological father who does not keep any connection with the child. The stepfather was convicted of murder before his relationship with victim's mother began. He was convicted of killing his father, but was released in 2005.

The elements of psychogenesis involve a neuro-psychic development between 0-1 years in childhood. The minor is the first born by natural birth, it is normally developed from a neuro-psychic point of view. Regarding the situational/occupational environmental assessment, it should be noted that the minor is a student in the 10th grade, at the "Anghel Saligny" High School, he walks 30 km daily to get to school. The assessment of self-care skills reveals the financial dependence of the minor. He is Christian-Orthodox and has respect for social moral norms. The minor has a girlfriend with whom he did not start his sexual life.

Examination of the current mental state reveals a sad facial expression, a distant look, anxiety, a hypomobile attitude, and easy crying at the memory of traumatic events. During hospitalization, the general mental state changed positively. The child establishes and maintains contact with the interlocutor, presenting a mental state of sad, semi-apathetic feeling. From a psychomotor point of view, the minor is calm, the gesture is focused on the body, and the outfit is neat, orderly and appropriate.

When it comes to "communication", the minor has a medium intensity and tonality of the voice, coherent speech, normal fluency. He respects the reciprocity of the dialogue, has an active and passive vocabulary, but on its way to improvement. The attitude during the examination was cooperative, the child being calm from a psychomotor point of view, he adapted to the situation. Initially, he cooperated reluctantly, but he respected the reciprocity of the dialogue. Some additional questions were needed to relate the facts, but his communicative nature made the work easier. His vocabulary is developed, uses simple, common words, but also knows complex words. It also presents a psychological blockage with opening dialogue and communication. His writing is neat, coherent, legible, without grammatical errors. The perception of the minor is without quantitative and qualitative changes. Attention and vigilance are maintained, tenacity decreased, volume fluctuates, and mobility is present. The patient presents with

spontaneous hypoprosexia and fatigue at sustained exertion.

His memory is of normal amnesic capacity, and thinking implies a comprehensive capacity with an ideational rhythm and coherence. Also, the minor has the capacity for synthesis, abstraction and generalization. The notional and lexical content denotes a correctly assimilated educational system and a good development in this respect. The intellect is within normal limits. Imagination is based on intrinsic and extrinsic motivation. The motivational system is structured with extrinsic and partially intrinsic predominance.

Regarding the affective side, the minor has a predominantly sad mood, with diminished vitality, latent anxiety and manifests emotion, emotional-affective variability, decreased vitality, psychhastenia, pessimism. Also, somatizations were noticed at the level of the solar plexus, erythemfacial, cold sweats in the context of recalling the events. The mobilization of the minor is uneven, perseveres unevenly and has asthenic tendencies. Regarding instinctual life, defensive reactions are observed. Although he has a girlfriend, he did not start his sexual life, because he motivates fear, dread and anxiety, caused by the abuses he was subjected to. The fear of not finding out the girlfriend of these psycho-traumatic events presses him even harder. The nictemeral rhythm involves qualitative and quantitative hypnotic disorders, dreams with themes related to traumatic events. Integration, adaptation and relationships are in normal parameters in the socio-familial environment. The minor is actively involved in all household chores, helping both his mother and his maternal grandmother. As future plans, the patient wants to finish school. Regarding the relationship with his middle brother, who suffered the same trauma, the patient manifests a hyperprotection: "I only eat with my brother, I'm waiting for Denis to go together (...) Denis, if you can't, I'll help you"(5). From a temperamental point of view, the child initially has a controlled, restrained, slow, harder to adapt, hypersensitive, internalized, withdrawn, anxious and insecure temperament.

Diagnosis and other relevant observations

Following the above, it was found that patient C.C.G. suffers from a moderate depressive episode. There was also a PTSD caused by physical, emotional, psychological and sexual abuse. The child has strong feelings within and related to the family context. The victim's family support is inadequate.

The psychological examination focuses on the psycho-cognitive side. The IQ is between 90-95. The educational instructional process is assimilated at the characteristic age stage. Also, language and communication skills are at a medium to high level being assimilated, processed and represented correctly. The minor's dialogue has pertinent and correct answers in terms of the content and topic discussed.

Psycho-pathological reactivity in the spectrum of post-traumatic stress disorder of depressive coloration with anxiety aggravations and obsessive phobic manifestations is highlighted by: marked emotion, psychhastenia, emotional-affective variability; decreased vitality, complex of insecurity, pessimism, mistrust, recurrences, remissive memories, recurrent psycho-stressful dreams related to the events to which the minor was exposed, hypervigilance, mental ruminations with a theme focused on abuse, flashback in relation to the events that took place, marked by psychological distress.

The following are highlighted:

- psychotraumatic and psychostressing event over a long period of time:

„At the age of 10, he tried to sexually abuse me. He tried to insert his penis; for over a year he kept trying, he kept coming and trying, he kept coming from work and trying. He threatened me that he was killing me and my mother. In the end, he started having anal sex with me. I didn't want it, but everywhere I was with him, he kept doing it and threaten me"(6);

- psychological blockage with marked withdrawal and self-retreat, strong anxiety:

„He always threatened to kill me and my mother. He threatened me, beat me, beat me until I fell off my feet, kicked me in the head. I was very afraid of him"(6);

- reduced mobilization, diminished vital momentum, inability to feel joy in regards to school achievements, unable to rejoice with his schoolmates and his enlarged family;
- frequent flashbacks when encounter situations, people, places, objects that recall or have a vague resemblance to the abuser's person and characteristic events;
- reduction of hypnotic activity: shallow sleep, unable to sleep without a night light, wincing at every noise he hears;
- his family had to move out from the house due to fears of the abuser;
- depressive mood throughout the day, moral pain:

„I have the feeling that I see him everywhere and that people look at me and know what happened to me. I feel bad and ashamed that all my friends found out. The police kept coming to our place and it quickly got out, even my girlfriend knows, but she supports me"(6);

- social retreat through non-involvement, inability to make decisions, overall indecisiveness.

.

CONCLUSIONS

Pedophilia as a form of sexual abuse is a problem that society has always faced. The mentioned studies reminded that the amount of cases existed before even being taken into account by sociologists and sexologists, but this was not put under the critical light of the society. Initially, community members showed more interest in various theories about what causes a pedophile to act in this way and less on what can be done to reduce the number of cases of child sexual abuse. Although this is desired, acts of sexual assault with prepubescent victims can never be stopped, but experts believe that the annual rate of such abuse can be reduced.

It has been observed that, in many cases, the pedophile is a person who suffered in his childhood a sexual abuse of the same nature as the one he practices in adulthood with his victim. In other words, the pedophile was once an abused child who concentrated the elements of the post-traumatic episode in anger that he releases in this way, when he is strong and is no longer in a position of vulnerability. Also, in most cases, pedophiles are people known to assaulted minors. Not infrequently it was noticed that the aggressors were parents, teachers, coaches, neighbors, relatives or family friends with the victim, which amplifies the fact that the minor is in a large field of

observation of the pedophile until he is chosen as a victim. Regarding the mode of action of pedophiles, it was noted that they have in mind children they see as safe victims. Thus, children in protection institutions, orphans, who come from a disadvantaged environment, who are deprived of affection from the family or who have a precarious economic situation or have disabilities are easier to seduce and their silence is easier to buy. In this sense, pedophiles act tactfully, proving to be true masters.

Beyond these aspects, during the present article the importance of the medical examination performed on the victims of pedophilia was revealed. It is of real importance the fact that the forensic report should play a probative role before the court, being the most powerful "weapon" that the prosecutor or victim's lawyer can use to prove the existence of sexual abuse. From a structural point of view, the minor's forensic psychiatric expertise includes a history that is provided by the police station where the complaint was registered, the statement of the injured person, psychiatric/non-psychiatric personal pathological antecedents, reports made by social protection institutions, reports of the institution where the minor was hospitalized for rehabilitation and reintegration, respectively the diagnosis and other recommendations.

The forensic report involves both the clinical examination of any signs of violence or aggression on the body, especially in the genital areas that could serve as evidence in the file, and the psychiatric expertise of the minor, his attitude during the examination and how long it is held in the reintegration program. Therefore, if the traces of violence and sexual assault disappear from the body due to the event being reported after a longer period of time, the factual evidence will return exclusively to the investigation. However, the psychiatric forensic report uses a series of techniques to prove the existence/non-existence of a diagnosis established after the post-traumatic episode in which the child took part, which the court is obliged to take into account. Thus, a special emphasis is placed on the child's inner feelings regarding the way he recounts what happened, if he presents anxiety, states of repulsion or fear. Most children tend to relive the event every time they are asked to tell the story they went through. In the worst cases, children present suicidal thoughts and gloomy prospects for their uncertain future.

Regarding the legal side, I emphasize the fact that no state expressly condemns pedophilia, because it is impossible to condemn a start, a mental attitude of a person or a diagnosis. As long as it does not manifest itself in any way that harms the interests of those around it, it does not present a degree of danger, therefore it is not in the interest of the state to take legislative measures in this regard. However, there are a number of laws worldwide that unanimously seek to stop child sexual abuse, the production of pornographic material and reduce trafficking in minors. Although the term “pedophilia” is not mentioned in the national laws of the Member States of the European Union, I noticed that in all the Criminal Codes of the studied states the aggravating circumstance regarding sexual intercourse with a minor is taken into account, if he has not reached the age of 12-13 years, even if the age of majority differs from one state to another. Therefore, although pedophilia is not incriminated, indirectly, the legislator provided to punish more severely those acts that have as victims prepubescent and not adolescents. The logical-legal vision behind this reasoning is based on the level of physical and mental development of the passive subject of the crime, his degree of sexual and intellectual development, as well as the impact that such an event has on the life of the minor.

From my perspective, pedophilia will always be a difficult and hard problem to fight. Regardless of the number of studies carried out, the protection and guard measures adopted or the level of relationship between minors and the state institutions, there will always be a worrying and unknown number of cases that are not reported. Thus, a good collaboration between state institutions that take care of minors, a proper education and a good preparation for life implies a first step towards reducing the alarming number of cases of pedophilia. In other words, I believe that education is the key that can open many doors, even more the rigid door of social ignorance and lack of institutional care. Therefore, in order to decrease the registration statistics in recent years, I would find it useful to introduce sex education in Romanian schools, but not in the way it is currently perceived, rather the way it was originally written and thought by WHO. According to the WHO Regional Office for Europe and the BzgA, "sex abuse scandals have served as a strong impetus for sex education and have led to the need to introduce sex education for young people. (...) The main motivation has become the belief that young people should be supported, motivated and encouraged to manage sexuality responsibly, safely and satisfactorily, rather than focusing primarily on personal problems or threats." (7) Although sexual abuse is one of the factors behind the WHO initiative, it must be borne in mind that current sex education is more aimed at the mental sexual maturation of people who have sex to prevent HIV infection or unwanted pregnancies.

Sex education should involve training minors in understanding the elements of sexual abuse, perceiving danger and the tricks behind tempting and seemingly innocent offers. From my point of view, sex education as seen and understood today promises only an awareness of what a consensual sexual act means and it is far from what an abuse implies, how it can be recognized, which are the institutions that minors can contact in case of sexual abuse, to whom they should address if this event takes place in the family or at school and to understand that it is never too late to put an end to sexual abuse.

I conclude by emphasizing that only through an education based exclusively on preventing and combating sexual abuse, beyond what WHO promotes, there can be made a real change in how prepubescents are able to avoid falling victim to pedophiles. By implementing a study program in primary school, it is possible to gradually prevent the way in which the minor perceives the intention of foreigners to offer them gifts, to show their affection and to gain their trust. Unfortunately, the world we live in is based on a morbid interest and an unprecedented selfishness, which is why the vulnerability of minors is the easiest form of exploitation in order to obtain a secure profit, either we consider pecuniary profit by producing pornographic materials, or non-pecuniary by satisfying sexual needs.

ACKNOWLEDGMENTS
The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Udroiu M. Codul de procedură penală comentat pe articole, art.1-603, C.H.Beck, Bucharest, 2015
2. Plahteanu M. Sexualitatea minorilor în problematica medico legală, Performantica, Iași, 2008
3. Hecser L. Sindromul de stres posttraumatic la minori, Revista Română de Pediatrie, vol. LV, Nr. 2, 2006
4. Luca C. Expertiza psihologică a copilului abuzat/neglijat, Hamangiu, Bucharest, 2014
5. Socola, Institute of Psychiatry Iași Report on 10.10.2019
6. Minor's Injured person's statement on 07.04.2018
7. Standarde pentru Educația Sexuală în Europa, WHO Regional Office for Europe and BzgA

Correspondence:

Călin Scripcaru,
Professor, PhD, MD, "Ștefan cel Mare" University of Suceava, Faculty of Law and Administration Sciences, Suceava, Romania, calinscripcaru@yahoo.com

Submission: 12 jan 2021
Acceptance: 05 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

Clinical-diagnostic and therapeutic landmarks of conversion disorder. Literature synthesis

Mădălina Dumitrița Prihor, Alexandra Boloș, Ilinca Untu, Roxana Chiriță

Mădălina Dumitrița Prihor – M.D., "Socola" Institute of Psychiatry, Iaşi, Romania
Alexandra Boloș - M.D., Ph.D., University of Medicine and Pharmacy "Grigore T. Popa", Iași, "Socola" Institute of Psychiatry, Iaşi, Romania
Ilinca Untu – M.D., Ph.D. Student, UMF "Grigore T. Popa", Iași, "Socola" Institute of Psychiatry, Iaşi, Romania
Roxana Chiriţă - Prof., M.D., Ph.D., UMF "Grigore T. Popa", Iași, "Socola" Institute of Psychiatry, Iaşi, Romania

ABSTRACT
Conversion disorder, a pathology always present in the current practice of psychiatrists, being the subject of multiple empirical research in the early twentieth century, is now a little explored nosological category, the literature having many gaps in its therapeutic landmarks. The present synthesis of the specialized literature aims to draw attention to the importance of studying this topic and the favorable consequences that can establish a comprehensive clinical-therapeutic guide in terms of addressing the conversion disorder, by limiting patient addressability in general medical centers and in emergency rooms, by streamlining the exclusion of organic diseases and by increasing the quality of life of people suffering from this disorder.

KEYWORDS:
Conversion disorder, differential diagnosis, anxiety, somatic symptoms

INTRODUCTION

Conversion disorder, formerly known as conversion hysteria, is a psychiatric disorder in which there are signs and symptoms that affect voluntary or sensory motor function, which cannot be explained by a neurological or other organic condition. Psychological factors, such as stressful or conflicting situations, are considered to be associated with the onset of these deficits.

Hysteria has been disputed over time by many specialists in neurology and psychiatry. The term *conversion disorder* comes from Sigmund Freud, who observed that certain symptoms that cannot be explained by an

organic disorder actually reflect a subconscious conflict. Although the symptoms cannot be explained by an organic condition, they are real and the patient cannot control their appearance (1, 2).

Symptoms may vary in intensity, usually occur suddenly, may be intermittent, or may occur for a long time. The most common symptoms that occur in the conversion disorder are: blindness, deafness, speech disorders, pseudo-paralysis, pseudo-epileptic seizures, anesthesia, hypoaesthesia, hyperesthesia, contractures, spasms, swallowing disorders, gait disorders, hallucinations (1).

Studies estimate that 20% -25% of hospitalized patients have conversion symptoms, of which 5% meet the criteria for conversion disorder. In a randomized study of one hundred patients in a psychiatric clinic, 24 had unexplained neurological symptoms. Approximately 20% -30% of patients presenting to neurology medical services have a conversion disorder and a large proportion of them return to the clinic due to persistent symptoms and a low cure rate. The care of these patients is a burden both for their families and for society. Some patients require long-term care, some become addicted to a wheelchair or caregiver. In America, 82% of them miss or quit their jobs due to symptoms (1, 3, 5).

Conversion disorder has been diagnosed more frequently in women, in rural areas, with low socioeconomic status, low education, intra-family conflict, a history of sexual, physical, emotional abuse, or childhood traumas. One study found that patients were initially investigated in clinics other than psychiatry and after a longer period of time consulted a psychiatrist. Also, many of them received psychiatric treatment for a long time, but were not investigated for their personal history, whether they had trauma or were abused during childhood. Thus, it is important to emphasize the time given to the patient for the interview in the psychiatric evaluation (4).

The presence of symptoms for a short period of time before starting treatment, early diagnosis and the existence of a confidence in the health system are positive prognostic factors. The most important factor of a positive prognosis remains the acceptance and understanding of the diagnosis (1). Late diagnosis, the presence of childhood abuse and the presence of other comorbidities are negative prognostic factors. The most common comorbidities are depression (38% - 50%), anxiety disorders (35%), dissociative disorders (48.3%), painful syndromes (50%), phobia and obsessive compulsive disorder (3, 6).

THERAPEUTIC APPROACH TO CONVERSION DISORDER

There is currently no standard treatment protocol for conversion disorder. The lack of well-controlled studies may be due to: a high phenotypic and etiological heterogeneity of the disorder; numerous associated comorbidities, the difficulty of hiring patients in the study, because they initially accept the diagnosis with difficulty, lack of specialists with experience in treating these patients (2. 3).

It is important that in any approach with patients with conversion disorder, a solid, trusting relationship is established between the doctor and the patient, which allows him to recover with dignity. Feelings of doubt, anger, distrust of the medical staff, negatively affect the doctor-patient relationship. Medical personnel should avoid labeling patients as addicted, pretended, or exaggerated in symptoms (6).

Many patients do not understand the inner conflict, which is probably in their subconscious. Confronting patients with the psychological nature of the symptoms most often worsens the symptoms. However, the patient can obtain a resolution of symptoms or internal conflict only if he is able to recognize the connection between the two (1).

Because patients with conversion disorder may be less compliant than patients with neurological disease alone, the explanation of the diagnosis should be made carefully. It is recommended: not to tell the patient the diagnosis from the first meeting, to assure the patient that the symptoms are real, despite the lack of an organic condition, to give examples of other symptoms that may occur in stressful situations (hypertension), to explain how the subconscious can influence behavior (the habit of eating nails), emphasize that symptoms are potentially reversible (as opposed to neurological disorders), to explain to the patient that understanding and accepting the diagnosis often leads to a better recovery, because he is thus more involved in the rehabilitation process (1, 7, 8, 9, 10).

Although many studies have been done in recent years, treatment options are limited. An individualized treatment is currently recommended, depending on the patient's symptoms and a multidisciplinary approach that includes psychotherapy, pharmacotherapy, physical therapy and physiotherapy. Hypnosis can be used for diagnosis or treatment. Symptoms may be relieved with antidepressants, anxiolytics, or antipsychotics, depending on the patient's psychiatric comorbidities (11, 12, 13).

