

Biological markers in CSF of Sardinian patients with multiple sclerosis

Paola Tolu¹, Yolande Asara¹, Giuseppe Delogu¹, Alessandra Sotgiu¹, José Carlos Prados², Andrea Montella¹, Roberto Madeddu^{1,3}

¹ Biomedical Sciences Department, University of Sassari, Italy

² Anatomy and Embryology Department, University of Granada, Spain

³ Istituto Nazionale Biostrutture e Biosistemi (INBB), Italy

Multiple Sclerosis (MS) is an inflammatory disease of the Central Nervous System (CNS). The lesions appear in seemingly random areas of the CNS white matter. Theories try to combine the known data into plausible explanations, but none has proved definitive so the specific cause of MS is not fully understood. This inflammatory response may be triggered by genetic, environmental, and viral factors that initiate demyelination.

The different courses of the disease, both within an individual and within the whole population, principally differ in their timing, location and severity.

There is a very specific geographic distribution of this disease around the world. A significantly higher incidence of the disease is found in Sardinia.

Sardinia represents an ideal large data set for MS aetiopathogenic studies.

Biomarkers in cerebrospinal fluid (CSF) could help to predict and monitor neurological decline in people with MS. Neurons and glial cells exhibit a remarkable diversity of shapes. The evidence indicates that the shape of cells in the nervous system is closely connected to their functions.

The aim of this study is to determine if CNS-derived proteins present in the CSF of MS patients reflect different pathologic processes of MS and if these proteins could be useful as biologic markers of disease activity.

In particular we have studied the following proteins: NFL, GFAP and the isoforms II and III of tubulin β .

CNS cytoskeleton proteins concentration was performed by dot blot technique.

The results of the concentration of the four proteins are expressed in Arbitrary Unit (AU) that is the relationship between the optical density of the spots obtained and the concentration of the protein.

The concentration values of the 4 proteins of cytoskeleton are higher in all MS patients compared to both control groups.

In particular the NF increase significantly in the RRMS group than in the RPMS group, while the values of GFAP are slightly increase in RRMS group.

About tubulins, while the values of tubulin β isophorm II are almost identical in 2 groups of MS patients, the tubulin β isophorm III shows levels higher in the group RPMS than in the group RRMS.

Key words

Multiple sclerosis, Sardinia, biomarkers, cerebrospinal fluid