

Project 1.9. Identification of novel biomarkers for the diagnosis and prognosis in seronegative patients with overlapping multiple sclerosis(MS)/neuromyelitis optica(NMO) clinical syndromes

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www: <https://lobi.nencki.gov.pl/>

Background:

Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) are distinct inflammatory/demyelinating diseases of the brain, spinal cord and the optic nerve. MS and NMOSD patients present clinically in a similar way with optic neuritis, transverse myelitis and/or brain or brainstem attacks, but have distinct prognosis and therapeutic responses. Both conditions are highly disabling and should be appropriately treated from the onset, which emphasizes the need for the correct and early diagnosis. Importantly, due to distinct pathogenesis, many MS drugs are not effective in NMOSD and might even exacerbate it. Serum antibodies against aquaporin-4 (AQP4) or myelin oligodendrocyte glycoprotein (MOG) can be detected in a subset of patients with NMOSD, but those who remain antibody-negative, are very challenging to diagnose.

Aim:

The aim of this project is to set up a longitudinal prospective study recruiting antibody-negative patients with overlapping features of NMOSD and MS in order to identify diagnostic and prognostic imaging biomarkers in this patient cohort using non-conventional magnetic resonance imaging techniques, such as diffusion tensor imaging and quantitative susceptibility mapping. These techniques provide deeper insight into the underlying pathology of the CNS, therefore show higher potential for diagnostic accuracy than conventional imaging used in clinical practice.

Identification of diagnostic and prognostic biomarkers in antibody-negative MS/NMOSD borderline patients will allow for early and accurate diagnosis in this challenging and heterogenous cohort of patients, prediction of long-term prognosis, optimisation of their treatment and prevention of long-term disability.

Requirements:

- Medical diploma or MSc in psychology/cognitive science, biology, physics or similar
- a strong interest in the project
- readiness to work in a collaborative environment
- interpersonal skills for working with patients with neurological disease
- previous involvement in scientific projects

- fluency in spoken and written English

Extra assets:

- completed courses in neuroimaging methods
- experience with magnetic resonance imaging (MRI)
- knowledge of statistical software (SPSS, R, AMOS)
- ability to create and work with databases
- knowledge of high-level, general-purpose programming language (Python, C, Java)
- knowledge of Matlab