Few studies have looked at the effectiveness of antidepressants in the conversion disorder. No randomized placebo-controlled study demonstrated the effectiveness of a particular antidepressant. Thus, the choice of the type of antidepressant or anxiolytic should also be based on the treatment of the identified psychiatric comorbidities, and the time at which the drug treatment should be initiated is determined by the attending physician (14, 15, 16)

In a prospective study, 15 patients diagnosed with psychogenic movement disorder were treated with selective serotonin reuptake inhibitors (SSRIs) for 8 weeks. The average duration of the disease was 62 months. Patients did not necessarily meet the diagnostic criteria for depression, although they did have certain symptoms and received psychotherapy throughout the study. The authors reported that of 10 patients with primary conversion disorder, 8 had marked global rehabilitation and 7 enjoyed complete remission of symptoms after 8 weeks of treatment (12, 13, 14, 17).

A 2018 randomized study evaluated the effectiveness of quetiapine versus haloperidol in controlling symptoms in patients with conversion disorder who presented to the emergency department. The results showed that although quetiapine and haloperidol have similar effects, in the group that was treated with quetiapine, the prevalence of extrapyramidal symptoms was much lower, limiting the use of haloperidol. In this study, extrapyramidal symptoms were observed in only one patient in 71, in those treated with quetiapine and in 13 patients in 73, in those treated with haloperidol. This significant difference recommends quetiapine as a safer option than haloperidol. (18)

Another study compared the effectiveness of quetiapine versus venlafaxine in treating somatic symptoms. Although quetiapine has been shown to improve symptoms, it has reduced efficacy compared with venlafaxine

(19, 20). In addition to this study, Jin-Iong et al showed that low doses of quetiapine are effective in the treatment of somatization disorder and that the use of is safe and with fast results (21).

A randomized study evaluated the effectiveness of haloperidol versus midazolam treatment in patients with conversion disorder who presented to the emergency department. The results showed that the administration of haloperidol iv had a higher efficacy compared to midazolam (91.5% versus 64.3%). However, patients treated with haloperidol had several transient and minor side effects at one hour, 24 hours, and one week after treatment. The presence of severe side effects was rare in both groups of patients. Contrary to these results, Huf and colleagues reported that side effects did not differ significantly in patients with conversion disorder treated with haloperidol plus promethazine versus midazolam. Powney et al. (2012) evaluated the results of 32 studies that reported the effects of haloperidol treatment compared to other treatments. According to the results, two clinical trials reported that the group of patients treated with haloperidol had one or more side effects compared to the placebo group (17).

A study by Esmailian et al. (2015) evaluated the effectiveness of haloperidol and midazolam in patients with symptoms characteristic of the conversion disorder who presented to the emergency department. The results were similar for both drugs in relieving symptoms (22).

Another study by Nobay et al. (2003) evaluated the effects of 3 drugs (midazolam, haloperidol and lorazepam) in patients with behavioral disorders. The results illustrated a similar efficacy for the 3 drugs (23).

The patient should be re-evaluated periodically by a psychiatrist and/or neurologist to limit the number of emergency department visits and to avoid performing additional invasive tests (1, 7).

When the conversion disorder is in the acute phase, symptoms may resolve spontaneously after explanation of the diagnosis and suggestion. However, chronic forms often require specialized treatment in a psychiatric clinic (6).

Physical therapy is a key element in patients with conversion disorder who have motor symptoms. It helps both in preventing secondary sequels in case of prolonged immobilization (stiffness or muscle hypotrophy) but also for physical recovery (9). Both the intensity and the educational component of the physiotherapy program seem to be important in the success of the therapy (24).

In a randomized cross-controlled study of 60 patients with psychogenic gait disorder, patients received randomized physical therapy, some immediately and others after 4 weeks. After 3 weeks, a substantial improvement was observed in patients undergoing physical therapy (22).

A 2015 review found that physical therapy was part of the multidisciplinary approach to treatment. Most patients in the study had dystonia, hemiparesis, or ataxic gait. Treatment ranged from 3 days to 16 weeks and complete resolution of symptoms occurred in all patients (10).

A 2013 study that included 120 patients found that two-thirds of patients experienced improvement on the fifth day after starting treatment, which was maintained at 2 years (11). Another study published by Nielsen and

colleagues points to certain recommendations for the physical therapy program in patients with conversion disorder. The principles of treatment are clear communication with the patient, goal setting and confidence in the recovery program (12).

It is important to educate the patient in an empathic manner so that he understands the psychological substratum of his condition, to be aware of the connection between the subconscious conflict and the organic symptoms it presents (15). Once the patient is aware of this connection, the probability of accepting the diagnosis and following the recommended treatment increases.

The cornerstone of the conversion disorder is considered psychotherapy, as it can bring to the surface the emotional substrate of the disease (1). It is essential to change the "way the brain processes information" to reduce the tendency to express suffering through physical symptoms and to create new behaviors because the current way of acting unconsciously leads to those symptoms (24, 25). Psychotherapy may include individual or group therapy, behavioral therapy, hypnosis, relaxation methods, but cognitive-behavioral psychotherapy has had the best results (2, 3).

Cognitive-behavioral psychotherapy should focus on improving self-esteem, increasing the ability to express feelings, improving the ability to communicate with others, learning stress management techniques, identifying and replacing patterns of thinking that cause symptoms (20). Many patients also request psychotherapy for family members, as they have invested a lot of time and resources to help them (3, 26).

Randomized studies have demonstrated the effectiveness of cognitive-behavioral psychotherapy in the treatment of pseudoepileptic seizures. LaFrance reported that 11 of 17 patients treated for 12 weeks with an hour-long session healed completely by the end of treatment (24, 27).

A 2018 study evaluated the effects of cognitive-behavioral psychotherapy in children and adolescents with conversion disorder. The study included 22 children with a mean age of 14.5 years. On average, children received 12 sessions of psychotherapy, individually tailored to the needs of each child. These sessions included individual sessions with the child, his family and joint family sessions. Close contact was also maintained with the educational units where the children went. The therapy aimed to improve physical and emotional condition, as well as daily functioning. Thus, it aimed to help children and their families understand their physical symptoms, their causes and learn how to change certain behaviors, if necessary. The results of the study showed an improvement in the functioning of children with conversion disorder due to the use of cognitive-behavioral psychotherapy in children and their families (19).

The links between hysteria, hypnosis and conversion disorder have been observed since the 19th century. It has been observed that in people with conversion disorder, hypnosis can be used to reduce symptoms, or to evoke certain past traumas related to current symptoms (28, 29).

A randomized controlled trial claims that a multidisciplinary treatment program can help even patients who have had symptoms of conversion for a long time. Adding hypnosis to the treatment plan to reduce symptoms did not increase the effectiveness of the treatment. However, it cannot be concluded that hypnosis is not an effective form of treatment and new studies are needed. (29, 30)

DISCUSSIONS

Conversion disorder is more common than you might think at first glance and is often difficult to diagnose because the symptoms are similar to those of other disorders. Thus, the clinical signs of this disorder are nonspecific in terms of the absence of pathognomonicity in psychiatry and also require a rigorous differential diagnosis with other general medical conditions.

A key factor in identifying the conversion disorder is the sudden onset of symptoms: pseudoparalysis, blindness, gait, speech, pseudo-epileptic seizures etc. Because there is little research on the conversion disorder, it can often be misdiagnosed. Thus, a lot of money can be spent on investigations and treatments, which do not lead to relief of symptoms. Early diagnosis often leads to a good prognosis. Once a physician notices that the symptoms are atypical and do not correlate with physical examination or the results of additional tests and investigations, the patient should be referred immediately for a consultation, to a psychiatrist, or a psychologist. Often this disorder is caused by childhood trauma, a stressful event or abuse. The patient should receive individualized treatment, often multidisciplinary, depending on his symptoms.

In order to obtain the best possible compliance with the treatment, the doctor is first recommended to explain to the patient his diagnosis and the treatment plan and to try to achieve the best possible relationship, based on trust with the patient. Depending on the symptoms, one can resort to psychotherapy, pharmacotherapy, physio-therapy, etc. Pharmacotherapy may also be required to treat associated psychiatric disorders, most often anxiety and depression (8).

The neurological symptoms that can occur in the conversion disorder appear as a manifestation of a neuropsychiatric disorder or a subconscious conflict and are located at the intersection of neurology and psychiatry. Dualistic thinking is not useful in this type of patient, because neurological symptoms and psycho-emotional state influence each other. Because a multidisciplinary approach to treatment is most often chosen, open communication between the specialists involved is important (24).

CONCLUSIONS

Conversion disorder has recently received attention in the psychiatric literature compared to other psychiatric disorders. It is a condition in which certain subconscious conflicts are converted into somatic symptoms, which cannot be explained by an organic pathology.

In order to obtain the best results, it is essential to create a therapeutic alliance with the patient. It is important to obtain the patient's medical and psychiatric history, a thorough psychiatric examination to explain the onset of symptoms, the presence of stressors and co-morbid conditions. This would help to understand how abnormal psychological states can turn into somatic symptoms.

Regarding treatment, there is no single method; a multidisciplinary treatment consisting of pharmacotherapy, psychotherapy, physiotherapy (for motor symptoms) is recommended. Clearly, further studies are needed to evaluate the prevalence and effectiveness of different treatment modalities for this disorder.

ACKNOWLEDGE AND DISCLOSURE

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Shahid A., Shagufta J. Et al. Conversion disorder- mind versus body: A review. Innovations in Clinical Neuroscience. 2015; 12(5-6):27-33.
2. Nicholson T., Aybek S. Et al. Life events and escape in conversion disorder. Psychological Medicine. 2016: 46, 2617-2626.
3. Cornelis C., Allen S. Et al. Childhood sexual abuse predicts treatment outcome in conversion disorder/functional neurological disortder. An observational longitudinal study. Brain and Behavior. 2020:10.e01558.
4. Akyuz F., Gokalp P. et al. Conversion disorder. Comorbidity an childhood trauma. Arch Neuropsychiatry 2017: 54:15-20.
5. Dent B., Stanton B. Et al. Psychiatrists' understanding and management of conversion disorder: a bi-national survey and comparison with neurologists. Neuropsychiatric disease and treatment. 2020:16; 1965-1974.
6. Owens C., Dein S. Et al. Conversion disorder: the modern hysteria. Advances in Psychiatric Treatment. 2006; vol 12, 152-157.
7. Nusair F., Franck N. Et al. Conversion disorder with conceptual and treatment challenges. The American journal of psychiatry residents' journal. 2016;17-19.
8. Miller L., Archer R. Et al. Conversion disorder: earlly diagnosis and personalized therapy plan is the key. Case reports in Neurological Medicine. 2020.
9. Mesaroli G., Munns C et al. Evidence-based practice: physiotherapy for children and adolescents with motor symptoms of conversion disorder. Physiotherapy Canada 2019;71(4);400-402.
10. Fitzgerald T., Southby H et al. Is physiotherapy effective in the management of child amd adolescent conversion disorder? A systematic review. Paediatr Child Health. 2015;51(2):159-67.
11. Czarnecki K., Thompson J, et al. Functional movement disorder: successful treatment with a physical therapy rehabilitation protocol. Parkinsonism Relat Disord. 2011;18(3):247-51
12. Nielson G., Stone J et al.Physiotherapy for functional motor disorders:a consensus recommendation. J Neurol Neurosurg Psychiatry. 2014;86(10):1-7.
13. Thomson K, Randall E et al. Somatoform disorders and trauma in medically-admitted children, adolescents and young adults; prevalence rates and psychosocial characteristics. Psychosomatics. 2014;55:630-39.
14. Ito A, Nakamoto T et al. Postoperative tetraplegia due to conversion disorder upon emergence from general anesthesia. JA Clinical Reports.2020;6:88.
15. Chen D, LaFrance. Diagnosis and treatment of nonepileptic seizures. 2016.22:116-131
16. Marshall SA. Conversion disorder. Medscape J Med.2017.
17. Jafari M, BiukiA et al. Intravenous Haloperidol versus Midazolam in management of conversion disorder;a randomized clinical trial. Emergency. 2018;6(1):e43.
18. Saeed R, Hossein D et al. Quetiapine versus Haloperidol in controlling conversion disorder symptoms; a randomized clinical trial. Emergency. 2018;6(1):e47.
19. Fiona A., Watson H et al. Cognitive-behavioural treatment of functional neurological symptoms (conversion disorder) in children and adolescents: A case series. European journal of pediatric neurology. 2018.12.002.
20. Ali S, Jabeen S et al. How to use your clinical judgment to screen for and diagnose psychogenic nonepileptic seizurez without video electroencephalogram. Innov Clin Neurosci. 2011;8(1):36-42.
21. Jin-Iong W, He-Dan Z. Synergistic effects by small dosage of quetiapine in treatment of somatization disorder. Herald of medicine.2011; 6:21.
22. Esmailian M, Ahmadi O et al. Comparison of haloperidol and midazolam in restless management of patients referred to the emergency department: a double-blinded randomized clinical trial. J Res Med Sci. 2015;20(9):844-9.
23. Nobay F, Simon BC et al. A prospective double-blind randomized trial of midazolam versus haloperidol versus lorazepam in the chemical restraint of violent and severely agitated patients. Acad emerg med. 2004;11(7);744-9.
24. Neal M, Baslet G. Treatment for patients with a functional neurological disorder (conversion disorder): an integrated approach. Am J Psychiatry. 2018; 175:307-314.
25. Jordbru A, Smedstad L et al. Psychogenic gait disorder:a randomized controlled trial of psysical rehabilitation with one-year follow-up. J Rehabil Med. 2014; 46:181-187.
26. Rosebush P, Mazurek M. Treatment of conversion disorder in the 21st century: Have we moved beyond the couh? Current treatment options in neurology. 2011;13:255-266.

27. LaFrance WC, Miller I et al. Cognitive behavioural therapy for psychogenic nonepileptic seizures. Epilepsy Behav. 2009;14:591-6.
28. Voon V, Lang A. Antidepressant treatment outcomes of psyuchogenic movement disorder. J clin psychiatry. 2005; 66:2271-6.
29. Moene F, Spinhoven et al. A randomised controlled clinical trial on the additional effect of hypnosis in a comprehensive treatment programme for in-patients with conversion disorder of the motor type. Psychother Psychosom. 2002; 71:66-76.
30. Zhang C, He Z et al. Quetiapine in the treatment of somatoform disorder. China journal of health psychology. 2013; 2013(11):1629-31.

Correspondence:

Ilinca Untu,
MD, PhD student, "Socola" Institute of psychiatry, No. 36 Bucium, Iaşi, Romania,
ilincauntu21@gmail.com

Submission: 08 jan 2021
Acceptance: 01 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

The biochemical interaction between vitamin D and superoxide dismutase could influence anxiety and depressive-like manifestations

Sorin Ungurianu, Constantin Truş, Roxana-Rosmary Enciu

Sorin Ungurianu - Faculty of Medicine, Dunărea de Jos University, Galaţi, Romania
Constantin Truş - Department of Morphological and Functional Sciences, Faculty of Medicine, Dunărea de Jos University, Galaţi, Romania
Roxana-Rosmary Enciu - Sf. Apostol Andrei, Emergency Clinical Hospital, 188 Brăilei Str., 800494, Galaţi, Romania

ABSTRACT
It has been proven that vitamin D has positive effects on human cognition. Given this potential therapeutic role, we designed the present study to determine if a vitamin D deficient diet would increase the depression-like and anxiety-like behaviors of lab rats by increasing the level of oxidative stress. We determined the level of oxidative stress in our study by measuring the level of the antioxidant enzyme- superoxide dismutase (SOD) in the brain. We had two groups of rats: a group which received a normal rat diet containing vitamin D and a group which received a diet with 0 vitamin D in it. Regarding the level of oxidative stress, determined by measuring SOD, the ANOVA showed that there was a statistically significant difference among the rats in the control group and the rats which received the vitamin D deficient diet in regards to SOD levels ($p<0.001$). With reference to the depression-like behavior, measured with the forced swim test, the statistical analysis showed that there was a statistically significant difference between the control group and the vitamin D deficient group regarding the duration of time animals spent being immobile in the water ($p < 0.001$). In addition, in regards to the anxiety like behavior, our results also demonstrated that there was a statistically significant difference between the control group and the vitamin D deficient group regarding the time the rats spent exploring the center of the Open Field Test ($p < 0.001$). Overall, our investigation demonstrated that feeding rats a diet deficient in vitamin D for 6 weeks is associated with a decrease in SOD and an elevation of observed anxiety and depression-like behaviors. These findings suggest that vitamin D deficiency, induced through diet, is associated with an escalation of oxidative stress and specific alterations in the rats' brain neurochemistry.

KEYWORDS:
Vitamin D, oxidative stress, anxiety, depression, superoxide dismutase, SOD.

INTRODUCTION

It has been proven over the last twenty years that vitamin D has many positive effects on the musculoskeletal structure (1). Furthermore, it has been established in the available literature that vitamin D is also implicated in the prevention of various diseases (2, 3). Although these benefits are well proven and demonstrated in numerous studies the exact biochemical mechanisms behind this effect are yet to be uncover. That is the reason why studying animal models of vitamin D deficiencies in connection with various biochemical markers and psychiatric disorders, such as depression or anxiety, is of great importance.

The human body can obtain vitamin D in two different ways. The primary way is by consuming food with high content of vitamin D. The second way is through cutaneous exposure to sun (4). It has been showed that cutaneous synthesis is the major source of vitamin D for most people. However, the problem arises when sun exposure is limited. This limitation may be caused by various reasons such as climate or culture. The best example is represented by individuals who live in the United Kingdom. In this part of the world, a seasonal fluctuation in the availability of UVB exists. From September to March very little sun exposure is possible due to the local weather (5, 6). In addition, regarding the cultural factors, sun exposure is made more complex by a wide range of societal tendencies. For example, the average individual may benefit from increased sun exposure during a short period of time in vacations in sun-rich environments, with the rest of the year spent mostly indoor or in climates that do not favor skin exposure to benefic ultraviolet radiation from the sun (7). Therefore, there are serious concerns in the medical world regarding whether the population receives enough sun exposure to serve its vitamin D needs.

Given this epidemic of deficiency in year-round sun exposure for the modern individual, there are enough evidence that suggest a strong correlation between vitamin D deficiency and psychological disorders, such as depression and anxiety (8). The molecular mechanisms behind this connection show that given the vitamin D deficiency has similar neural pathways to mood-related alterations, low levels of vitamin D are expected to be found in patients with anxiety and various depressive disorders (8,9). These mechanisms can be further studied with the help of animal models of depression or anxiety. Therefore, the animal studies found in the literature have demonstrated that rodents missing the vitamin D receptor gene also exhibit an increase in observed depression-like behaviors measured through various models of depression (10). Nevertheless, perhaps the most important biochemical mechanism behind the influence of vitamin D on depression and/or anxiety is related to the oxidative stress. The available literature demonstrates that when vitamin D levels are adequate, the majority of the intracellular oxidative stress-connected processes are decreased. Furthermore, it has been demonstrated that having suboptimal intake of vitamin D leads to heightened oxidative stress conditions, decreased oxidative damage at intracellular level and intensified apoptosis' rate. In addition, a high level of serum vitamin D was found to be inversely correlated with an escalation of mitochondrial reactive oxygen species (ROS) (11). Therefore, vitamin D plays an important

role in protecting cells against reactive oxygen species (12).

