

Ghilechii A. S.

DIAGNOSTIC OPTIONS IN BRAIN METASTASES

State University of Medicine and Pharmacy «Nicolae Testemitanu», Chisinau, Moldova

Department of Oncology

(scientific advisor - M.D. Virlan M. L.)

Brain metastases (BM) are the most common brain tumors clinically manifested. Imaging tests are of paramount importance in the diagnosis and management of metastatic disease. It can provide initial confirmation of a previously suspected malignancy in patients with neurological symptoms, can confirm metastatic disease in the evaluation of a known systemic neoplasm, and can be used to stage and restadiolize central nervous system interest during treatment.

The study of the literature on brain metastases was performed using the MEDLINE database with the interface PubMed. Relevant articles were selected, using the following keywords: brain metastases, neuroimaging tests.

Although MRI is more sensitive than CT in detecting brain metastases, CT remains a vital tool in the initial assessment of perioperative management. Advanced NMR techniques such as MRS (magnetic resonance spectroscopy), MRP (magnetic resonance perfusion), DWI (diffusion weighted imaging) and DTI (diffusion tensor imaging) can also be used to help differentiate brain metastases from other pathologies. to monitor response to treatment. Nuclear medicine studies, including 18-fluoro-deoxyglucose positron emission tomography (FDG-PET) and other molecular imaging methods may play a larger role in the future. Spectroscopy can be performed for single or multiple tumor regions to detect certain ranges of specific metabolites in brain tissue, such as choline, creatinine, lipids, lactate, and N-acetyl-aspartate. The analysis of these metabolites is useful to distinguish metastases from necrosis, gliosis and vasogenic edema. There is great interest in whether BM has genetic differences from primary tumors and how these differences can be exploited to improve the outcome for this. DNA sequencing is proposed to find de novo mutations or deletions. Sequencing of the entire exome (performed on BM, primary tumors, and normal tissue from different histologies) found a branched pattern of evolution between BM and the primary tumor suggesting a common ancestor undergoing independent evolution.

Neuroradiological imaging is a major diagnostic method in the evaluation of brain tumors. These studies are critical for preoperative planning and often provide information on the biology of the lesion mass. Studies reveal an increased frequency of targeted genetic aberrations in BM, so BM analyzes can identify targeted mutations that are not present in the primary and, if available, should be considered for targeted therapy.