Extended Abstract Journal of Biomedical Science and Applications 2021 Vol.5 No.2

Correlation of cortical lesions of multiple sclerosis at double inversion recovery with cognition screening scores- Sally Mohamed Shaaban Elsheshtawy- Mansoura University

Sally Mohamed Shaaban Elsheshtawy
Mansoura University, Egypt

Introduction:

Multiple sclerosis is a chronic inflammatory disease affecting both white and gray matters of the central nervous system. It has been approved that the degree of gray matter involvement is closely associated with the degree of physical disability and the extent of cognitive impairment. Multiple sclerosis (MS) is typically considered to be a chronic inflammatory–demyelinating disease of CNS white matter. In the past decade, however, pathological and MRI studies have shown that lesions are often located in the gray matter, especially in the cerebral cortex. The name multiple sclerosis refers to the scars (sclerae – better known as plaques or lesions) that form in the nervous system. These lesions most commonly affect the white matter in the optic nerve, brain stem, basal ganglia, and spinal cord, or white matter tracts close to the lateral ventricles. Thus, it is necessary to incorporate widely available simple methods for neurocognitive evaluation and gray matter detection in the periodic assessment of MS patients that will influence treatment decisions. Multiple sclerosis (MS) can be pathologically defined as the presence of distributed glial scars (scleroses) in the central nervous system that must show dissemination in time (DIT) and in space (DIS) to be considered MS lesions.The scars that give the name to the condition are produced by the astrocyte cells attempting to heal old lesions. These glial scars are the remnants of previous demyelinating inflammatory lesions (encephalomyelitis disseminata) which are produced by the one or more unknown underlying processes that are characteristic of MS. Apart of the disseminated lesions that define the condition, the CNS white matter normally shows other kinds of damage. At least five characteristics are present in CNS tissues of MS patients: Inflammation beyond classical white matter lesions (NAWM, NAGM), intrathecal Ig production with oligoclonal bands, an environment fostering immune cell persistence, Follicle-like aggregates in the meninges (B-cells mostly infected with EBV and a disruption of the blood–brain barrier even outside of active lesions.Confluent subpial cortical lesions are the most specific finding for MS, being exclusively present in MS patients. Though this feature can only be detected during an autopsy there are some subrogate markers under study Damage in MS consists also in areas with hidden damage (normal appearing white and gray matters) and two kinds of cortical lesions: Neuronal loss and cortical demyelinating lesions. The neural loss is the result of neural degeneration from lesions located in the white matter areas and the cortical demyelinating lesions are related to meningeal inflammation. The scars in the white matter are known to appear from confluence of smaller ones .Currently the term "multiple sclerosis" is ambiguous and refers not only to the presence of the scars, but also to the unknown underlying condition that produces these scars. Besides clinical diagnosis uses also the term "multiple sclerosis" for speaking about the related clinical courses. Therefore, when referring to the presence of the scars is better to use the equivalent term astrocytic fibrillary gliosis. MS is usually defined as the presence of disseminated lesions in space and time with no other explanation for them. Therefore, given the unspecificity of the lesions, several MS pathological underlying conditions have been found, which are now considered separate diseases. There are at least three kind of lesions that were historically considered inside the MS spectrum and now are considered as separate entities. Lesions in MS are heterogeneous and there are four different patterns in which they start, probably due to different underlying pathogenesis. Nevertheless, it seems than

the last stage of damage is similar for all of them. Traditionally it was thought that MS lesions were produced by CD4+ T-cells bur after the discovery of anti-MOG and anti-NF demyelinating diseases, it has been noticed that most CD4+ cases are anti-MOG in reality, and now CD8+ cases are considered the real MS cases. In some cases (pattern II), a special subset of lymphocytes, called T helper cells or "CD4+ T-cells" play a key role in the development of the lesion in a way similar to the CD4+ attacks that appear in anti-MOG associated encephalomyelitis. This study was conducted to assess the correlation of cortical lesions of multiple sclerosis (MS) at double inversion recovery (DIR) with cognition screening scores on 30 patients with MS. All of them underwent MRI and clinical assessment with the calculation of Expanded Disability Status Scale (EDSS), Montreal Cognitive Assessment (MoCA), and Symbol Digit Modality Test (SDMT) scores. Results revealed that both MoCA and SDMT scales had a significant inverse correlation with cortical lesions number and total lesion load. Besides, there was a significant inverse correlation between these cognitive screening tests and varied cortical lesion subtypes and shapes. Interestingly, there was an excellent inter-observer correlation of cortical lesion number, total lesion load, different subtypes and shapes of cortical lesions . In conclusion, DIR can detect cortical lesions of MS which were well correlated with cognitive dysfunction as well as disability progression in these patients. Thus, DIR is found to be reliable and useful for clinical purposes to suspect cognitive dysfunction in MS patients.