Thus, given the promising, possible therapeutic role that vitamin D may have in reducing anxiety and depressive disorder, we designed the present study to determine if feeding lab rats a vitamin D deficient diet would affect their depression-like and anxiety-like behavior by increasing the level of oxidative stress. We determined the level of oxidative stress in our study by measuring the level of the antioxidant enzyme-superoxide dismutase (SOD) in the brain.

MATERIALS AND METHODS

The objective of our study was to investigate if vitamin D deficiency in adult male Sprague-Dawley rats will influence the depression-like and the anxiety-like behavior by increasing the oxidative stress level.

Animals and Housing

A total of 40 Sprague-Dawley rats were used in our experiment. The rats were randomly assigned to either a control group (which received normal rodents' food with supplemented vitamin D) or in a vitamin D deficient diet group (which received only normal rodents' food without vitamin D supplementation) for 6 weeks.

Forced swim test

The procedure of the forced swim test was conducted in similarity with the method used in the original study by Porsolt (13). The rats were placed one at a time in a glass cylinders (with a diameter of 25 cm) containing 30 centimeters of water. The water was kept at room temperature. After 15 minutes in the water, the rats were then removed from the cylinder and returned to their home cages. After 24 hours, the rats were again tested in the cylinder. The total duration of immobility of an animal was measured by a clinician during a 5-minute test and was considered as the depression-like behavior. The experimenter started the stopwatch when the animal remained indifferently floating in the cylinder's water.

Open field test

The open field test was built as a square plastic box. The open field area was split in two, a central zone and a surrounding border zone. The animals were positioned into the margin of the plastic box and were allowed to explore the open field test for exactly 10 minutes before being taken out by the investigator. The time spent in the central zone was recorded with a stop watch as measure of anxiety like behavior.

Biochemical measurements:

The measurement of SOD level in the temporal lobe was determined through a precise kit from Sigma Aldrich. The initial scores were normalized by mg protein and are estimated as enzymatic activity units. We used a well-known and validated method by Kakar et al. (14). The data is presented in units/mg protein.

RESULTS AND DISCUSSIONS

Superoxide dismutase

Our One Way ANOVA showed that there was a statistically significant difference ($p<0.001$) among the rats which were randomly assigned to the control group and the rats assigned in the second group, which received the vitamin D deficient diet for 6 weeks in regards to the antioxidant enzyme - superoxide dismutase $F(1, 38) = 58.562$.

The reported significantly differences among the two batches of rats were in the sense that the rats which were fed the vitamin D deficient diet for 6 weeks presented a lower level of SOD ($\overline{x}$=4.7 U/mg protein, s^2= 1.08)

compared to the control rats ($\bar{x}$=7.7 U/mg protein, s^2 = 1.38) (Figure 1).

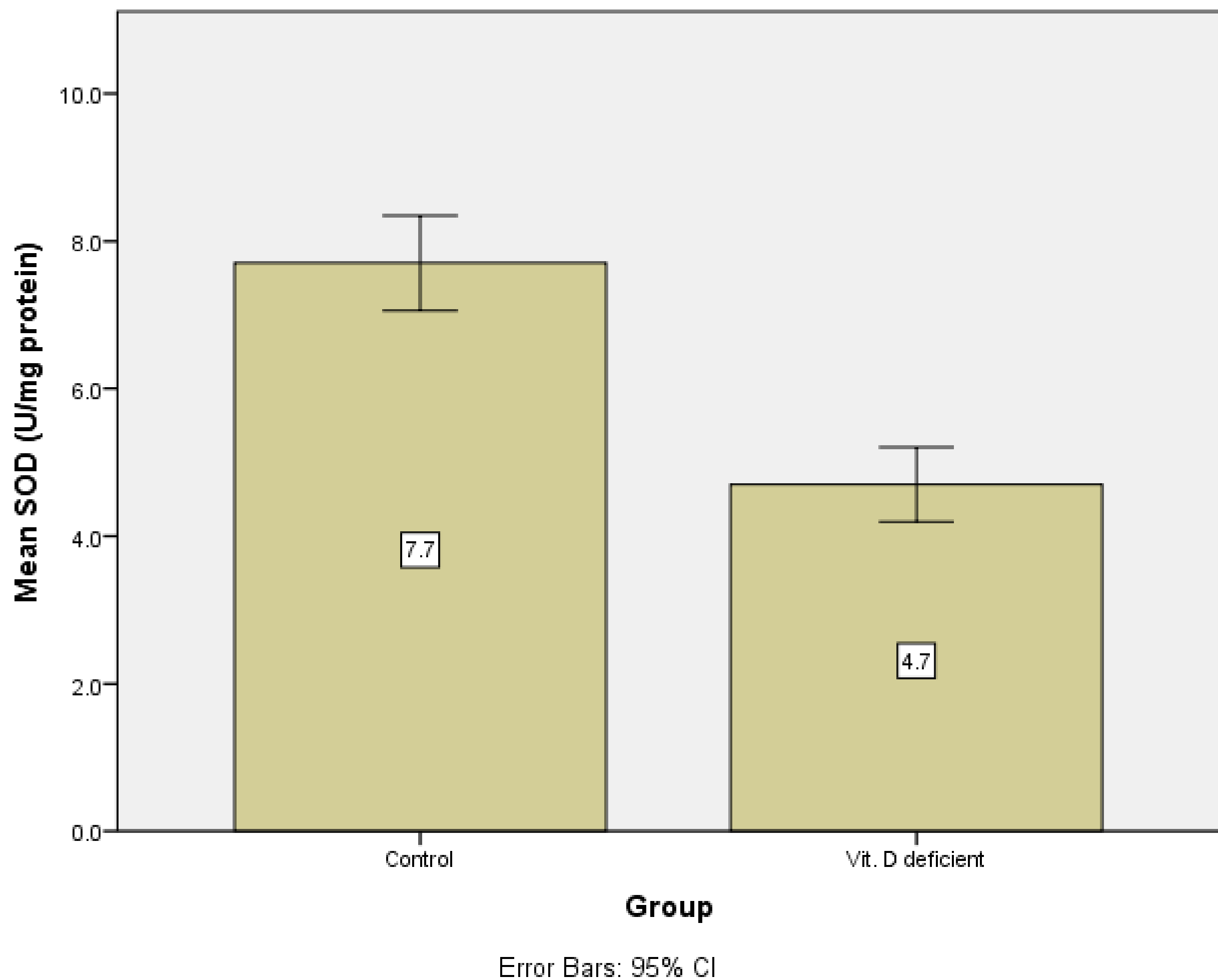

Fig 1. The mean SOD (measured in U/mg protein) for both the control group and the Vitamin D deficient group

Depression-like behavior

The results from the animal model of depression indicated that the difference between the rats in the control group and the rats in the Vitamin D deficient diet group was statistically significant ($p<0.001$) in regards to the depression like behavior (duration of immobility), F (1, 38) = 83.674.

The discovered significantly differences between the two groups of animals were in the sense that the rats which received the vitamin D deficient diet for 6 weeks spent significantly more time floating motionless ($\bar{x}$=107.95 sec, s^2= 5.236) compared to the control rats ($\bar{x}$=84.65 sec, s^2 = 10.117) (Figure 2).

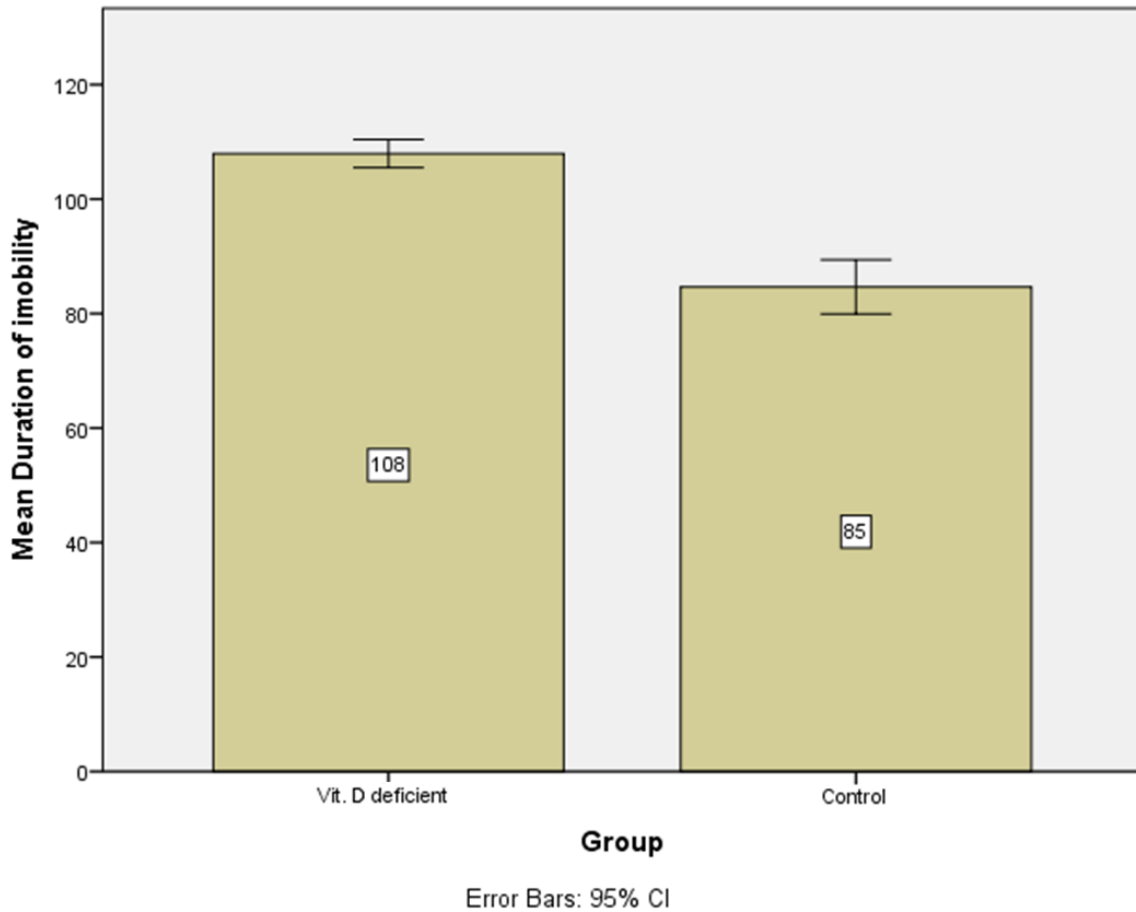

Fig 2. The duration of immobility (measured in seconds) for both the control group and the Vitamin D deficient group

Anxiety like behavior

The analysis of variance of our data demonstrated that there was a statistically significant difference ($p < 0.001$) between the rats which received the normal diet (control group) and the rats which received the vitamin D deficient diet (vit. D deficient group) in regards to the seconds they scouting the central area of the Open Field Test, $F (1, 38) = 17.375$.

The significantly variation found by our analysis were the following: the animals in the control group spent more time scouting the center of the Open Test Field ($\bar{x}$=80.60 sec, $s^2 = 17.593$) in comparison with the rodents which were lacking in vitamin D ($\bar{x}$=58.20 sec, $s^2 = 16.382$) (Figure 3).

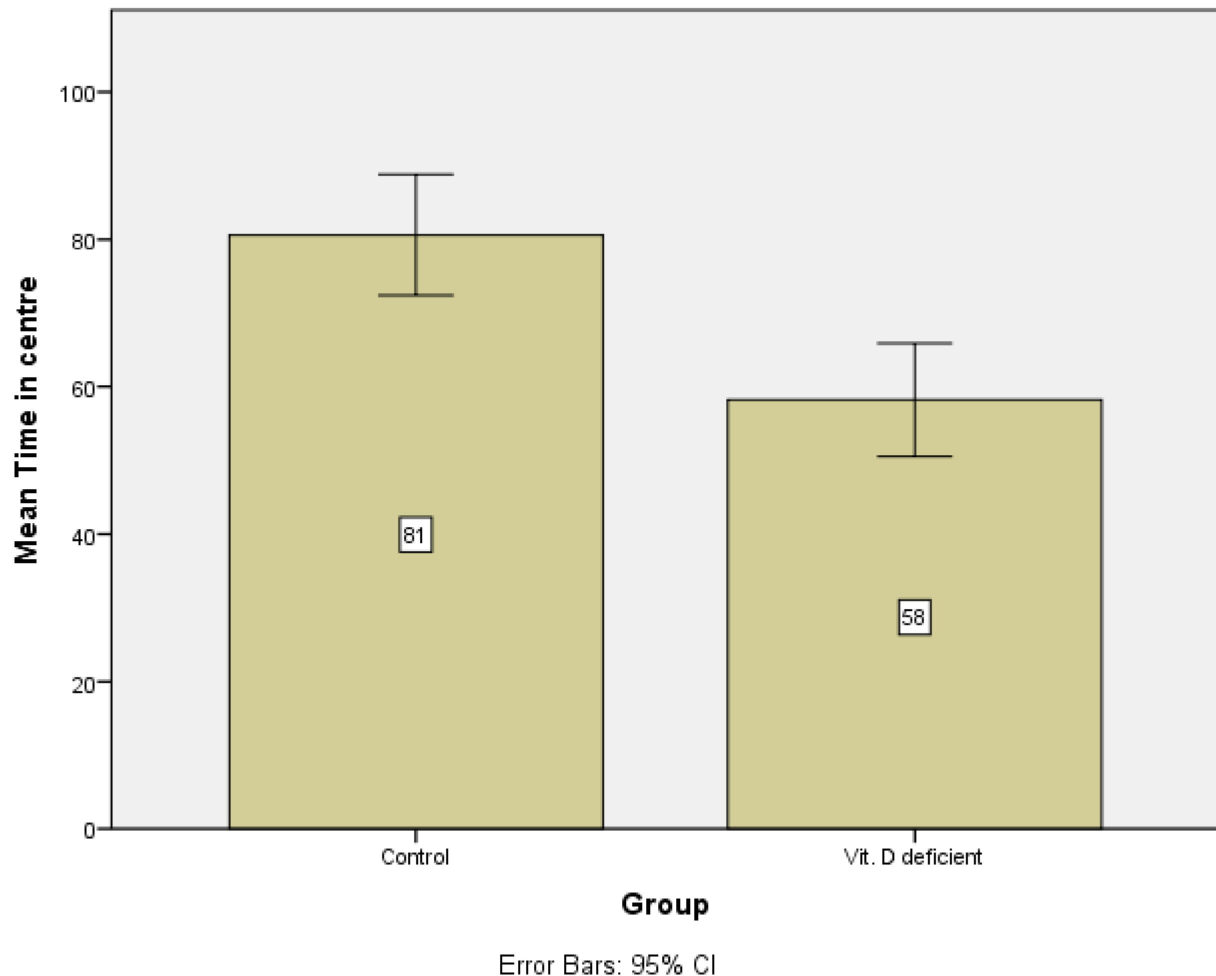

Fig 3. The time in center in the Open Field test (measured in seconds) for both the control group and the Vitamin D deficient group

Although there are many studies that examine the connection between vitamin D deficiency and various psychiatric disorders, there is still no consensus on the possible role of vitamin D deficiency in rats' anxiety and depression–like behavior.

Therefore, at the beginning of our study we hypothesized that rats which were fed with a vitamin D deficient diet will display a higher duration of depressive-like symptoms (measured by the duration of immobility in the forced swim model) and a lower duration of anxiety-like behavior (measured by the time the rodent spends in the center of the Open Field test) compared to animals from the control group. After we analyzed the data in SPSS, our hypothesis was confirmed. Specifically, the animals from the control group spent less time on average being immobile (84.65 sec) compared to rats from the vitamin D deficient group (107.95 sec). Furthermore, our statistical analysis demonstrated that the observed difference between the two experimental groups in regards to the depression like behavior was significant from a statistical point of view ($p<0.001$).

Furthermore, regarding the anxiety-like behavior, our statistical analysis showed that vitamin D deficiency intensifies the observed anxiety-like behavior in rats. The findings of our work support the idea that a correlation between low vitamin D levels and anxiety-related behavior exists in rats. Specifically,

our experimental design consisted of mean comparisons between a control group and an experimental group regarding the duration of anxiety- like behavior in the open field test. The distinction between the control group and the experimental group was made by the diet of the rodents. The control group was fed a normal rodents' diet, while the other group was fed a diet low in vitamin D. The ANOVA revealed that the animals from the control group spent significantly more time examining the center of the open field test in comparison with the vitamin D deficient rats. The findings are not surprising and are in concordance with those found in the literature. The data available in the literature demonstrates that vitamin D deficiency may truly increase anxiety- like behaviors in rats (15, 16).

Furthermore, our results regarding the possible connection between vitamin D deficiency and depression in animal models are also similar with those found in the specialty literature. For example, in one study that fed rats a vitamin D-deficient diet from weaning, presented the results according to which deficient in vitamin D rats showed increased behaviors of anxiety or depression (9). Furthermore, the impact of vitamin D deficient diet in adult rats has recently been studied on a number of various other behavioral domains. For example, in another study, it was showed that a deficient diet in vitamin D increased locomotion function in the open field test. In addition, the vitamin D deficient rats spent more time on the open arms of an elevated plus maze, and had enhanced responses to various negative stimuli, such as high voltage electric shock, increased heat in the hot plate model and high frequency noises when compared to control rats (10).

As a primary biochemical mechanism behind the discovered connection between vitamin D deficiency and anxiety/depression, our experimental group highlights the likely role that oxidative stress may have in this correlation. Therefore, in our experimental design we measured the level of an important antioxidant enzyme, superoxide dismutase (SOD) and its association with vitamin D deficiency. The results of our study demonstrate that the diet low in vitamin D decreased the level of SOD in the brain of the rats, therefore increasing the oxidative stress. Accordingly, these findings suggest that the observed increase in the anxiety and depression like behavior results from the lower levels of vitamin D found in the rats' diet. This deficiency inflates oxidative stress by decreasing the level of SOD.

Other biochemical mechanisms of the two demonstrated correlations in our study suggest that these findings might be explained by the physiological consequences that are observed after various GABAergic neurotransmitters are pharmacological adjusted (17). Furthermore, the available literature also shows that rats deficient in vitamin D present significantly lower percentages of glutamate and glutamine along with higher percentages of GABA and glycine, in their encephalon circulation (10). In addition, in other experiments using the elevated plus maze, vitamin D -deficient rats showed improved reactions and accessed the longer arms of the maze in a higher percentage (18). In the same study, the vitamin D-deficient rats presented visible alterations in various neurotransmitter levels, with the more pronounced growth observed in GABA levels. Another significant increase was also observed in the dihydroxyphenylacetic - homovanillic acid ratio (19).

CONCLUSIONS

Overall, our results clearly demonstrate that feeding rats a diet deficient in vitamin D for 6 weeks is associated with an increase in observed anxiety and depression-like behaviors. This association is explained by the low level of SOD we found in the vitamin D deficient rats. This finding suggests that the negative influence that low levels of vitamin D have on the depression and anxiety symptoms is related to high levels of oxidative stress. Our results accompanied by those found in the literature suggest that vitamin D deficiency in rats is correlated with a visible increase in depression and anxiety. This correlation is associated with low levels of SOD, high levels of oxidative stress and specific disorders in brain neurochemistry.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Deluca, H.F., Overview of general physiologic features and functions of vitamin D, Am. J. Clin. Nutr., 80(6), 2004, 1689–1696.

