Multiple Sclerosis And Demyelinating Disorders – New Update

Professor Jiraporn Laothamatas, MD

Faculty of Medicine Ramathibodi Hospital Mahidol University, Thailand

Multiple sclerosis (MS) is an immune-mediated inflammatory disease attacking myelinated axon in the central nervous system in young population. It shows recurrent attacks in time and space both clinically and subclinically. The definite cause of MS is unknown but it may involves a combination of genetic susceptibility person with exposure to triggering environment. Approximately 2.1 millions people are affected by MS. The prevalence of MS tends to increase with latitude with lower rates in the tropics and higher rates in northern Europe. The diagnosis is based on clinical findings and supporting evidence using 2010 McDonald's criteria. The criteria consist of a combination of clinical imaging and paraclinical tests. MRI findings serve as an important tool in diagnosis and monitoring disease progression because of its sensitivity in detecting brain (90-95% of MS), optic nerve and spinal cord (75%) lesions.

MRI imaging in multiple sclerosis composed of both conventional structural base such as T2W, FLAIR and T1W with gadolinium to demonstrate the presence of both old and new demyelinating plaques and grey matter lesions in different locations of the brain, optic nerves and spinal cord. It revealed the recurrent nature of the disease. Advanced MR imaging pulse sequences such as SWI, DTI, perfusion, fMRI and MR spectroscopy are able to demonstrate the molecular features of the pathology such as microhemorrhage and parenchymal venules related to the disease, preclinical lesions and use to predict the disability potential of the patients. The MRI protocol and guidelines revised in 2015 by the Consortium of Multiple Sclerosis Centers (CMSC) recommend using higher-resolution 3D imaging over 2D imaging whenever is possible. MRI with gadolinium for diagnosis and follow up study is recommended.

MS is divided into categories such as relapsing-remitting MS (RRMS) composed of 85% of cases, Secondary progressive MS (SPMS), primary progressive MS (PPMS) and progressive-relapsing MS (PRMS). Neuromyelitis optica (NMO) or Devic disease is a special category of the demyelinating disease attacking the spinal cord and optic nerves. Its diagnosis can be confirmed by the presence of antibody against aquaporin 4 (a water channel expressed at major fluid-tissue barriers across the CNS).