CLINICAL IMAGING CORRELATIONS IN NEUROMYELITIS OPTICA SPECTRUM DISORDERS

Dafna Poulose

Scientific adviser: Vitalie Lisnic

Neurology Department No. 1, *Nicolae Testemiţanu* University

Background. Neuromyelitis Optica Spectrum Disorders (NMOSD) are antibody-mediated diseases against aquaporin-4 (AQP-4) that result in autoimmune disorders of the central nervous system. The main clinical findings in NMSOD+AQP-4 include optic neuritis and myelitis. To support these clinical presentations, we look for MRI findings of lesions, inflammations, and edema in the optic nerve, spinal cord, brainstem, etc. **Purpose of study.** To understand the correlations between clinical manifestations in patients with NMSOD and cerebral and spinal cord MRI. **Material and methods.** This literature review uses relevant articles from the National Library of Medicine, PubMed, and Neural Regeneration Research. **Results.** The most frequent symptom, optic neuritis, involves different severity levels of loss of vision, pain due to eye movement, dyschromatopsia that can be explained by the bilateral lesion, and atrophy of the optic nerve along with the optic chiasm. Acute myelitis is identified by the presence of motor and sensory disturbances like numbness, spasms in the limbs, loss of bladder control, sexual dysfunctions, etc. This is influenced by lesions that descend from the corticospinal tract in the white matter towards the midbrain and damage the pyramidal tracts. Area postrema near the 4th ventricle is believed to be the crucial point of attack in NMOSD and a portal for entry for the circulation of the antibodies, which manifest clinically as persistent hiccups, nausea, and vomiting. The presence of a brain stem lesion seen in the MRI causes damage to the cranial nerve plexuses, leading to muscle numbness and ataxia. **Conclusion.** The crucial factor in identifying NMOSD clinically is to understand the symptoms, signs, and MRI that frequently show bilateral and longitudinal injury of the optic nerve, optic chiasm, area postrema, and injury of the spinal cord, with the lesions involving multiple vertebral segments. **Keywords:** NMOSD, aquaporin-4, optic neuritis, acute myelitis.

NEUROPLASTICITY PROCESSES IN SCHIZOPHRENIA

Diana Privalov

Scientific adviser: Jana Chihai

Department of mental health, medical psychology and psychotherapy, *Nicolae Testemiţanu* University

Background. Schizophrenia is a mental disease that includes disruptions in cognition, perception, emotional receptivity, and social synergy. Neuroplasticity is a process with adaptive changes in the brain. It is the ability of the nervous system to reorganize its structure, functions in reply to different stimuli. **Objective of the study.** The objective of the study is to analyze recent material about the functional and structural changes that happen in patients' brains with schizophrenia. **Material and methods.** The analysis of the latest information that shows the relation between neuroplasticity processes and the mental disorder such as schizophrenia published on reliable sources such as NIH, PubMed, World Health Organization, Scientific Research, The American Journal of Psychiatry and others. **Results.** In a meta-analysis effectuated in the USA, two groups participated, the first is people with schizophrenia and the second healthy individuals. Compared with the second group, the first has a more widespread thinner cortex, surface area is smaller, and frontal and temporal lobe regions are the largest effect sizes. In another study, also effectuated in the USA, in magnetic resonance imaging studies of schizophrenia, the most common findings were diminished gray matter volumes of the medial and superior temporal, prefrontal areas. One of the most important findings in schizophrenia is a reduced level of the N-acetylaspartate in the prefrontal cortex, thalamus, temporal cortex, cerebellum, basal ganglia. **Conclusion.** Numerous studies propose that schizophrenia may be a neuroplasticity disorder. Countless mechanisms of neuroplasticity implicate molecules affiliated with glutamatergic neurotransmission. In schizophrenia numerous of these molecules have also been found to be abnormal. **Keywords:** Schizophrenia, neuroplasticity, temporal lobe, frontal lobe.