2. Grant, W.B., Epidemiology of disease risks in relation to vitamin D insufficiency, Prog. Biophys. Mol. Biol., 92, 2006, 65–79.

3. Wolpowitz, D., Gilchrest, B.A., The vitamin D questions: how much do you need and how should you get it?, J Am Acad Dermatol., 54, 2006, 301–317.

4. Holick, M.F., The use and interpretation of assays for vitamin D and its metabolites, J Nutr., 120(l), 1990, 1464–1469.

5. Melamed M.L., Michos, E.D., Post, W., Astor, B., 25-hydroxyvitamin D levels and the risk of mortality in the general population, Arch Intern Med., 168, 2008, 1629–37.

6. Webb, A.R., Who, what, where and when—Influences on cutaneous vitamin D synthesis, Prog. Biophys. Mol. Biol., 92, 2006, 17–25.

7. Turner, K.M., Young, J.W., Mcgrath, J.J., Eyles, D.W., Burne, T.H., Cognitive performance and response inhibition in developmentally vitamin D (DVD)- deficient rats, Behav. Brain. Res., 242, 2013, 47–53.

8. Pochwat, B., Sowa-Kucma, M., Kotarska, K., Misztak, P., Nowak, G., Antidepressant-like activity of magnesium in the olfactory bulbectomy model is associated with the AMPA/BDNF pathway Psychopharmacology, 232, 2015, 355-67.

9. Singewald, N., Sinner, C., Hetzenauer, A., Sartori, S.B., Murck, H., Magnesium deficient diet alters depression- and anxiety-related behavior in mice e influence of desipramine and Hypericum perforatum extract, Neuropharmacology 47, 2004, 1189-1197.

10. Muroyama, A., Inaka, M., Matsushima, H., Sugino, H., Marunaka, Y., Mitsumoto, Y., Enhanced susceptibility to MPTP neurotoxicity in magnesium-deficient C57BL/6N mice, Neurosci. Res., 63, 2009, 72-75.

11. Holme, S., Abbasi, B., Su, C., Singh, M., Cunningham, R.L., Oxidative stress defines the neuroprotective or neurotoxic properties of androgens in immortalized female rat dopaminergic neuronal cells, Endocrinology, 154, 2013, 4281–4292.

12. Tseng, A.H., Shieh, S.S., Wang, D.L., SIRT3 deacetylates FOXO3 to protect mitochondria against oxidative damage, Free Radic. Biol. Med., 63, 2013, 222–234.

13. Altemus, K.L., Finger, S., Wolf, C., Birge, S.J., Behavioral correlates of vitamin D deficiency, Physiol. Behav, 39, 1987, 435–440.

14. Kakkar, P., Das, B., Viswanathan, P.N., A modified spectrophotometric assay of superoxide dismutase, Indian J. Biochem. Biophys., 21, 1984, 130–132.

15. Groves, N.J., Kesby, J.P., Eyles, D.W., Mcgrath, J.J., Mackay-Sim, A., Adult vitamin D deficiency leads to behavioural and brain neurochemical alterations in C57BL/6J and BALB/c mice, Behav. Brain. Res., 241, 2013, 120–131.

16. Lalonde, R., Strazielle, C., Relations between open-field, elevated plus-maze, and emergence tests in C57BL/6J and BALB/c mice injected with GABA- and 5HT-anxiolytic agents, Fundam. Clin. Pharmacol., 24, 2010, 365–376.

17. Kash, S.F., Tecott, L.H., Hodge, C., Baekkeskov, S., Increased anxiety and altered responses to anxiolytics in mice deficient in the 65-kDa isoform of glutamic acid decarboxylase, Proc. Natl. Acad. Sci. U S A, 96, 1999, 1698–1703.
18. Pawlak, C.R., Karrenbauer, B.D., Schneider, P., Ho, Y.J., The elevated plus-maze test: differential psychopharmacology of anxiety-related behavior, Emotion Rev., 4, 2012, 98–115.
19. Carobrez, A.P., Bertoglio, L.J., Ethological and temporal analyses of anxiety-like behavior: the elevated plus-maze model 20 years on, Neurosci. Biobehav. Rev., 29, 2005, 1193–205.

Correspondence

Constantin Truş,
Department of Morphological and Functional Sciences, Faculty of Medicine, Dunarea de Jos University, Galati, Romania, dilconstantin@yahoo.com

Submission: 10 dec 2020
Acceptance: 12 feb 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Humanistic Contributions

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

Amphetamine-fuelled manic fornication. The case of Dean Cassady

Amir Jalbă, Adrian Brunello, Bogdan C. S. Pîrvu

Armin-Constantin Jalbă – MD., Psychiatry Resident, “Socola Institute of Psychiatry”, Iași, Romania
Adrian Brunello – PhD. Associate Professor, “Apollonia” University of Iași, Romania
Bogdan C. S. Pîrvu – MD., PhD. Clinical Psychiatrist, “Mavromati” Emergency Hospital, Botoșani, Romania

ABSTRACT
We first provide a brief literature survey of amphetamine consumption in connection with sexual practices, and then focus on the special case of Dean Cassady who, while dying in his early forties, did not have the time to get into amphetamine psychosis, but had time enough to experience some fully-fledged mania. We will be exploring, rather more specifically, his increase in goal-directed activity (B6) coming complete with his risk-taking behaviour (B7), the emblematic beat character thus rising to mythological dimensions in what concerns his speed-fuelled fornication.

KEY WORDS:
Amphetamine consumption, Dean Cassady, beat, manic episodes, fornication.

A BRIEF LITERATURE SURVEY

The story of a 1970s ex-punkette (reproduced by the *Deviants* lead singer Mick Farren) goes that she and that night’s “guy” were regular “speedfreaks” and, before their sex game began, he was “high as a kite” and she wasn’t “much better” – what with “some kind of white powder” and lots of “vodka, first with juice and then with shots on their own.” It thus took him “quite a while” to get “a hard-on,” but once the erection was there it stayed. He just “couldn’t come,” but “with the relentless determination of a goddamned speedfreak” he kept going and going, no matter what, killing him or her. At first “it was a turn-on” that he was able to keep up so steadily, but in time her frustration soared to the skies and she got this resentment she was “a little more than a means to an end” and perhaps she wasn’t doing enough to “help him” – also, this “paranoia and anxiety” that all of this was “her own fault.” She wrapped “her legs around him” and did her best, “changing position, playing with his balls,

saying all kinds of dirty stuff to him," simply "to get him off" or, "maybe to get him off her" – with "the whole business" becoming "a nightmare," the walls "closing in," the guy "turning into a thing, all frustration and gritted teeth," "slamming into her, and slamming into her." "It was insanity!" She was "dry," she was "sore," and she was getting "damned fed up with it all," now using "all her strength to push him off her," himself looking "fucking crazy," making "this weird noise somewhere between a sigh and groan," groaning and rolling "over on his side with his back to her," jerking himself off, "angry, almost violent," herself grabbing her clothes, leaving and hiding in the bathroom. Her unhappiness was still there in a few days' time, in the "counter-story," with a boy "speeding out of his mind," and meaning "to fuck so hard," only that "he just couldn't get it up" though she again did her best "sucking him and playing with his damn thing forever." It seems that "having sex on speed" is pretty much "impersonal," the guy wishing "to stick his dick in the woman," never giving "a damn otherwise": "it's always about you, and the other person is just there for the ride" or, to put it short, it's the narcissist's way! (1)

A study of 29 Stockholm convicts, with 27 having had sexual activity while on amphetamine, with 23 reporting to have been more sexually excited, with 21 reporting to have experienced intensified orgasms, with 23 reporting to have had prolonged intercourse, with 6 having more than 10 partners during the last 3 years, with only 3 having had a condom during their last intercourse with a casual partner (2); another study of 115 amphetamine users, with 51% of the male sample and 20% of the female sample reporting to have had sex as their preferred activity while actually on amphetamine (3); still another study of 301 regular amphetamine users (2/3 of the subjects injecting the drug) with the subjects having been associated with paid sex, quite a number of sexual partners and higher levels of psychopathology, while the male cohort was 1.8 times more likely to do so (4) – all of the three studies were to confirm the ex-punkette's story in broad lines, that one could basically find gender differences in the physiological and psychological approach to sex-on-amphetamine.

A 35-voiced interview (5) was to go still further, the heterogeneous group of interviewers revealing differences in the impact of amphetamine that are provided by "personal experience and culturally-determined expectations." The drug was expected to "increase sexual desire and enhance sexual experience" and, indeed, at least at the beginning it seemed to facilitate "sexual experimentation" in its positive dimensions but gradually it changed into something like a succession of manic episodes, with "marathon sex being an important component."

To cut a long story short, "even when one manipulates the sexual act with amphetamine," the strong individuality going into human sexuality still remains. The overall experience of "mixing amphetamine and sex," while changing in "a negative direction over time," appears to be a result of "the interaction between amphetamine, the relational setting and the sexual script of the individual." The story to come will be a good case in point.

THE CASE OF DEAN CASSADY

To Neal Cassady sex was "the one and only holy and important thing in life." Now he had just dispatched his guest to the kitchen, supposedly to make coffee, but actually for him to proceed with his "love problems." (R: 4) It was not that he hardly respected his

guest, or that he didn't care "one way or the other" especially when "eager for bread and love," but "so long's [he] could get that lil ole gal with that lil sumpin down there tween her legs, boy" … (R:10) For some time now, in Denver, he was "making love to two girls at the same time, they being [LuAnne], his first wife, who waited for him in a hotel room, and [Carolyn], a new girl who waited for him in a hotel room." Between the two of them he rushed to his friends for their "unfinished business," getting benzedrine and communicating "with absolute honesty and absolute completeness everything" on their minds, while sitting on the bed, "crosslegged facing each other." (R: 38) The schedule, because there was "always a schedule" in Neal's life, was this: while [Allen Ginsberg] was coming off work, changing and dressing, he was balling LuAnne "at the hotel." "At one sharp" he rushed from LuAnne to Carolyn – "of course neither one of them [knew] what's going on" – and banged her once again, giving Allen "time to arrive at one-thirty." Then he came out with Allen – "first he [had] to beg with Carolyn, [who'd] already started hating [Allen]" – and they came here "to talk till six," no later because he was "pressed for time." Then "at six" he went back to LuAnne because she insisted on banging. She said she loved him, and so did Carolyn, and he couldn't help doing her favours. How did he ever come on her, for God's sake? One of his friends, a poolhall boy, found her in a bar and took her to a hotel; "pride taking over his sense, he invited the whole gang to come up and see her." Now, "everybody sat around talking with her," Neal did "nothing but look out the window." Then when everybody left, "he merely looked at her," pointed at his wrist, made the sign 'four' ("meaning he'd be back at four"), and went out. At three "the door was locked to the poolhall boy, at four it was opened to Neal." The two of them were now haggling in a rooming-house and, when Jack Kerouac knocked, he opened the door "stark naked," Carolyn "on the bed, one beautiful creamy thigh covered with black lace," looking up with "mild wonder." "Why, Jack!" said Neal – yes, of course, you've arrived – you old sonumbitch you finally got on that old road. Well, now, look here – we must – yes, yes, at once – we must, we really must!" And swirling on Carolyn, "[Jack] is here, this is my old buddy from New York, this is his first night in Denver and it's absolutely necessary for me to take him out and fix him up with a girl." It was "exactly one-fourteen," and he promised he'd be back at "exactly three-fourteen," for their "hour of reverie together, real sweet reverie, darling." Remember "not three but three-fourteen." Are we straight in the deepest and most wonderful depths of our souls, dear darling?" Off the two guys rushed into the night, Allen joining them in an alley. "Jack," said Neal, "I have just the girl waiting for you at this very minute – if she's off duty" … "a waitress, fine chick, slightly hung-up on a few sexual difficulties, which I've tried to straighten up, and I think you can manage" while "I've just got to get into her sister Mary tonight." (R:40) He did it, and when "three o'clock came, he rushed off for his hour of reverie" with Carolyn. As for the date with LuAnne, he insisted and found her in a hotel, "up in Denver." They had "ten hours of wild lovemaking," and decided on the spot to stick, 'cause she was "the only girl he ever really loved." He was "sick with regret when he saw her face again, and, as of yore, he pleaded and begged at her knees for the joy of her being." And "she understood him; she stroked his hair; she knew he was mad." (R: 101) A few hours later, up in town, "he leaped off and rushed to see a colored girl that just then passed outside the station." "Dig her," he shouted, standing with "limp finger pointed, fingering himself with a goofy smile," "that little gone black lovely. Ah! Hmm!" (R: 104)

Still later he stood "googing around with a towel" and necking with LuAnne "among the pots and pans," until they withdrew "to a dark corner in the pantry" … (R: 106) All through the New Year's weekend, going on for "three days and three nights," Neal was having "his kicks"; he put on "a jazz record," grabbed LuAnne, held her tight and "bounced against her with the beat of the music," while she was bouncing "right back" in "a real love dance," in the middle of "a huge gang." (R: 113) On the way to New Orleans, in the car Neal suddenly became tender, asking Jack and LuAnne to admit that "everything" was fine and there was "no need in the world to worry," and in fact they should realize they were not "really worried about anything" as long as they were "all together" – all the while "steering while kissing and fooling around" with LuAnne. "Oh man, what kicks!" he yelled, "Now honey, listen really, you know that I'm hotrock capable of everything at the same time and I have unlimited energy – now in San Francisco we must go on living together. I know just the place for you – at the end of the regular chain-gang run – I'll be home just a cut-hair less than every two days and for twelve hours, darling. Meanwhile I'll go right on living [with my wife] like nothin, see, she won't know. We can work it, we've done it before." (R: 122) But at dusk, while coming into "the humming streets of New Orleans," he yelled with his face out the window, sniffing. "Ah! God! Life!" He darted the car and looked "in every direction for girls." "Oh, I love, love, love women! I think women are wonderful! I love women!" He spat "out the window," groaned and clutched his head. Great beads of sweat fell from his forehead "from pure excitement and exhaustion." (R: 127) He giggled "maniacally," rubbed his fly, stuck his finger in LuAnne's dress, slurped up her knee, frothed at the mouth," and said "Darling, you know and I know that everything is straight between us at last beyond the furthest abstract definition in metaphysical terms or any terms you want to specify or sweetly impose or harken back …" (R:141) She was watching him "as she had watched him clear across the country and back, out of the corner of her eye" – "with a sullen, sad air," as if "she wanted to cut off his head and hide it in her closet, an envious and rueful love of him so amazingly himself, all raging and sniffy and crazy-wayed," "a love she knew would never bear fruit" because "she knew he was too mad." Neal, on the other hand, was positive she was "a whore" and "a pathological liar." (R: 148) And "the whore ran off" at long last (R: 158), leaving him with a sense of freedom, though. He lost no time and talked "a waitress in a luncheonette" into driving in his Cadillac and made it with her, "in nothing flat, in a parking lot in broad daylight." (R: 204) And he made it with a teenager who "blushed and blushed" (R: 206), with "a strange middle-aged colored woman" "flapping her hips" and butt (R: 216), with "that woman in that window up there, just looking down with her big breasts hanging from her nightgown, big wide eyes" (R: 217) …with this and that woman, in a never-ending array.

DISCUSSIONS AND CONCLUSIONS

We now feel compelled to ask the legitimate question about the "true-to-life" quality of Neal Cassady's sexual exploits. If they are "there" as mere products of Jack Kerouac's imagination, are they worth reproducing? Our answer is that even so, even if products of fantasy, they have their significant value as psychopathological documents – simply because the artistic personality is not

necessarily less trustworthy than the medical personality. On the contrary, free as they are from factual constraints, writers sometimes deliver their cases in their textbook version, i.e. by the book.

Any doubts aside though, and some exaggerations aside to boot, the Neal Cassady in *On the road* seems to be the next best thing to the real Neal Cassady who sent Jack Kerouac, in December 1950, a long letter describing his short-time affair with Cherry Mary, how the mother of the woman for whom she was baby-sitting showed up, and he was forced to hide in the bathroom, "nude, no clothes, and all exits blocked," how Mary tried to divert the mother while he discovered his task was to, "as quietly as a mouse," remove "all the yearslong collection of rich people's bath knickknacks that blocked the room's only window," then "impossible though it looked," climb "up the tub to it and with a fingernail pry loose the outside screen" – the window having "four panes of glass 6 inches long and 4 inches wide," forming a "rectangle of about 12 inches or 13 inches high and 8 inches or 9 inches across, difficult to squeeze through at best" but, when opened, splitting "the panes of glass down the middle" and making "two windows," simply because it was "hooked to its frame by a single metal bar in direct centre!" And then he could hardly reach to work on the screen – since the window opened outward – but he pushed and made "a hellova noise," splitting the screen "enough to open the window." Now "the impossible compressing" of his own frame "for the squeeze." He thought if he could get his head through, he could make it; he was just able to, "by bending the tough metal bar" … and of course, he almost tore off his "pride-and-joy" as he wiggled out "into the cold November air… ." (Charters 1991: XVII)

The conclusion then comes forth in a rather straightforward manner. Neal Cassady's sex exploits might well be read to the letter, and they are indeed indicative of his manic fornication, also responsible for his risk-taking behaviour, fuelled by the amphetamine consumption.

ACKNOWLEDGEMENTS AND DISCLOSURES
The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. Farren M (2010) Speed-Speed-Speedfreak. London: Feral House.
2. Köll KI (1992) Effects of amphetamine on sexual behaviour of male i.v. users in Stockholm. AIDS Education and Prevention 4(1): 6-17.
3. Köll KI, Nilsome A (1995) Preference for sex on amphetamine: a marker for HIV risk behaviour among male intravenous amphetamine users in Stockholm. AIDS Care 7(2): 171-188.
4. Darke S, Ross J, Cohen J, Hando J, Hall W (1995) Injecting and sexual risk-taking behaviour among regular amphetamine users. AIDS Care 7(1): 19-26.
5. Skörner A, Svensson B (2017) Amphetamine use and sexual practices. Nordic Studies on Alcohol and Drugs. 30(5): 403-423.
6. Kerouac J (1955/1991) *On the Road.* London: Penguin (qtd. as R).
7. Charters A (1991) Introduction to *On the Road.* London: Penguin. VII-XIX.

Correspondence

Adrian Brunello,
PhD. Associate Professor, "Apollonia" University of Iași, Romania,
adrian_brunello@yahoo.com

Submission: 08 feb 2021
Acceptance: 10 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

A new beginning, a great challenge: metamodern psychology* (Part I)

Mihai Şleahtiţchi

Mihai Şleahtiţchi - Doctor habilitat (*docteur d'État*) in Psychology, PhD in Paedagogy, Professor, Republic of Moldova

ABSTRACT

In metamodernity, the psychological science takes on a new outline, tending to adapt itself to the spirit of an era that counts on pragmatism and involvement, on the ability to decipher people or events based on data with a direct output to reality, on the idea of reconstructing the ego through inter-relational communication, on the ability to see things in all their depth and on the desire to establish an existential order in which all situations would actually express a unitary logic. Although it significantly distances itself from the experience accumulated in the postmodern era, the metamodern psychological science, given that metamodernity represents an extension of modernity and postmodernity, is not completely isolated from what happened earlier. However, under the new historical conditions, what has been earlier stated is, to a certain extent, preserved, such as: the existence of universal truths, the diversity and competition among paradigms, the presence of monolithic existential factors, the importance of socio-cultural norms, of economic determinations and of arbitrary linguistic conventions, etc. In this way, the metamodern psychological science reproduces a complex epistemological construction, whose originality is perfectly tuned with traditionality, while discontinuity - with the spirit of continuity, and classicity - with plenary anchoring in the contempory epoch.

