16. ROLE OF NEUROFILAMENT LIGHT CHAIN IN NEUROLOGICAL DISEASE

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Introduction. Neurofilament light chain (NF-L) is a cytoplasmic protein highly expressed in large-caliber myelinated axons. The degree of axonal damage in a variety of neurological disorders, including inflammatory, neurodegenerative, traumatic, and cerebrovascular diseases are proportionally correlated with increased levels of NF-L in cerebrospinal fluid (CSF) and blood.

Aim of study. To evaluate the role of NF-L as a diagnostic biomarker, monitoring therapy, and prognostic biomarker for neurological disorders.

Methods and materials. There were analyzed articles from PubMed and ScienceDirect databases from the last 5 years, from 2018 to 2023, that mentioned such words as “Neurofilament light chain”, and “Neurological disease”.

Results. Firstly, we analyzed the literature about NL-F levels in elderly persons. NL-F levels are correlated to the age of elderly persons. Differences between sexes aren’t found. Comorbidities also present a major role in correlation with NF-L ranges; the ranges were increased in patients with neurological disorders, cardiovascular diseases, and a history of fracture, compared with people who didn’t report these comorbidities. Literature analysis showed a higher level of NF-L in neurocognitive disorders. Various studies have previously explored the role of the biomarker in the diagnostic process, monitoring, and prognosis of dementia: Alzheimer’s dementia, motor neuron disease, Parkinsonian syndrome, cerebral small-vessel disease, and psychiatric disorders. It is a biomarker of axonal injury in neurological diseases and has a substantial correlation with cognitive decline. It was studied that biomarker is elevated in metachromatic leukodystrophy, a lethal metabolic disease. Another study uses NF-L not only for diagnosis, also, for studying effectiveness across disease-modifying therapies in Multiple Sclerosis and for prognostic of disease.

Conclusion. Biomarker NL-F can be one of the early diagnostic biomarkers in cognitive decline, in neurological disorders. Also, it can be used to evaluate treatment therapy and may be as a prognostic biomarker.