MRZ reaction could distinguish patients with NMO from those with MS

Most patients with multiple sclerosis (MS) have a polyspecific, antiviral humoral immune response against neurotropic viruses such as measles, rubella, and varicella zoster (MRZ reaction). Crucially, Jarius *et al.* now report that individuals with neuromyelitis optica (NMO) barely experience this reaction, which could potentially provide a new test to differentiate between MS and NMO.

Intrathecal and serum levels of antibodies to the three viruses were determined in serum and cerebrospinal fluid samples from 20 patients with NMO and 42 patients with MS. Only one patient with NMO had a positive MRZ reaction, and this patient had an atypical presentation. By contrast, 37 (88%) patients with MS—24 of 29 patients with relapsing–remitting MS, 4 of 4 patients with secondary progressive MS, and 9 of 9 patients with a clinically isolated syndrome suggestive of MS—had a positive reaction (P <0.0001). Median antibody indices were significantly higher in patients with MS for all three viruses (P <0.0005). The test differentiated between MS and NMO regardless of serum NMO-specific IgG status.

The marked differences in antibody responses support the idea that NMO is pathologically distinct from MS and indicate that testing for an MRZ reaction via routine cerebrospinal fluid analysis could help to differentiate between these diseases. With its 88% sensitivity, 95% specificity, positive likelihood ratio of 17.62 and negative likelihood ratio of 0.1, the authors speculate that this test could be helpful in the differential diagnostic work-up of seronegative patients with NMO, especially for those with brain lesions, in whom differential diagnosis is often particularly difficult.

Original article Jarius S *et al.* (2008) Polyspecific, antiviral immune response distinguishes multiple sclerosis and neuromyelitis optica. *J Neurol Neurosurg Psychiatry* [doi:10.1136/jnnp.2007.133330]

Vitamin D supplements could guard against stroke

Supplementation with vitamin D has been shown to have several positive effects in patients with stroke, including reducing osteopenia and fractures, and increasing muscle strength. A study conducted in Germany has now demonstrated an independent association between low levels of vitamin D and incidence of fatal stroke, which suggests that this vitamin could be directly protective against stroke.

The study was performed in 3,316 white patients referred for coronary angiography to a single center; serum concentrations of 25-hydroxyvitamin D (25[OH]D) were measured in 3,299 patients, and serum levels of 1,25-dihydroxyvitamin D (1,25[OH]2D) in 3,315 patients. Binary logistic-regression analyses demonstrated that levels of both 25(OH)D and 1,25(OH)2D were significantly lower in the 42 patients who died from stroke (27 ischemic, 8 hemorrhagic, and 7 of unknown etiology) during follow-up (median 7.75-years) than in study survivors. This relationship held true after adjustment for cardiovascular risk factors and levels of physical activity, calcium and parathyroid hormone. Additionally, levels of both vitamin D metabolites were reduced in patients with a baseline history of cardiovascular disease.

The authors acknowledge that the lack of a group of healthy controls in this study could have influenced the findings. Nevertheless, from the results of this study and those of a previous meta-analysis that indicated increased survival in individuals treated with vitamin D, they recommend that patients affected by or at high risk of stroke should receive vitamin D supplementation to maintain 25(OH)D concentrations of at least 75 nmol/l.

Original article Pilz S *et al.* (2008) Low vitamin D levels predict stroke in patients referred to coronary angiography. *Stroke* [doi:10.1161/STROKEAHA.107.513655]

Antisense RNA upregulates β-secretase 1 in Alzheimer disease

A noncoding, antisense RNA that regulates β-secretase 1, also known as BACE1 (β-site amyloid precursor protein cleaving enzyme), has been implicated in the pathogenesis of Alzheimer disease (AD), a new study reports. BACE1 is involved in the production of the amyloid-β (Aβ) peptides that form plaques in the brains of individuals with AD. Faghihi *et al.* have identified the mechanisms by which the natural