KEY WORDS:
Psychology, modernity, postmodernity, metamodernity, metamodern psychology.

According to a perspective approached in the interpretative outlook of several specialists from socio-humanistic domains (1), metamodernity is the expression of some trend of ideas and attitudes or – more comprehensively – of an extremely feverish historical period, viewed as a ”reaction to postmodernity”, annoncing ”a new label for what is to come after postmodernity”, or as a modality of stating ”the enlargement and challenge of postmodernity” (2). Such an ideological-temporal construction – offering,

as one can observe, not only a unique interpretative path, but also the breath of a historical moment conferring a highly unusual direction of the issues of human existence (3) – was born against the background of the essential transformations manifested, in latest decades, at both cultural and/ or political, and technical-economic levels (4). In most of the cases, sheding light on the envisaged types of transformations, the already mentioned specialists refer to mondialization (a phenomenon according to which ”the events produced in some part of the terrestrial globe come to have more and more ample repercussions upon the societies and issues from other parts of the world”, to ecological disasters, to the battle for resources, to great financial crises, political extremism, the post-truth (if considering the circumstances in which ”the objective facts are less influential for orienting the public opinion than for restoring to emotion and to personal beliefs”), to the digital revolution, to the fatigue induced by excessive formalism/ bureaucracy, the psychic terror induced by advertisments, the hybrid wars, viral pandemics, the identitary crises, the perspective of multiethnic societies, trans-nationalism, brain exode, the immense migration movements, the demographic decline, the protests organized by means of socialization platforms and/ or the general crisis of neoliberal capitalism (a labour market the more precarious the more dynamic it is). The individual contractor, they say, does not represent today, anymore, the minimal unit of a culture centered on a doctrine permitting a limited juridical and economic intervention of the state. Instead, what counts is the ever increasing importance of temporary teams and projects (namely, shifting from the ”businessman” towards the ”contractor artist”).

Usually, the literature of the field – mainly the culturally- and/ or the philosophically-centered one –, assigns to metamodernity a *capacity of feeling* highly oriented towards some sort of ”pragmatic idealism” (5). The asssertions made in such contexts state that, for now, ”the postmodern culture of relativism” is destined to fail, being replaced by a post-ideological condition *in which stress is laid on involvement and dissimulation.* Consequently, ”the return of romantic sensibility” is viewed as a key characteristic of metamodernity. In other words, the epoch under discussion is expected to produce ”a romantic reaction to such a moment of full crisis”.

By its specific characteristics, metamodernity provides a scheme for a ”mental comprehension” of people and/ or events, resorting no more to ”reading of the socio-cultural norms, economic determinations or arbitrary linguistic conventions”, but, instead, on ”the wholly tangible, sensorial, non-conceptual dimension of reality”. Worth mentioning is that *the new philosphy of materiality* brings about another, equally influential turn – the *affective one*. In this respect, the thesis of B. Massumi, well-known Canadian philosopher and sociologist, professor at the University of Montreal, is highly illustrative: *if postmodernity is characterized by minimization of the importance of the affective condition, then metamodernity assumes the return of affectiveness associated to its social events* (6).

According to this idea, mention will be made in the following that the cultural practices of metamodernity ”map out a new meaning of oneself and of subjectivity”. The type of sincerity imposed by such practices assumes *reconstruction of oneself based on communication.* Accordingly, identity is

defined ”from a post-positivistic perspective and only within a certain community”. As a matter of fact, as many researchers of the field are inclined to think – such as, for example, T. Vermeulen and R. Van den Akker (7) – the emotional logic of the metamodern epoch is closely related to the *reappearance of profoundness.* If, they say, *the modern and the postmodern people digged up the depth starting from the surface*, then *the metamodern ones are covering the surfaces with profoundness*. In other words, *profoundness is again dragged along the surface*. And one more thing: *the metamodern epoch creates the sensation of another existential order,* which means that ”the common things of everyday are part of a unitary logic”. Or, under such circumstances, anyone should keep in mind that ”everything is mediated, while also considering that the images should not be necessarily reduced to the idea of superficiality” (8).

Leaving aside modernity, known as having exalted the power of reason: *I think, therefore I am*, and also postmodernity which, ”in its fragmentary deviation and with the identitary tautology which it animates in an autistic manner”, lays stress on egocentric pragmatism: *I am, therefore I am*, metamodernity advances – as K. Evans used to observe (9) – around the relational pattern *You are, therefore I am*. Consequently, the ”new era” to come states that ”development of oneself no longer involves an objectual manner (namely an as possibly as balanced ”arrangement” of a honorable identity, through instrumental turning to good account of one’s personal resources), but a relational opening, in which which does really matter – and what does remain, indeed, is the richness and quality of the relations with the ”other important ones”. Open to transdisciplinarity, centered upon interconnection, interdependency and intersubjectivity as resources for identitary modelling, this new era ”will defy the cynicism, greed and violence which characterized, to a too high extent, the modern and postmodern times”.

The fact that metamodernity (manifested as early as the end of the first decade of the XXIst century), comes after postmodernity (initiatied in the 6th decade of the last century and continuing until the beginning of the 2nd decade of our century), and, even more important, after modernity (installed on the ruins of the Middle Age, continuing until the middle of the XXth century), does not necessarily mean that among these three epochs – essentially, highly different one from another –, no connection would be possible. The literature of the field provides numerous ideas according to which modernity actually expresses ”an extension and a challenge for modernity and postmodernity” or, more precisely, ”a joint reconsideration of the modern and postmodern methods for approaching topics much distanced from the domain or interest of modernists and postmodernists themselves”. In the opinion of several specialists – such as, for example, T.Vermeulen, R. Van den Akker and/ or K. Levin (10) – a general view upon metamodernity will suffice for reaching the conclusion that it is ceaselessly oscillating between modernity and postmodernity, ”as a pendulum balancing between different poles”. In such a case, prefix ”meta-” does not refer to a ”reflecting position” or to a ”repeated ruminancy”, but to Platon’s *Metaxia* which, as generally known, indicates *a movement among opposed positions, as well as beyond them.* Against such an interpretative background, metamodernity appears as ”a structure of feeling” oscillating between *what had been and what it is, between good and evil, desirable and indesirable.* More precisely, such an oscillation ”should include certitudes

and doubts, hope and melancholy, sincerity and irony, feeling and apathy, personal and impersonal views, technicism and technology".

As a matter of fact, if – as already demonstrated – the modern epoch is characterized by its tendency of *releasing* thinking from religious dogma, of *outlining* a world vision based on the information provided by scientific discoveres, of *turning to good account* the idea stating the existence of universal truths, of *promoting* the freedom of spirit and of reason, of *substantiating* the concept of "monolithical existentialistic factors" or of *proposing* governing methods centered on the idea of equality among people, while the postmodern one – by *considering* the process of knowledge from the perspective of the factors acting outside individuals (place, time, social position, etc.), by *minimizing* the importance of the affective-related states, by *observing* the postulate according to which "the secrets of truth, of ethics or of beauty" have roots "in anything but else than individual perception or group constructions", by *avoiding*, when confronted with various phenomena and circumstances, to lay stress on a minute scientific investigation of the general and universal traits, bringing to light only the local, singular ori specific ones, by *proclaiming* the diversity and competition among paradigms, the co-existence of heterogeneous elements, recognizing the presence of a large variety of social interactions, of philosophical knowledge and scientific concepts, and by *opting* for "destroying the binary thinking of the «or/ or» type and its replacement with «attitudes of thermal thinking»" (when they are equivalent not to two, but to three outsets), there results that, in metamodernity, everything or almost everything indicated how much *pragmatism*, *involvement*, *affectivity*, *the capacity of deciphering the manner in which people act and/ or events occur, in direct connection with reality*, *the paradigm of one's reconstruction through inter-relational communication*, *the ability to grasp the deep essence of things* and/ or *the awarness on an existential order in which all – important or less important, common or less common – things express a unitary logic.* As one may observe, the discrepancy is not only obvious, it is highly significant. However, while largely distancing from postmodernity and, the more so, from modernity, once it represents *an extension and challenge for modernity and postmodernity,* metamodernity gets isolated neither from the former nor from the latter. Or, under the new historical conditions, *pragmatism* should be organically linked to the *universal truths* and, at the same time, with *the diversity and competition of paradigms*, *with the ability of grasping things inside their deep essence* – with *the existential monolitic facts* and also with the *factors of local, singular or peculiar extraction*, while the *culture of involvement and of affective experience* – with the observance of the *socio-cultural norms, of the economic determinations or of the arbitrarily-linguistic conventions* and with *the philosophy of relativism.* In this way, the metamodern epoch gets imposed in a manner in which originality is ideally tunned to traditionality, discontinuity - to continuity, and classicity – to a thorough anchoring to the contemporary epoch. Essentially, by its specific characteristics, the period here under analysis declares that "oscillation is the natural order of the world", asking for annulling "the inertia created by a century of modernistic ideological simple-mindedness and cynical unsincerity of its poor antonymous child" (11).

Based on the above-mentioned arguments and observations, we shall discuss, in the following, the mode in which psychology will

evolve in the near future, while not forgetting that such a future will be essentially of metamodern extraction. By means of which modalities will this scientific domain react to the imperatives of the modern times? To what extent and how will it reconsider its interests and priorities? How will its non-conformism be manifested? What will help it remain the eloquent expression of the continuity in the investigation of human nature?

In the year 1982, when world's ”changing face” became more and more obvious, thus taking distance from the cultural and economico-financial patterns of postmodernity, and when the concept of metamodernity did not appear as a novelty, any more, in France, under the guidance of P. Fraisse, the author of several original investigations upon time perception, a monumental work is issued, bringing together the opinions of numerous European and American psychologists (M. Reuchlin, P. Oléron, M. Richelle, J.S. Bruner, F. Bresson, J.- F. Le Ny, J. Nuttin, S. Moscovici, H. Tajfel, R. Zazzo, D. Widlocher, M. Rosenzweig and others.) on what is to follow in psychology during the historical period to come (12). Considerations are here made on the future of various branches of psychology (such as, for example, child psychology, social psychology, labour psychology or pathological psychology), of certain interdisciplinary domains (*e.g.*, neuropsychology, psychobiology or psychophysiology), of capital psychological aspects (motivation or affectivity), of some theories known and applied in psychology (the theory of equity) or of some once famous methods in psychology (for example, psychanalysis). P. Fraisse is a nostalgic of the unity of psychology (13), while P. Oléron – of a psychology available to all people, and not only to specialists (14). Here and there, the analysis is extremely strict, if not even dramatic. An example in this respect is the intervention of D. Widlocher (15), who asks himself whether psychopathology, known for the essential role it played in the development of the psychological science, has any future, any more, if considering a series of factors of crisis which directly affect it. Among these factors, mention should be first made of ”the very concept of pathology, so differently interpreted in various psychological orientations”. In the opinion of this specialist, ”the double direction of psychopathology towards an existentialistic perspective centered on the understanding of history and of a personal situation, on one side, and towards a socio-political criticism of its theories and practices, on the other, estranges itself inexorably from psychology as a science”. More than that, ”psychopathology may be two times dead: dead as it tends towards an existentialistic practice and dead as such a practice risks to be transformed, absorbed or rejected by the social practices to be soon developed”. Accordingly, D. Widlocher asks himself whether, possibly, ”psychopathology might harbour inside it its own destruction”. In his opinion, another factor of crisis is ”the difficulty to define the bounderies of the pathologic condition criteria (organogenesis or psychogenesis of psychic disorders?)”. For a too long time, this domain was centered on explaining the differences between the normal and the pathologic, especially the immediate causes, of such differences. The time has come to lay stress on the study of ”the mechanisms and factors which accelerate framing of a type of answer as part of human being's actions”. Against such a background, ”the role of the psychopathology of tomorrow is of investigating how and why is it established, persists and opposes to change a certain type of interaction, how and why is it modified in time, under the pressure exerted by therapeutical interventions”. A special place is

offered – in the volume coordinated by P. Fraisse – to the study elaborated by the Belgian psychologist M. Richelle (16). Starting from the level attained by the psychology of those years (a critical tribune ”offering the image of a fragmented universe”, within which methodological tendencies, theoretical currents, fundamental and applicative orientations were juxtapositing, ignoring or excluding one another, where partial theories pretended to be general and exhaustive, where the tendency towards a progressive ”closure” of the territory under investigation came to be manifested, thus contributing to the elaboration of some local theories, dedicated to a peculiar aspect of the memory, of learning or of one's personality development, etc.), he attemps at offering a perspective upon the manner in which things can reach normality. In the beginning, the idea of the elaboration of a unifying general theory is rejected, as a most inadequate, even Utopian idea, states M. Richelle. What should be necessarily of interest refers to sincretism. It goes without saying that a syncretic-type intervention should not be restricted exclusively to the observance of the existing psychological theories of ”the common, solid and generally accepted elements”. In the opinion of M. Richelle, the effort of integration should assume four characteristics: (i) *a new reading of the theoretical approach* (”not only for evidencing their common denominator, which would be equivalent to their desubstantiation, but also for evidencing the problems they raise, yet without solving them; it is the only manner of turning to good account the existing chances for evidencing convergent and complementary aspects”); (ii) *terminological clarification* (”in too many situations, one and the same thing is expressed in different words, or different things are expressed in the same words; to rediscover and identify things, one should leave aside the words”); (iii) *a radical modification of the dominating approach* (”instead of laying stress on the – partially or totalitary – explanatory models, one should better re-establish the priority of issues, from which to derive theoretical models”); (iiii) *re-examintion of the methods employed* (”study of an issue by means of several methods, as, in too many cases, the method is selected exactly for checking the theory”) (17).

Interesting ideas regarding the evolution of psychology along a historical period placed ”at the confluence of two millenia” were put forward at the *XXIIIrd International Congress of Psychology* (Mexic, Accapulco, September 2-7, 1984) (18), where psychologists from USA, Spain, (ex)Yugoslavia, Columbia and (ex)Democratic Germany delievered communications devoted to this theme at the symposium entitled ”Psychology of the future”. The works of the symposium were opened by V. Pecjak, an emblematic representative of the psychological school in Belgrade, who analyzed the results of an international inquiry dedicated to the progress of psychology, an initiative to which 296 reputed specialists were invited to participate. The inquiry included the following questions: *Which is your opinion on the future advance of psychology*? *Which are its perspectives*? *In your opinion, which aspects of contemporary psychology have the best chances of development on the long run*? *What innovations are to be expected in the field of psychology*? The recurring and most frequent themes identified in the answers obtained were: *cognitive psychology will progress*; *the psychology of information processing will be amply extended*; *physiological, biological and genetic psychology will also witness a great impetus*; *integration of psychology and elaboration of an integrating paradigm is expected*; *the future development of*

psychology will follow divergent directions, *and ample disagreements will be manifested*; *psychology will become increasingly interdisciplinary*; *psychology will enlarge its sphere and interests*; *psychology will be more socially relevant*; *psychology will become much more an intercultural domain*. Contrary to what was expected, it was only a very low number of respondents that mentioned the three dominating orientations of psychology (*behaviorism*, *psychanalysis*, *humanistic psychology*). Analyzing the recorded answers, V. Pecjak observed, on one hand, their relatively opposite approaches and, on the other, the intention of most respondents of adapting their future working plans to what had been discussed and decided by the Congress. Another participant, H. Carpintero (Spain), put forward a series of arguments meant at demonstrating that, under the new historical conditions, the psychological science will have to consider, to a greater extent, ”the double aspects under which it is grasped”: *as science and as technology*, *as a domain of theoretical knowledge and as a factor of professional and technical intervention*. Possessing an extremely vast scientific material, psychology is, in the opinion of the Spanish scientist, ”at a crossroad”, up to reaching the limits of a critical mass, ”as in nuclear fission”. Or, the corpus of the psychological science might appear as disintegrable, producing several specialities, hardly integrable one into another. The same researcher believed that, possibly, psychology will be forced to select between two opposed patterns: *liberal* and *totalitarian*. The former one ”assumes a psychology operating in an open society, providing counsels and support to all those who need them”, whereas the latter pattern ”confers to psychologists the role of some governamental agents in charge with planning and controlling people’s behaviour, by means of sophisticated, ultrasecret techniques”. If, in the first situation, the reaction of the participants to the symposium was a positive one, the second case produced some reserve (and, a few years later, the whole community of psychologists will happily observe that ”the totalitarian pattern of psychology anticipated by their Spanish colleague declined in less than five years, simultaneously with the collapse of the totalitarian social systems”).

Several years later, interesting opinions on the past and future of psychology were discussed at the *51st Annual Convention of the International Council of Psychologists* (Canada, Montreal, August 16-19, 1993). On the occasion of this forum – whose generic idea was ”Revising the future” and whose manifestation forms were varied (workshops, communication sessions, symposia, round tables, free conversations, etc.) –, very different topics, related to the latest changes produced at planetary level, and to the manner in which the science focused on a profund analysis of human psychic, were approached. Some of them referred to the *continuous education and training of psychologists,* preparing them to face aspects that will be undoubtedly aggravating in the future (sexism, rasism, ethnocentrism, child abuse, sexual abuse, ill-treatments, commercialization, treatment of adults who had been abused during their childhood, prevention of psycho-behavioural disorders, mental health, control of aggressivity, primary prevention of emotional confusion, global violence, psychology of death and death denial, etc.). Other topics approached either the *role of the psychologist in various new domains of activity* (such as: international consulting, international organizational psychology, etc.), or the *necessity of revising* the increasingly diverse research domains or techniques (re-elaboration of the programs of psychologist training from a multicultural

perspective, modification and adaptation of the various types of personality, especially of those involving morality, etc.) (19).

More years later – namely, in 1999 –, three American authors – R.W. Robins, S.D. Gosling and K.H. Craik – proposed an empirical analysis of the tendencies manifested in four main domains of the psychological science – psychanalysis, behaviorism, cognitive psychology and neurosciences. Their investigation included the studies issued in four top professional publications (*American Psychologist*, *Annual Review of Psychology*, *Psychological Bulletin* and *Psychological Review*), between 1950-1997. The results obtained evidenced that psychanalysis is ”virtually ignored”, behaviorism ”declines” (”especially after the introduction of cognitive psychology”), cognitive psychology ”is developing and will continue to represent a prominent psychological school”, while neurosciences ”witness only a modest advance” (20).

