

Norwegian hope for biomarker research in Multiple Sclerosis

Professor Kjell-Morten Myhr discusses his hopes for the new K. G. Jebsen Centre for Multiple Sclerosis Research, at the University of Bergen

Multiple sclerosis (MS) is the leading non-traumatic cause of nervous system disability in young adults, and represents a major burden to individuals and the society. In order to reduce the consequences of the disease, research effort is forwarded aiming for developing tools for early diagnosis and treatment.

MS is an immune-mediated disease, causing multi-focal inflammatory damage and loss of nerve fibre insulation (myelin) in the central nervous system (CNS), with secondary nerve fibre (axon) destruction.

The disease develops from a complex interplay between environmental and genetic factors in genetic susceptible individuals. The onset of the disease is usually between 20 and 40 years of age. Most patients (80-90%) experience a relapsing-remitting course (RRMS) whilst fewer (10-20%) develop insidious progression from onset, known as primary progressive course (PPMS).

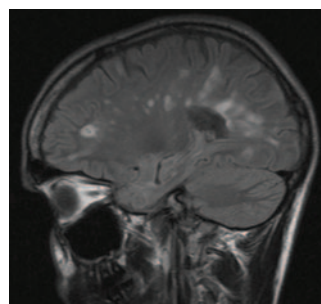
No single clinical feature or diagnostic test is sufficient for diagnosing MS. The diagnosis is therefore based on careful evaluation of the disease history of the patient and clinical neurological examination, supported by magnetic resonance imaging (MRI) of the brain and the spinal cord, as well as cerebrospinal fluid (CSF) analysis.

Disease activity is characterised by inflammatory CNS-lesions associated with myelin and axonal damage. Activity evaluated by monthly MRI may be 5-10 times higher than clinical disease activity recognised by the patients themselves or their neurologists. Treatment strategies aim to reduce relapse frequency and prevent progression of permanent disability. No curative treatment is available for MS, but corticosteroid treatment to shorten relapses and immunomodulatory therapies are important to modify the disease course.

Along with the development of new and more effective treatment strategies in MS, there is also an increasing need for early and precise diagnosis to start early treatment. However a major problem in MS is the lack of disease specific markers, both for early diagnosis and evaluation of disease activity and treatment response.

K. G. Jebsen Centre for MS-Research

Norway is a high prevalence area of MS with about 8,000 patients, and so presents a unique opportunity, as well as a special responsibility, to establish high quality MS research in the country. Thanks to a generous donation from the K.G. Jebsen Foundation, and support from the University of Bergen, the K.G. Jebsen Centre for MS-Research was recently established at the University of Bergen.



MRI picture of MS-lesions

The new centre will strengthen research efforts at the Norwegian Multiple Sclerosis Competence Centre at Haukeland University Hospital and Department of Clinical Medicine, University of Bergen.

The assignment of the K.G. Jebsen Centre for MS-Research is to identify

biomarkers with high sensitivity and specificity for multiple sclerosis. The overall research strategy is to take advantage of the unique Norwegian MS Registry and Biobank that include about 5,000 patients, 2,500 blood samples, 300 CSF samples, and tissue samples from about 80 patients.

The centre aims to define specific MS biomarkers by comparing CSF from MS patients to other neurological diseases and healthy persons by means of proteomics based on mass-spectrometry. Similar biomarker investigations will also be performed in tissue from MS brains. Identified biomarker candidates will also be studied in more easily available body fluids, preferable blood (serum/plasma) using large numbers of samples from the Norwegian MS Registry and Biobank. Verified markers will further be analysed for diagnostic sensitivity and specificity, as well as for prognostic and treatment response properties in larger samples. Successfully identified biomarker candidates will also be analysed in animal models for MS to explore the pathogenesis of the disease.

The K.G. Jebsen Centre for MS-Research will hopefully contribute to identification of MS specific biomarkers for diagnosis, disease activity and treatment response to help understanding the pathogenesis of MS.



MS Norwegian Multiple Sclerosis COMPETENCE CENTRE



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