Closer to our time, some new ideas on the progress of the psychological science ”in the near future” are put forward by M.Golu, professor at the University of București (21). In his opinion, against the background of the new historical realities, psychology ”will perseverently continue its laborious scientific path, while constantly amplifying attributes such as objectivity, precision and rigour. In this respect, it will advance in both *extension*, coming to include more and more phenomena and higher and higher levels of complexity (from sensation to thinking and from reflex emotional reactions to feelings and aptitudes, from functions and sequential psychic processes up to integral personality), and *intension*, shifting from phenomenological, situational descriptions to unveiling the causality and inner mechanisms causing the occurrence and manifestation of psycho-behavioural processes and actions”. Concomitantly with the progress in the study of the fundamental matters, important steps will be made ”for a *methodological and terminological unification*, by transcending the clear-cut antagonism and unilateral absolutizations: objective-subjective, conscious-unconscious, internal (subjective internal psychic life)-external level (secretory behavioural, motory and verbal-motory reactions to the stimuli produced by the external medium), individual (focus on the study of individual-concrete aspects)-general (stress being laid on the discovery and formulation of the general principles and laws), ineism-genetism, biological-cultural, part-totality, qualitativism-quantitativism, determinism-undeterminism, etc.”. More than that, ”the place of the paradigms based on the «either-or» or «or-or» principle will be gradually occupied by paradigms based on the principles of relativism, complementarity and interaction”. Similarly with the other sciences, psychology will suffer restructurations under the influence of the ”new methodologies imposed by the general theory of systems, by cibernetics and by the theories of organization”.

In presenting his ideas, the reputed Romanian psychologist demonstrates that he belongs to the category of observers who believe that that, in time, the science of psychology will be among the domains of knowledge ”with the most rapid development”, together with microelectronics, informatics and molecular biology. The impetuous advance of psychology, he asserts, will be stimulated by both epistemologico-theoretical and practical considerations. The former ones involve ”a large-scale awareness of the special importance of psychological knowledge as part of the system of general understanding of the surrounding world, and of recognizing the value of data about the organization of the

human psychic structure in the development of informatics and of artificial intelligence". The latter ones attempt at "demonstrating the usefulness of psychological data in solving problems related to the optimization of social life and activity, both through adaptation of the objective conditions to the psycho-individual traits of the humans, and through human being's adaptation to the specific external conditions and requirements". In such a context, the cited author is expecting an unprecedented development of "both fundamental investigations, meant at testing and improving the existing partial and general theoretical models" (which would assure a considerable expansion in understanding and explaining individual psychic life in all its diversity and aspects), and of the "applicative analyses devoted to labour and professions, education, behaviour and interpersonal relations at group level, organizations, institutions, marketing, management, mass-media communication, advertizing, sports, loisir, interethnic and international relations, military activities, cosmic space expeditions, individual and group creativity, life and intra-family relations, psychopathology and psychotherapy, etc.". Following the imperatives of our times, psychologic research will evolve "towards the large-scale introduction of digitalization, of simulative models, of functional statistics, theory of probability and theory of sets, of multifactorial and multidimensional analysis". In some situations, the so-called empirical or direct experiment will be doubled, substituted by theoretical experiment, based on deductive models, liable to checking with digital programs. M. Golu is convinced that, in itself, such a perspective will call for "a corresponding training of the future psychologists, expected to assimilate the logic of programming, the operationalization techniques of various qualitative categories, the technique of formulating the hypotheses within a formal system, and of generating deductions". At the same time, enlargement of the theoretical-deductive experiment will impose – along that of (statistical) "average subject", the new concept of "ideal subject", which will probably "be viewed as a golden standard both in the organization of the instructive-educative process in school, and in the activities of professional orientation-selection". In this way, under the influence of the informatic-systemic methodology, "analysis of psycho-behavioural phenomena will secure a much more rigorous character".

The conclusion reached by the reputed Romanian scientist is that, from now on, "it is a logically to assume that psychology will have to face new research issues". Undoubtedly, many of them will aim at optimizing inter-human relations, valorisation of the existing creative potential, higher professional performance, at preventing individual inadaptations and organizational disfunctions. The border (psychoneurology, psychobiology, psycho-sociology, psycholinguistics, psycho-pharmacology, etc.) and interdisciplinary domains, in which psychology acts as a turntable, "will prevail, the internal coordination of various sciences imposing itself as a major epistemological imperative". At the same time, the extent of psychology's approaching and involvement in all spheres of the social life and activities will increase, up to becoming "a guide and, equally, a motivation for the elaboration and application of developmental projects at both individual and general human level". Considering all these aspects, it is quite reasonably to assert that, little by little, humanity advances in the beneficial empire of the science of psychology, once accepting that "no human salvation and raising can be attained without a deep knowledge of one's psychobehavioural structure and without a creative utilization of such information".

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES

1. See, in this respect, HUTCHEON, L. Politica postmodernismului . New York: Routledge, 2002, p. 166; OKEDIJI, M., HARRIS, M. (eds.). Dialogul transatlantic: arta contemporană în şi în afara Africii. In: Muzeul Ackland, Universitatea din Carolina de Nord., 1999, pp. 32–51;. FURLANI, A. Postmodern şi după: Guy Davenport. In: Literatura contemporană, 2002, nr. 43 (4), p. 713; VERMEULEN, T., VAN DEN AKKER, R. Note despre metamodernism". In: Journal of Aesthetics & Culture , 2010, nr. 2 (1), pp. 56-77; TURNER, L. Metamodernism. Manifesto, 2011. Available at: http://www.metamodernism.org; EVE, M. P. Thomas Pynchon, David Foster Wallace şi problemele metamodernismului. In: Jurnalul Scrierilor secolului XXI , 2012, nr. 1 (1), pp. 7–25; KADAGISHVILI, D. Metamodernism as We Perceive It. In: European Scientific Journal, 2013, vol.2, pp. 558-565; ABRAMSON, S. Ten Basic Principles of Metamodernism. The blog, 2015. Available at: http://www.huff-ingtonpost.com/seth-abramson/ten-key-principles-inmet_b_7143202.html; TURNER, L. Metamodernism: A Brief Introduction. Berfrois, 2015. Available at: http://www.metamod-ernism.com/2015/01/12/metamodernism-a-brief-introduction; BACIU, C., BOCOŞ, M., BACIU- URZICĂ, C. Metamodernism. A Conceptual Foundation. In: Procedia-Social and Behavioral Sciences, 2015, no. 209, pp.33-38; YOUSEF, T. Modernism, Postmodernism and Metamodernism: A Critique. In: International Journal, 2017, no. 5(1), pp. 33-43 sau/şi AKKER, R., GIBBONS, A., VERMEULEN, T. (eds.). Metamodernism: Historicity, Affect, and Depth after Postmodernism. London: Rowman & Littlefield Int., 2017. 304 p.
2. As mentioned not only once, postmodernity expresses a condition involving all phenomena that took place following modernity. More precisely, it lays stress on the economic, sociological, technological, ideological and/ or cultural conditions differentiating the modern epoch from all that came after it. If the modern epoch – which, as generally known, springs from the ruins of the Middle Age, characterizing a long time period in which events such as the Protestant reform, which "promoted the critical consciousness about religion and church", The discovery of America, which "exteded the perspectives on the map of the world", Humanism, which "contributed to the development of a new vision on the human being and on his relation with the world" or The Mechanized and Automated Industry, which "permitted a gradual elimination of manual labour" took place – aims at representing "a climax in the search of an Illuministic aesthetics" or – in other terms – of "a distinct ethics", then postmodernity aims at identifying the manner in which the authority of some ideal entities (called metanarrations) is "weakened by fragmentation, consumerism and deconstruction". Marked by some "suspicion towards metanarration, postmodernity attacks the existence of certain "monolithic existentialistic factors", while encouraging the "fractured, fluid and multiple perspectives". The central idea of the postmodern epoch is that "knowledge comes to be based on everything outside the individual". Even if it demonstrates its polymorphism, postmodernism, as asserted by numerous specialists in critical theory, will alyways begin with knowledge, which is equally "largely disseminated in its form, but never limited in its interpretation". They also assert that "postmodernity, which has rapidly developed a vocabulary characterized by an anti-Illuministic rhetoric, stated that rationality has been never so reliable as its supporters used to say it is and that, in itself, knowledge is related to place, time, social position or other factors by means of which a person establishes his/her perspective upon knowledge". Postmodernity criticizes all those pretending to hold "the secrets of truth, of ethics or of the beautiful" and who consider that, due to their privileged condition, such secrets "have roots in anything alse but individual perception or group construction". Consequently, the Utopian ideas about the universal truths should give space to some "local, decentralized or temporary petit recits" (instead of referring to global issues or to cultural ideas of maximum generality, once the ideals themselves are "liable to interpretation or reinterpretation"). In other words, what eventually counts is not necessarily the scientific investigation of the general and universal traits, but the scientific investigation of the local expression, singular, peculiar traits.

Therefore, postmodernity avoids "any form of monism and universalization", while doubting the positivistic (logical) representations, the ideals and methods of classical science. Obviously, in such a context, fundamentalism and recognition of the multiple image of reality should be considered. Equally, according to its supporters, postmodernity proclaims the variety and competition of paradigms, the coexistence of heterogeneous elements, recognizing and stimulating a large variety of contemporary life projects, of social interactions, philosophical knowledge and scientific conceptions. More than that, an important consequence of postmodernistic ideas requires "shaking of the binary reasoning of the «or/ or» type and its replacement with "attitudes of thermal thinking", according to which not two, but three outsets are equivalent. Instead of oposition, the apologists of postmodernism propose "systemicity, harmonization, complementarity and simultaneity".

In the opinion of G. Vattimo, author of important studies devoted to what happened after the walls of modernity fell (special mention being made, in this respect, of The end of modernity), postmodernity represents the transition from unity to plurality. This epoch, he says, is characterized by "weak thinking" based on the denial of metaphysics, and does not recognize the importance of a "unitary vision upon the world". If the "strong thinking", which constitutes the emblematic element of modernity, always assumes a violent effort of homogeneization and universalization, then the

”weak thinking”, representing the exponential element of postmodernity, is characterized by ”weakening, diminution of the human being”, by ”reducing the stress laid on the moral laws, on political power and on scientific positivistic realism”, by ”secularization of the great religious ideas, crisis of the important philosophical systems, of traditional metaphysics and of the Hegelian or Marxist historicity”. The manner in which the ”weak” thinking of the postmodern epoch gets imposed, concludes G.Vattimo, has a positive connotation, namely it ”adopts nihilism instead of Utopia and the hermeneutics of doubt instead of metaphysical interpretation”.

Continuing the ideas of G. Vattimo, St. Connor, author of the famous Postmodernism Culture: A Introduction to Theories of the Contemporary, shows that, principially, the postmodern condition is characterized by both ”multiplication of the centers of power and activity”, and by ”dissolution of any type of totalizing narrative” (which would alone dominate all social activities). More than that, he adds, the postmodern condition is characterized by massification, namely a situation involving ”undermining and replacement of elites by masses in the regulation of the system of values and cultivation of tastes”. In postmodernity, consummism and consumers’ life style dominate the whole social life, to which one should add globalization, a phenomenon bringing about significant mutations of social, political, economic, financial, military and cultural nature. In the opinion of St. Connor, the main perils of globalization are homogeneization, uniformization, standardization, loss of identity and a situation defined as mcdonaldization.

In his turn, J. Baudrillard considers that the postmodern individual lives along with the simulacra created by TV and mass-media. In one of his essays – the one entitled Simulacra and Simulation –, he asserts that ”social reality exists only as convention”, once it has been replaced by ”an endless process of producing simulacra”. In his view, modernity is substituted by an epoch in which ”mass-media and the other forms of cultural mass production constantly generate processes of re-approaching and re-contextualization of certain cultural symbols or images, thus fundamentally transferring human experience from reality to hyper-reality”. It is exactly the mass-media that creates a hyper-real world of simulacra. In such a world, the only reality is represented by TV advertisments, which wipe out the differences between objects and their representations, while the meanings lose contact with the things they signify, becoming free significants. The only tangible realities become mass-media simulacra, so that the world appears as a Disneyland beyond retrieve. Postmodernity, concludes J. Baudrillard, is a ”world of reversed values, where knowledge becomes merchandise, science gets subjugated by technique, truth is conditioned by power and richness, while the reality of the simulacra created by mass-media substitute reality”. It is an epoch of information and of informatics, in which the traits of humanism vanish. The traditional scenarios, which used to legitimate the values of humanity – theology, metaphysics, Utopia, the faith in progress – lose their credibility.

Essentially, the postmodern epoch is the concentrated expression of the late capitalism (which, as well-known, puts an end to monopolistic capitalism). Its manifestation coincides with the moment in which ”the old industrial society, relying on factories, was replaced by a new one, which relies on services”. More precisely, it starts in the sixth decade of the last century, when the first signs of globalization, massification and consumism appeared, along with the first signs announcing the sexual revolution, feminism, multiculturalism, rock, punk, graffiti, hippies, digitalized and/ or multi-media art. According to specialists, ”the model postmodernity aims at is the American, free and prosperous society, characterized by confortable life, democratic and tolerating administration, offering to all its citizens equal chances to advance”. In the first decades after World War II, they say, the capitalist countries of Europa have rapidly rehabilitated their infrastructure. Science and technologies are developing at an unprecedented speed, and new discoveries are recorded in atomic physics and informatics; the theory of catastrophies, the theory of fractals, the theory of chaos are launched, and ”remarkable progress is registered in genetics and medicine, television and computers appear on the market, man flies in cosmos and even on the moon”. More and more frequently it is asserted that ”in science, nothing can be established for good and no universally valid truth does exist”. The production of goods ”leaves space to the production and manipulation of knowledge” and the gobal electronic evolution sets up the hegemony of information technology. All these observations characterize the tendency of the epoch, increasingly marked by insatisfaction and relativization of values.

For other details, see BEST, S., KELLNER, D. Postmodern Theory. Critical Interrogations. New York: The Guilford Press, 1971; JENCKS, C. Postmodernism. London: Academy Editions, 1987; BERMAN, M. All That Is Solid Melts Into Air: The Experience of Modernity. New York: Viking Penguin, 1988; CĂLINESCU, M. Five Faces of Modernity: Modernism, Avant-Garde, Decadence, Kitsch, Postmodernism. Durham, N.C.: Duke University Press, 1987; APPIGNANESI, I. (ed.). Postmodernism. London: Free Association Books, 1989; CALLINICOS, A. Against Postmodernism: A Marxist Critique. Cambridge: Polity, 1999; CONNOR, S. Post Modernist Culture: An Introduction to the Theories of the Contemporary. Cambridge: Mass Blackwell, 1997; HASSAN, I. The Postmodern Turn. Essays in Postmodern Theory and Culture. Ohio: Ohio State University Press, 1987; LUPAN, R. Moderni si postmoderni. București: Cartea Românească, 1988; PETRESCU, L. Poetica postmodernismului. Pitești: Paralela 45, 1998; VATTIMO, G. Sfârşitul modernităţii. Constanţa: Pontica, 1993; BAUDRILLARD, J. Simulacra and Simulation (transled by Sh.F.Glaser). Michigan: University of Michigan Press, 1994; HUTCHEON, L. Politica postmodernismului (translated by Mircea Deac). București: Univers, 1997; HUTCHEON, L. Poetica postmodernismului (translated by Dan Popescu). București: Univers, 2002; JAMESON, F. The Cultural Turn. London: Verso, 1998; LYOTARD, J.-F. La

condition post-moderne. Paris: Minuit, 1988; LYOTARD, J.-F. Condiția postmodernă (translation and foreword by Ciprian Mihali). Cluj – Napoca: Idea Design, 2003; SOKAL, A., BRICMONT, J. Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science. New York: Picador, 1998; BOLDEA, I. De la modernism la postmodernism. Târgu-Mureş: Publishing House of the ”Petru Maior” University, 2011; ACHIMESCU, N. Religie, modernitate și postmodernitate. Bucureşti: Trinitas, 2013 and/or FREINACHT, H. The listening society: A metamodern guide to politics book one. UK: Metamoderna, 2017.

3. Considering this circumstance, concomitantly with driving inspiration from the approaches on the quintessence of postmodernity (with special reference to the interpretations involving the ”postmodernism- postmodernity-postmodern” terminological triad), we dare assert that the notion of metamodernity may be described with two connex linguistic categories. The former would be that of metamodernism, a linguistic construction covering the responses of intellectual, cultural, artistic, academic, economic, political or philosophic type, expressed in relation with the imperatives imposed by metamodernity. The latter category is associated to the adjective metamodern, a part of speech capable to indicate the specific character of the various types of activity developed in metamodernity (metamodern architecture, metamodern literature, metamodern culture, metamodern philosophy, metamodern psychology, metamodern paedagogy, etc.). For not complicating things, while having in view the connexion existing between the three linguistic categories, the present analysis will prevailingly deal with the notion of metamodernity which, as already evidenced, represents not only a course of edifying ideas on the significance of the period following postmodernism, but equally a complex system of daily realities by means of which ”one reacts to postmodernity”, announcing ”a new label for what is to come after postmodernity” and/ or indicating the extent up to which ”enlargement and challenge of postmodernity” will arrive.

4. The term metamodernity appears for the first time in the year 1975, when Mas'ud Zavarzadeh used it in an isolated manner for describing a series of unusual attitudes already manifested in the American literary culture in the middle of the 50’s. Along the years, its utilization increased. Among the latest remarkable specialists who contributed to its propagation and development, mention should be made of T. Vermeulen and R. van den Akker (in their work issued in 2010 and in the study entitled Notes on metamodernism). In most of the cases, they assert that the metamodern epoch starts with the end of the first decade of the XXIst century, when a large part of humanity became aware that it had enough postmodernity, and that the conditions and principles it had imposed became unable to keep pace with the complexity and dynamics of historical evolution. The metamodern epoch, they also say, could last for one hundred years or even more. The people to be born and live along these years will be substantially different from those having lived in postmodernity or, the more so, in modernity. They will not live with the simulacra created by TV and mass-media, any more. Their world will not be, any more, a world of reversed values, in which knowledge becomes merchandise, science is subjugated by technique and the truth is conditioned by power and richness, and the representations created by socialization networks substitute reality. For other details, see ZAVARZADEH, M. The Apocalyptic Fact and the Eclipse of Fiction in Recent American Prose Narratives. In: Journal of American Studies, 1975, vol.9, pp. 69-83; VERMEULEN, T., VAN DEN AKKER, R. Notes on metamodernism. In: Journal of Aesthetics and Culture, 2010, vol. 2, pp. 1-14; МИТРОШЕНКОВ, О. Что придет на смену постмодернизму? Retrived from http://metamodernizm.ru/chto-pridet-na-smenu-postmodernizmu/ and/or БЕСПАЛАЯ, О. П. После постмодерна. În: Гуманитарные, социально-экономические и общественные науки, 2014, № 3, с. 20-23.

5. See, in this respect, VERMEULEN, T., VAN DEN AKKER, R. Note despre metamodernism. In: Journal of Aesthetics & Culture, 2010, no. 2 (1), pp. 56-77 ; EVE, M. P. Thomas Pynchon, David Foster Wallace și problemele metamodernismului . In: Jurnalul Scrierilor secolului XXI , 2012, nr. 1 (1), pp. 7–25; KUNZE, P. Filmele lui Wes Anderson: eseuri critice asupra unei icoane. New York: Palgrave McMillan, 2014, pp. 27-28; POTTER, C. Timotheus Vermeulen vorbește to Cher Potter. TANK 55. Retrived from http://tankmagazine.com/issue-55/talk/timotheus-vermeulen; TURNER, L. Metamodernism: A Brief Introduction. Notes on Metamodernism. Retrived from http://www. metamodernism. com/2015/01/12/metamodernism-a-briefintroduction; TURNER, L. The Metamodernist Manifesto. Retrieved from http://www.metamodernism.org/. BUNNELL, N. Oscillating from a distance: A study of metamodernism in theory and practice. In: Undergraduate Journal of Humanistic Studies, 2015, no.1, pp.1-8 and/or YOUSEF, T. Modernism, Postmodernism and Metamodernism: A Critique. In: International Journal, 2017, no. 5(1), pp. 33-43.

6. See, in this respect, CIOROGAR, A. Poetica metamodernismului și sfârșitul postmodernității (II). In: Observatorul cultural, 05.10.2018, nr. 941, p.1 and/or https://www.observatorcultural.ro/articol/poetica-metamodernismului-si-sfirsitul-postmodernitatii-ii/

7. See, in this respect, VERMEULEN, T., VAN DEN AKKER, R. Note despre metamodernism. In: Journal of Aesthetics & Culture, 2010, nr. 2 (1), pp. 56-77.

8. More details on this characteristic of metamodernity in ESHELMAN, R. Performatism, or the End of Postmodernism. In: Anthropoetics, 2007, vol. 6, no. 2. [http://www.anthropoetics.ucla.edu/ap0602/perform.htm] and/or ESHELMAN, R. Performatism, or the End of. Postmodernism. Aurora, Colorado: Davies Group, 2008.

9. See EVANS, K. Living in the 21 Century: A Gestalt Therapist’s Search for a new Paradigm. In: Gestalt Reviev, 2007, no.11(3), pp.190-203.

10. See, in this respect, VERMEULEN, T., VAN DEN AKKER, R. Note despre metamodernism. In: Journal of Aesthetics & Culture, 2010, nr. 2 (1), pp. 56-77 and/or LEVIN, K. How PoMo Can You. Available at: artnews.com/art-news/news/how-pomo-can-you-go-2108 (15 October 2012).

11. The formulations belong to L.Turner. For the first time, they were expressed in The Metamodernist Manifest, a paper written and published in 2011, considered as ”an exercise for a simultaneous defining and personifying the metamodern spirit”. See also TURNER, L. The Metamodernist Manifesto. Retrieved from http://www.metamodernism.org/.
12. FRAISSE, P.(sous la direction de). Psychologie de demain. Paris: P.U.F., 1982. 344 p.
13. FRAISSE, P. Pour l'unité dans la diversité. In: P. FRAISSE (sous la direction de). Psychologie de demain. Paris: P.U.F., 1982, pp. 9-24.
14. OLÉRON, P. Demain, une psychologie pour tous? In: P. FRAISSE (sous la direction de). Psychologie de demain. Paris: P.U.F., 1982, pp.39-54.
15. WIDLOCHER, D. La psychopathologie a-t-elle un avenir? In: P. FRAISSE (sous la direction de). Psychologie de demain. Paris: P.U.F., 1982, pp.191-208.
16. RICHELLE, M. Craintes et esperances pour la psychologie de l'an 2000. In: P. FRAISSE (sous la direction de). Psychologie de demain. Paris: PUF, 1982, pp.55-71.
17. Shortly after the issuing of M.Richelle's study, the truthfulness of his ideas is accepted. See, for example, a brief citation from M. Zlate's book: ”Introducere în psihologie” (Bucureşti: ”ŞANSA” S.R.L., 1994, p.46): ”Clues on this characteristic (of the new psychology – n.n.) have already been manifested as real and functional in psychology. As a proof of this observation, see the similarities made between the stages of cognitive development (described by Piaget) and the theory of operating learning (elaborated by Skinner), which raise two questions (lack of ecquilibrium at Piaget and subject's variability at Skinner), neither of them having received theoretical elaborations”.
18. Valuable information on this important scientific event in ARDILA, R. The future of psychology and the future of man. In: XXIII Congres International de Psychologie, Volume des resumes. Mexico,1984; ZLATE, M. Introducere în psihologie. Bucureşti: ”ŞANSA” S.R.L., 1994, pp. 47-48 and/or ZLATE, M. Introducere în psihologie. Iaşi: ”Polirom”, 2000, pp. 68-69.
19. See, in this respect, ZLATE, M. Introducere în psihologie. Bucureşti: ”ŞANSA” S.R.L., 1994, pp. 48-49 sau/şi ZLATE, M. Introducere în psihologie. Iaşi: ”Polirom”, 2000, pp. 69-70.
20. ROBINS, R.W., GOSLING, S.D., CRAIK, K.H. An Empirical Analisis of Trends inPsychology. In: American Psychologist,1999, no.54 (2), pp. 117-128.
21. See, in this respect, GOLU, M. Fundamentele psihologiei. Bucureşti: Fundaţia România de Mâine, 2007, Vol. I, pp. 27-32.

Correspondence

Mihai Șleahtițchi,
Doctor habilitat (docteur d'État) in Psychology, PhD in Pedagogy, Professor,
Republic of Moldova

Submission: 10 sep 2020
Acceptance: 12 feb 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Case Reports

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativa

The importance of an early and accurate diagnosis: behavioral variant of frontotemporal dementia (bvFTD). Clinical aspects

Mădălina Ionela Grosu, Anina Rugină,
Georgiana-Biatrice Bădii, Ana-Caterina Cristofor

Mădălina Ionela Grosu – M.D., Junior Psychiatrist, „Socola Institute of Psychiatry", Iaşi, Romania
Anina Rugină - M.D., Junior Psychiatrist, „Socola Institute of Psychiatry", Iaşi, Romania
Georgiana-Biatrice Bădii - M.D., Junior Psychiatrist, „Socola Institute of Psychiatry", Iaşi, Romania
Ana-Caterina Cristofor - M.D., Ph.D, Lecturer, "Grigore T. Popa" University of Medicine and Pharmacy, Iaşi, Romania

ABSTRACT
Frontotemporal dementia, a neurodegenerative disorder, is characterized by early onset with an outstanding impact on the patients' life. The most impressive alteration is the occurrence of behavioral manifestation which dominate the clinical picture throughout the entire evolution of the disease. Up to this date, early diagnosis of frontal-temporal dementia remains a challenge especially because it is associatiated with a wide range of symptoms, often perfectly mimicking affective or psychotic disorders. In recent years, positive diagnostic criteria for Frontotemporary Dementia have been nuanced in an attempt to improve the diagnosis process. The evolution of the disease is progressive, with a short survival span and a rapid decline of the patient's state, which represents a challenge for the caretakers in their attempt to provide the necessary care and the permanent supervision required in order to avoid accidents. A common dilema among clinical physicians is related to the prognosis of the illness, but, at present, there is not sufficient data in regard to this matter. The only factor with an impact on the survival prognosis is the presence of language disorders at the first assessment, which associates with a lower survival rate. This paper aims to emphasize once again the significance of a proper diagnosis by presenting a complex case of bvFTD which was quite challenging in terms of differential and positive diagnosis taking into consideration the

unusual onset in the form of delusional disorder. Psychotic symptoms such as hallucinations and delusions, are well known to be main symptoms in schizophrenia but are also prominent features in several neurodegenerative diseases (e.g. Alzheimer's disease, dementia with Lewy bodies, psychosis in Parkinson's disease). Therefore, signs of actual bvFTD may often be misinterpreted.

KEY WORDS:
Frontotemporal dementia, behavioral manifestations.

INTRODUCTION

Frontotemporal neurocognitive disorder includes patients with onset before 65 years of age. The average survival time after the onset of symptoms is about 6 to 11 years and 3 to 4 years after diagnosis. (1) FTD represents a focal clinical syndrome characterized by profound changes in personality and social conduct being associated with circumscribed degeneration of the prefrontal lobe and anterior portion of the temporal lobes. (2) Early manifestations of FTD are subtle, siding, rarely reported by the patient. The onset is often confused with a "middle age crisis" or other psychiatric conditions, such as depression. However, behavioral manifestations are the most comon presentation symptoms. (3) The Lund and Manchester groups criteria are recommended to be used for the clinical diagnosis of FTD and they consist of: early loss of self-esteem, loss of motivation towards previously appreciated interests and activities, early loss of normal behavior in society, early signs of disinhibition, mental rigidity and inflexibility, impulsivity and attention disorders. Other common characteristics include repetitive and compulsive or even ritualistic behaviors, hyperorality and diet changes, lack of awareness of the disease and lack of criticism of their own actions. Regarding the affective function and its alterations, one may observe: depression, anxiety, fixed and suicidal ideas, delusional behavior (early and transient); hypochondria, bizarre somatic concerns; apathy, lack of empathy and sympathy. (4) The only factor with an impact on the survival prognosis is the presence of language disorders at the first assessment which associates with a lower survival rate. (5)

An interesting aspect was outlined by some studies conducted in 2012 and 2013 which revealed that a pretty high proportion of patients associate psychotic symptoms. A 2014 review based on 122 publications concluded that the approximate prevalence of psychotic symptoms in FTD is 10%. Moreover, an increased prevalence of psychotic symptoms appears to be associated with specific molecular and genetic subgroups of FTD. Unfortunately, this has not been sufficiently studied so far. (6)

The clinical syndromes of FTD are: the behavioral variant FTD (bvFTD), the progressive aphasias semantic dementia (SD) and progressive non-fluent aphasia (PNFA) (7). A study, which used a cluster analysis to assess anatomical heterogeneity among subjects with bvFTD (8), identified 4 anatomical subtypes which are different by the degree of frontal and temporal atrophy. Two subtypes show massive frontal and two subtypes with predominant temporal lob atrophy. The rate of functional decline is higher in subtypes with frontal atrophy, suggesting that the volume of the frontal lobe could be an useful prognostic tool to predict faster clinical decline. (9)

In contemplation of the clinicians need for an diagnostic tool, recent studies have developed new criteria for the diagnosis of bvFTD (tab. 1). (3)

Tab. 1

Criteria for possible bvFTD (>=3 criteria)	***Criteria for probable bvFTD***	***Criteria for certain bvFTD***	***Exclusion criteria***
Behavioral disinhibition	Criteria for possible bvFTD	Criteria for probable bvFTD	(A) Deficits are better justified by other non-degenerative nervous system diseases or other medical conditions
Apathy/inertia	Significant functional decline	Histopathological evidence of frontotemporal lobar degeneration by biopsy or postmortem	(B) Behavioral disorders are better explained by a psychiatric diagnosis
Loss of sympathy / empathy	Suggestive neuroimaging for Behavioral DFT a. Anterior frontal and/or temporal atrophy on CT or MRI b. Hypoperfusion/ hypometabolism (PET/SPECT)	The presence of a known pathogenic mutation to cause fronto-temporal lobar degeneration	(C) Biomarkers strongly indicate Alzheimer's disease or other neurodegenerative process
Perseverative, stereotype or compulsive/ritualistic behavior			Criteria A and B must be **negative** for any diagnosis of behavioural FTD Criterion C may be positive for possible behavioral FTD, but must be negative for probable behavioural FTD
hyperorality and diet changes			
Significant decline in social cognitive function and/or execution functions			

CASE PRESENTATION

A 60-year-old female patient from the urban area is brought in the emergency room by police being accompanied by her daughter. The patient was taken in custody because a saleswoman called 112 and reported that the patient was trying to stuff food into her bag avoiding to pay for it. Her daughter, with whom the patient lives, declares that her mother leaves home frequently and she even leaves the door unlocked and open. This kind of behavior is typical and frequent for dromomania. Furthermore, the daughter states that her mother used to work abroad, in Italy, and that she returned in 2017 being a little bit different and acting strange. Her behaviour was accounted for stress. In the emergency room, the patient presents a symptomatology manifested by: psycho-motor agitation, behavioral manifestations, physical and verbal hetero-aggressiveness, spatial temporal disorientation and also auto and allopsychic disorientation, hyperesthesia, incoherent speech.

MEDICAL HISTORY

The patient is in the records of the Socola Iasi Institute of Psychiatry with 2 previous hospitalizations. The first hospitalization was in 2018, at the age of 58, within the context of a psychiatric emergency for a symptomatology objectified by: unsystematized delusion, disorganized thinking, dysphoric mood, low frustration tolerance, persecutory delusions, impaired attention. The psychological evaluation highlighted: decreased cognitive functions, spatial temporal disorientation, delusional tendencies, irritability, irascibility. The cranio-cerebral CT scan report was within normal limits. The patient was diagnosed with "Persistent Delusional Disorder".

The patient returned in 2019, also via psychiatric emergency presenting symptoms such as: marked psycho-motor agitation, impulsive behaviour, hyperesthesia, decreased global cognitive functions, spontaneous and voluntary hypoprosexia, fixation and evocation hypomnesia, bradypsychia, temporo-spatial disorientation and incoherent speech. The psychological examination highlighted: uncooperative patient, behavioral manifestations, incoherent speech, severe cognitive dysfunction, auto and allopsychic disorientation, impared judgment, episodes of confusion with dromomania. Furthermore, inability to self-conduct and self-care led to total socio-familial dependence. Cranio-cerebral CT exam revealed frontotemporal cerebral atrophy. Diagnosis at discharge were: "1. Frontotemporal Dementia- severe form (REISBERG = 6P); 2. Need for continuous supervision."

PSYCHIATRIC EXAMINATION

During the psychiatric examination, the patient had an uncooperative attitude. The outfit is untidy and body hygiene is poor. There is a global cognitive decline, irritability, irascibility, voluntary and spontaneous hypoprosexia, difficulty concentrating, difficulty switching focus, marked distractibility and fixation and evocation hypomnesia. Cognitive dissonance with bradypsychia. Simple language, verbal stereotypes, inadequate answers were also present. The eating instinct is diminished, sometimes with food refusal; the self-preservation instinct is low being unable to recognize dangerous situations the gregarious instinct - tendency to socially isolate oneself.

Volitionally, the patient has hypobulia for daily activities. Motor behaviors includes bradykinesia with inability to self-conduct and self-care. The impulses escape from volitional control. Additionally, the patient displays episodic verbal and physical hetero-aggressive behavior and aggression towards the medical staff.

Paraclinical investigations: the native cranio-cerebral CT objectifies a slightly more accentuated frontotemporal cerebral atrophy (compared to the previous examination from 2019) with ventricular and subarachnoidal space enlargement.

POSITIVE DIAGNOSIS

The patient is likely to suffer of probable Frontotemporal Dementia (according to the criteria of the Lund and Machester groups). The onset of the patient's disease at the age of 59 is a criterion that supports this diagnosis as well as the increase of cerebral atrophy in one year which is a diagnostic marker for FTD. Besides, the patient presents behavioral manifestations and affective disorders that are typical for bvFTD.

DIFFERENTIAL DIAGNOSIS

Dementia in Alzheimer's Disease - the onset of the disease is insidious with a slow evolution, symptomatology usually occurs in the eighth and ninth decades of life. Behavioral changes occur late in the evolution of the disorder.

Dementia with Lewy-body - the patient does not show features that suggest the presence of lewy bodies.

Dementia in Parkinson's disease - there is no personal pathological history of Parkinson's disease.

Vascular dementia- can not be considered because there is no cerebrovascular event temporally related to the onset of cognitive impairment in the patient's history.

Other neurological disorders such as Progressive supranuclear paralysis and Corticobasal degeneration are ruled out.

TREATMENT

During hospitalization the patient underwent specialized treatment with: Memantine 20 mg/day, Carbamazepine 400 mg/day, Lorazepam 3mg/day, Trazodone 150 mg/day, Risperidone solution 4ml/day, as well as Diazepam f. 1f im in case of psychomotor agitation. On discharge it was recommended to continue treatment with Memantine 20 mg/day, Carbamazepine 400 mg/day, Bromazepam 3mg/day, Trazodone 150 mg/day and Risperidone solution 4ml/day.

Since acetylcholinesterase inhibitors, used in Alzheimer's, have not proven their effectiveness in frontotemporal dementia, with studies showing that they can exacerbate behavioural symptoms (3), memantine, an NMDA receptor antagonist, has been chosen.

Serotonin antidepressants have been reported to decrease behavioural manifestation (especially repetitive ones), disinhibition, apathy, inappropriate sexual behaviors and hyperorality. No beneficial effects on cognitive and functional abilities have been proven. Lebert and Pasquier evaluated 14 patients with frontotemporal dementia treated with trazodone, an atypical serotonin agent which increases extracellular levels of 5 hydroxytriptamine in the frontal cortex. After 4 weeks of treatment, relief of behavioural symptoms such as anxiety, irritability, aggression was observed, after 6 weeks relief of depression, disinhibition and motor symptoms was noticeable. (10)

Evidence of the use of antipsychotics in treatment of FTD is limited because of the extrapyramidal side effects. However, in patients with severe behavioral disorders, second- or third-generation ones are preferred. The risk-benefit ratio should be balanced, given the risk of heart complications and sudden death. (11) In the current case,

risperidone was opted for administration which succeeded in attenuating the behavioral symptomatology.

Antiepileptics with thymostabilizing effects, such as carbamazepine and valproic acid, have been reported to relieve behavioural symptoms (Class IV). (11)

DISCUSSION

The case presented outlines the difficulty of establishing a correct diagnosis. It should be noted that in this particular case, the onset took place in the form of delusional symptomatology. A retrospective study from 2011 shows how more than half of people with this type of dementia are initially diagnosed with other psychiatric pathologies. (12) As the intial symptoms were quite uncommon for FTD, the family members had difficulties in accepting the diagnosis. Once the disease progressed it became even harder for them to deal with it. The education of the family (the caregivers) regarding the diagnosis of bvFTD was required. The caregiver burden is a real problem which has tremendous consequences not only for the patient and his/hers family but also for the society. As the population of the plant ages, the number of patients with dementia is increasing and it becomes a public health crisis. (13) Numerous studies were conducted in order to evaluate the mental health of caregiver for dementia and the results were alarming. Not rarely the caregivers become second patients as they try to manage their personal life, career and the new responsibility: caring for a beloved person with dementia (14) In the case presented, the caregivers were explained the complications, the evolution and the outcome of this pathology as the main goal is to improve the patient's quality of life but to also make their burden easier on the process. Unfortunately, the patient does not benefit from adequate family support which is an unfavorable prognostic factor. Permanent supervision at home is necessary so as to avoid accidents and to make sure that the medicines are correctly administrated. Moreover, it is highly recommended to establish a routine in order to create a psycho-protective climate in the socio-familial environment and to avoid psycho-traumatic conflict situations that could endanger the life of the patient and of those around her. This recommendation brings up another issue: the institutionalization of dementia patients, a long disputed subject which proved to have both beneficial effects and sometimes less positives ones. (15) Discouragingly, in Iasi, there are not many options to choose from when it comes to the institutionalization of the patient. Thus in the case presented, the patient remains in the care of the daughter. An intriguing phenomenon that caught the psychiatrists' attention in the last years and may be applicable to the case presented is called Italy Syndrome. Italy syndrome is a form of social depression that occurs primarily in people who do not have a medical background, but who care for a long time people with severe illnesses. From the patient's personal history we learn that she had been at work in Italy for 13 years, between 2004 and 2017 as an elderly carer. There are multiple possible psychotraumatizing factors in the case such as: being away from home for a long period of time in an environment which she felt as being foreign and/or hostile; the extended schedule without sufficient hours and days of rest; the precarious mental state of the person she was caring for; the fact that she did not know the language well enough and she could not easily communicate with people around her. However, further research is needed as more and more persons who work abroad as caregivers manifest features of this syndrome.

The case presented stresses not only the importance of an accurate and proper diagnosis but also draws attention to the problematic of the caregiver burden and of the institualization of the patients with dementia. In addition, it tried to raise awareness about the new phenomenon called Italy syndrome.

ACKNOWLEDGEMENTS AND DISCLOSURES

The authors state that there are no declared conflicts of interest regarding this paper.

.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders DSM-5. 5th ed. 1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders DSM-5. 5th ed. Washington, DC: American Psychiatric Association; 2013
2. David Neary; Julie Snowden; David Mann (2005). Frontotemporal dementia., 4(11), 771-780. doi:10.1016/s1474-4422(05)70223-4
3. Seeley, W.W.(2019). Behavioral Variant Frontotemporal Dementia. CONTINUUM: Lifelong Learning in Neurology, 25(1), 76-100. doi: 10.1212/con.0000000000000698
4. Journal of Neurology, Neurosurgery and Psychiatry. 1994. PMID: 8163988 Clinical and neuropathological criteria for frontotemporal dementia. The Lund and Manchester Groups.
5. Garcin, B., Lillo, P., Hornberger, M., Piguet, O., Dawson, K., Nestor, P. J., Hodges, J. R. (2009). Determinants of survival in behavioral variant frontotemporal dementia. Neurology, 73(20), 1656–1661. doi:10.1212/wnl.0b013e3181c1dee7
6. Landqvist Waldö, Maria; Gustafson, Lars; Passant, Ulla; Englund, Elisabet (2015). Psychotic symptoms in frontotemporal dementia: a diagnostic dilemma?. International Psychogeriatrics, 27(4), 531–539. doi:10.1017/s1041610214002580
7. Shinagawa, Shunichiro (2015). Rosenberg's Molecular and Genetic Basis of Neurological and Psychiatric Disease Frontotemporal Dementia. 779–791. doi:10.1016/B978-0-12-410529-4.00069-3
8. Whitwell JL, Przybelski SA, Weigand SD, et al. Distinct anatomical subtypes of the behavioural variant of frontotemporal dementia: a cluster analysis study. Brain. 2009; 132:2932–2946.
9. Josephs KA Jr. Whitwell JL, Weigand SD, et al. Predicting functional decline in behavioural variant frontotemporal dementia. Brain. 2011; 134:432–448.
10. Natalie D Weder; Rehan Aziz; Kirsten Wilkins; Rajesh R Tampi (2007). Frontotemporal Dementias: A Review. , 6(1), 15–0. doi:10.1186/1744-859x-6-15
11. Tsai, Richard M.; Boxer, Adam L. (2014). Treatment of Frontotemporal Dementia. Current Treatment Options in Neurology, 16(11), 319–. doi:10.1007/s11940-014-0319-0
12. Woolley, J.D., Khan, B.K., Murthy, N.K., Miller, B.L., Rankin, K.P. (2011). The Diagnostic Challenge of Psychiatric Symptoms in Neurodegenerative Disease. The Journal of Clinical Psychiatry, 72(02), 126-133. doi:10.4088/jcp.10m06382oli
13. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5550537/
14. Brodaty H, Donkin M. Family caregivers of people with dementia. Dialogues Clin Neurosci. 2009;11(2):217-28. doi: 10.31887/DCNS.2009.11.2/hbrodaty. PMID: 19585957; PMCID: PMC3181916.
15. Eska K, Graessel E, Donath C, Schwarzkopf L, Lauterberg J, Holle R. Predictors of institutionalization of dementia patients in mild and moderate stages: a 4-year prospective analysis. Dement Geriatr Cogn Dis Extra. 2013 Nov 1;3(1):426-45.

Correspondence:

Anina Rugină,
M.D., Junior Psychiatrist, „Socola Institute of Psychiatry", 36 Bucium Street, Iasi, Romania,
anina.gavrilita@gmail.com

Submission: 19 jan 2021
Acceptance: 09 mar 2021

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Book Review

BPI Bulletin of Integrative Psychiatry
Buletin de Psihiatrie Integrativă

Psychiatry in Crisis: At the Crossroads of Social Sciences, the Humanities, and Neuroscience

Authors: Vincenzo Di Nicola, Drozdstoj Stoyanov
By Vlad Teodor Iacob

Vlad Teodor Iacob – MD, PhD student, "Grigore T. Popa" University of Medicine and Pharmacy Iaşi, Romania

Written for students and specialists alike, the book, as the title suggests, presents psychiatry in a crisis of knowledge regarding its very definition and theoretical basis as it allows itself to be modelled and rebranded as the times change. While psychiatry has been deconstructed and analyzed in many ways, the main components of any psychiatric knowledge, according to the authors, consist of taxonomy (the branch of science concerned with classification) projected onto a crisis of identity, respectively methods onto a crisis of confidence. These are reflected firstly in the discrepancies between the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases. Other problems include the issue of translating data across various disciplinary matrices to form connections between them. There is also the persistent need to classify items and arrange them into statistically susceptible units of measurement and analysis, even though the diagnosis for all intents and purposes remains a matter of subjective judgement. This, in turn, leads to the reevaluation of the validity of psychiatric decisions and raises ethical concerns regarding the critical aspects of mental health expertise in social, economic and legal procedures.

The book is a truly complex work that few can fully grasp its messages. Even someone as inexperienced as myself can tell only after reading the first chapter that a vast amount of thought and research went into writing each page. Nevertheless, it will leave many of its readers asking different questions like Is psychiatry supposed to be a subdivision of medicine that classifies each diagnosis, treatment, and so on, in a way that everyone can agree on? Or is it supposed to be in a forever changing state, closer to art than science, offering anyone that tackles it the freedom to interpret it? Is psychiatry a social science like psychology or anthropology, is it better understood as part of philosophy, or is it best to classify it as a simple branch of medicine?

The authors look at psychiatry from a more philosophical and metaphysical point of view, rather than a scientifical one. They paint a picture one cannot easily understand at first glance, giving us their insight on what psychiatry is, and more importantly, what it ought to be, with the help of many great minds of past and present, and their vast knowledge.

Perhaps the most important question the authors ask is, in their own words, the true mission of psychiatry. Is it to understand, to classify or to heal? Are these different goals compatible or mutually exclusive? Many have agonized over this inquiry and have yet to find an answer everyone can be satisfied with.

If there is one thing you should take from this book, it is this. Never stop asking questions. Psychiatry has always been considered a highly problematic and debated discipline since its very beginning. Asking questions regarding the mind and brain, finding answers, then doubting those very answers in every way possible, subjectively and objectively, is my current take on the true goal of psychiatry after my encounter with this book.

.

Instructions for authors

The Bulletin of Integrative Psychiatry publishes blind peer reviewed articles, reviews, updates, meta analyses, original papers, case reports in the following fields of research: psychiatry correlated with philosophy, ethics, meta ethics, bioethics, aesthetics, economy, sports, nutrition, law, forensic medicine, political sciences, communication science ,sociology, social assistance, anthropology, cultural anthropology, literature, religion. The journal is published quarterly in English.
Articles are submitted to the discussions in meetings of the Editorial Board, being subjected to a blind peer review evaluation from two specialists in the field.
Evaluating the scientific value and originality of the article, as well as its layout, grammar and structure and the way in which the guidelines for publication have been observed, the final publication decision is made by the editor-in- chief and the advisory board. It is also required that the article admitted for publication should represent a substantial contribution in the field, and the data included are correct and pertinent.
There are no author fees and all articles are made free access on line.
In the Declaration of Interests, authors must indicate any financial and personal relationships with other people or organizations that could influence in an incorrect way their work.
Conflict of interests can refer to financial relationships and academic competition.
Authors should not submit articles that have been published or sent for publication to other journals.

Bulletin of Integrative Psychiatry, accept for publication the following types of works (articles): reviews, updates, meta analysis, original papers, case report

Fields of research: psychiatry correlated with philosophy, ethics, metaethics, bioethics, esthetics, economy, sports, nutrition, law, forensic medicine, political sciences, communicational sciences, sociology, social assistance, anthropology, cultural anthropology, literature, religion etc.

Manuscript Criteria and Information

Manuscripts and all attached files should be submitted in electronic form and on paper.
The electronic form should be submitted, either on compact disk or by e-mail (see at end). It is preferable that two copies (in English and Romanian) of the manuscript, printed on one side of A4 paper format, single-spaced, with 2 cm margins, be also submitted to the same address. The manuscript should be accompanied by a **cover letter** including the statement on authorship responsibilities form, the statement on ethical considerations and the statement on financial disclosure (For more information please see directions on website).

Authorship

All named authors should meet the criteria for authorship as stated in the “Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication” issued by the International Committee of Medical Journal Editors (www.icmje.org).

Ethical considerations

If the scientific project involves human subjects or experimental animals, authors must state in the manuscript that the protocol has been approved by the Ethics Committee of the institution within which the research work was undertaken. All authors are responsible for adhering to guidelines on good publication practice.

Financial Disclosure

The manuscript should be accompanied by a **cover letter** including the statement on financial disclosure. The statement on conflicts of interest will be published at the end of the paper. Please submit all requested signed documents by regular mail to the Secretariat. Scanned copies sent electronically and fax submissions are not acceptable.

Corrections

Scientific fraud is rare events; however, they have a very serious impact on the integrity of the scientific community. If the Editorial Board uncovers possible evidence of such problems it will reserves the right to take all steps it considers necessary for the elucidation of the situation, including possibility to publish errata, corrigenda, or retractions.

Copyright

The papers published in the Journal and protected by copyright. Their full or partial publication in other journal is allowed only with the written approval of the publisher.

Manuscript Preparation

- Romanian authors should send both the Romanian and English version of the article, including title, abstract and key words. Foreign authors should send the English version of the article.
- Manuscripts must be prepared in conformity to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication" issued by the International Committee of Medical Journal Editors (www.icmje.org).
- Articles must be written in Microsoft Word, Style: Normal + Justify, Font: Times New Roman, size 12. All manuscripts must be typed single-spaced. Original source files (not PDF files), are required. In text editing, **do not use** spacing with spacebar, or paragraph mark, use only Enter or Tab key.
- Subheadings of the article should be left-justified, typed with capital letters, Font: Times New Roman, size 12.
- The abstracts and Key words must be written in Microsoft Word, Style: Normal + Justify, Font: Times New Roman, size 12.
- Use as few formatting commands as possible:
  - input your text continuously (without breaks);
  - do not use different types of fonts to highlight your text;
  - any word or phrase that you would like to emphasize should be indicated throughout the text by underlining;
  - use only the "Enter" key to indicate the end of the end of paragraphs, headings, lists etc.;
  - do not use the "Space Bar" to indicate paragraphs, but only the "Tab" key
- Figures must be cited in order in the text using Arabic numerals, (e.g., fig.2). Their width should be max. 13,5 cm. The figures have to satisfy the following conditions:

- Black and white photographs with good contrast, with recommended size;
- Scanned photograph with a resolution of minimum 300 dpi and edited on a computer, original file (*JPG);
- Illustrations (drawings, charts) created on a computer, cited in the text, original file (*XLS, *CDR). Every figure should be accompanied by a title and a legend.
- Tables, numbered consecutively with Latin numerals (e.g., Tab. II), should have a width of max. 13,5 cm. Every table should be also accompanied by a title and a legend. The distribution of tables and figures in the text should be balanced.
- Please do not import tables or figures into the text document, but only specify their insertion in text (e.g., Table No.III insertion). They have to be sent in separate files. Files should be labeled with appropriate and descriptive file names.
- Abbreviations shall be avoid. If used, will occur preceded by the full term at their first apparition in text. A list of all used abbreviations shall be made at the end of the article,
- Separate pages: tables, graphics, pictures and schemes will appear on separate pages.
- You may use a common compression program: ARJ, RAR or ZIP.

Manuscript organization

Article title: titles should be short, specific, and descriptive, emphasizing the main point of the article. Avoid a 2-part title, if at all possible. Do not make a declarative statement in the title. Title length, including punctuation and spaces, ideally should be under 100 characters and must not exceed 150 characters.

Manuscript Size

- Original paper - 8 pages/3500 words;
- Review and update - 8 pages/3500 words;
- Case report - 4 pages/1700 words;
- Clinical notes - 3 pages/1300 words;
- Letters to editor, information scientific reunions - one page/450 words.

Author(s). First name, middle initials and surname of the authors, without any scientific, didactic or military degrees; (e.g., Mircea A Popescut, Aura Vasilescu, **not Popescu M.A., Vasilescu A.**).

Footnote that specifies the authors' scientific titles, professional title, name and address of their workplaces (institution and department) for each author; contact details of the corresponding author (full address, telephone number, fax number, e-mail address) and the address of the institution and department where the study has been carried out. Contact details will be published unless otherwise requested by the author.

Abstracts in **in English and Romanian,** should have max. 300 words. For original articles is advisable to include five paragraphs, labeled Background, Objective(s), Method(s), Result(s), and Conclusion(s).

Keywords maximum of 6 keywords (minimum of 3). Keywords should not repeat the title of the manuscript.

Original papers organized in:

- **Introduction** (no more than 25% of the text), material and methods, results, comments or discussions and acknowledgements.
- **Material and methods** have to be described in enough detail to permit reproduction by other teams. The same product names should be used throughout the text (with the brand name in parenthesis at the first use).
- **Results** should be presented concisely. Tables and figures should not duplicate text.
- **Discussions** should set the results in context and set forth the major conclusions of the authors.
- Information from the Introduction or Results should not be repeated unless necessary for clarity. The discussion should also include a comparison among the obtained results and other studies from the literature, with explanations or hypothesis on the observed differences, comments on the importance of the study and the actual status of the investigated subject, unsolved problems, questions to be answered in the future.
- **Acknowledgements** section must disclose any substantive conflicts of interest in addition to the customary recognition of non-authors who have been helpful to the work described.

References. References should be numbered consecutively **in the order in which they are first mentioned in the text**. Identify references in text, tables, and legends by Arabic numerals in parentheses. The reference list will include only the references cited in the text (identified by Arabic numerals in parentheses, **not in square brackets and not bold).** All authors should be listed when four or less; when five or more, list only the first three and add “et al” (Popescu I, Popescu I, Vasile V. et al). The name of the Journals cited in the References should be abbreviated according to ISI Journal Title Abbreviations.

It is absolutely imperative that references to be entered in the text!!

Examples:

- **Reference to a journal publication:**

Amura SG.: Neurotransmitter transportor: recent progress. Ann Rev Neurosci 1993; 16; 73-93.
Tonis PJ, von Sandick JW, Nieweg OE, et al.: The hidden sentinel node,in breast cancer. Eur J Nucl Med 2002; 29: 305-311

- **Reference to a book:**

Ashcroft FM.: Ion channels and disease, San Diego, London: Academic Press,
2000, pp. 26-52.

- **Reference to a chapter in an edited book:**

Pandiom MR, Fischer DA. Immunoradiometric assays. In: Scabes CG, editor.
Handbook of Endocrine Research Techniques. New York, London: Academic Press, 1993, 26-52
The punctuation and the general aspect of the text format must comply with the rules mentioned above. This is a mandatory and eliminatory condition.

ACKNOWLEDGMENTS AND DISCLOSURE

Authors: an “author” is generally considered to be someone who has made substantive intellectual contributions to a published study, and biomedical authorship continues to have important academic, social, and financial implications (1). An author must take responsibility for at least one

component of the work, should be able to identify who is responsible for each other component, and should ideally be confident in their co-authors' ability and integrity.

We strongly encourage developing and implementing a contributor ship policy, as well as a policy on identifying who is responsible for the integrity of the work as a whole.

Disclosure: The authors must declare if they have or not a potential conflicts of interest to disclose.

Acknowledgments: All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section. Authors should declare whether they had assistance with study design, data collection, data analysis, or manuscript preparation. If such assistance was available, the authors should disclose the identity of the individuals who provided this assistance and the entity that supported it in the published article. Financial and material support should also be acknowledged.

PEER REVIEW PROCESS

Although the practice of peer review started 300 years ago, only since 198s the process has been active to analyze if articles sent to journals are well-written, correctly edited and represent reliable sources of information.

All manuscripts intended for publication will be subject to blind peer-review by a committee of experts which assesses the scientific and statistical correctness of articles submitted. The committee receives the manuscripts without knowing the authors' name and proposes possible changes, which will be transmitted to the authors by the medium of Editorial Board. The authors have the obligation to oversee the text in English language with the help of a professional translator.

When submitting a paper, a confirmation email is automatically sent back to the author. It contains a unique registration number used as a referral in further correspondence.

Initially, the editorial team verifies whether the manuscript complies with the editing instructions. If the paper does not meet the necessary requirements, it is rejected and the corresponding author is notified to correct the errors. If all instructions for editing have been followed accordingly, the editor selects two reviewers that will independently evaluate the paper. They have high expertise in the "peer-review" system and are well-known specialists in the field. The reviewers have all academic affiliations and may be already accredited by the Journal or specifically contacted for certain papers. Their affiliation is usually different from the one of submitting authors.

The editor sends the paper in both electronic and printed format to each reviewer with the invitation to evaluate it within 15 days. The reviewers will analyze the paper from several perspectives such as clarity, objectivity of data, scientific quality and relevance. A scale from 1 to 5 is used, where 5 is excellent and 1 is poor. The reviewers score the paper accordingly and issue a recommendation.

The existence of a manuscript under review is not revealed to anyone other than peer reviewers and editorial staff. Peer reviewers remain anonymous and are expected to maintain strict confidentiality.

After the review process has been completed, authors will be informed by mail of the Editor's decision.

Reviewers should inform the editor about suspected plagiarism.

Mandatory fill and send "Cover letter for submission of manuscript" and "Declaration of Interests and disclosure form", which you can download from the website of Bulletin of Integrative Psychiatry (www.buletindepsihiatrie.ro).

Ethical Considerations

Authors of articles should sign a statement assuming the responsibility for the originality, property rights and ethical implications of their work. Authors should obtain permission or copy right to publish figures, images or tables from other journals whose material they use.

A written consent must be obtained from patients when personal information or images of patients are included in the article. Authors must state that the protocol has been approved by the Ethics Committee of the institution where the research was conducted.

Address to send the manuscripts is:

Buletin de Psihiatrie Integrativa/ Institutul de Psihiatrie “Socola” Iasi

Lecturer Alexandra Bolos: Institutul de Psihiatrie “Socola” Iasi, Șos. Bucium 36, 700282, Iasi, jud. Iasi; E-mail: **contact@buletindepsihiatrie.ro**