

Clinical diagnosis

Case 330

5. Neuromyelitis optica spectrum disease (NMOSD)

Or Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD)

【Progress】

She was introduced to Universal Hospital for further management.

【Discussion】

The representative diseases occupying spinal cord whose sizes over exceed three vertebrae are neuromyelitis optica spectrum disease (NMOSD) and sarcoidosis. The pathogenesis of NMOSD is that antibody for aquaporin 4 antibody adheres to glia cell aquaporin 4 adheres inducing damages to glia cells and various neuro-disorders. Namely, NMOSD is caused by allergic type II: type 1, anaphylaxis by Ig E adhered mast cell secreting histamine and protease; type II, self-antibody adheres to self-cell, damaging inflammation and dysfunction; type III, complex of antibody to fluid-antigen, precipitating and damaging to capillary; type IV, disposal process of foreign body with macrophages, lymphocytes and fibroblasts, forming a swollen nodule. Meanwhile, sarcoidosis alike tuberculoma but without caseous necrosis. Both lesions are considered to be formed by immune reaction, although sarcoidosis is not determined to be allergic disease.

Aquaporin 4 of glia cells adhered to vessels assume functions to flow in drain fluids of lymph from vessels to brain parenchyma for nutrient and flow out waste products. NMOSD is a disorder of Aquaporin 4, inducing damages of glia cells. The optic nerve, brain and spinal cord containing dens Aquaporin 4 are susceptible to NMOSD (1-4).

Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) is found in the process associated with the findings of NMOSD. In short, in cases with similar radiological and clinical findings as those of NMSOD, the cases with negative aquaporin antibody but with positive anti-oligodendrocyte glycoprotein were found, terming as MOGAD (5-10).

Oligodendrocytes are supportive cells for myelin sheath which protect axon transmitting electric nerve signals. Oligodendrocytes function to give nutrients and repair axon. Multiple sclerosis (MS) arises from myelin sheath injury due to attack by cyto-toxic CD8 T cells with elevation of interferon γ . Meanwhile, MOGAD arises from helper CD4 T cells with neutrophils probably antibody adhered to glycoprotein present at the surface of oligodendrocytes. MOGAD faces mild symptoms and favorable prognosis rather than MS, even than NMSOD (11).

Spinal tumor arises from four type cell component of spinal cord; astrocyte, ependymal cell, oligodendrocyte and microglia. Namely, as intraspinal tumors, astrocytoma, ependymoma and oligodendroglioma are listed. As extraspinal intradural tumors, meningioma and neurinoma are listed.

In our case, spinal MRI depicted a lesion with high signal intensity on T2WI extended over three vertebrae, indicative of NMOSD, MOGAD sarcoidosis and spinal infarction. Symptoms are mainly sensory disturbance of numbness rather than motor disorder indicative of no possibility of spinal infarction but NMOSD, MOGAD or sarcoidosis.

【Summary】

We presented a sixty-six-year-old female for main symptom of numbness of bilateral lower extremities associated with motion disorder. Fat suppression T2WI MRI depicted a long lesion with high signal intensity at thoracic spinal cord whose size extends beyond three thoracic vertebrae. It is borne in mind that spinal cord lesion over three vertebrae is often experienced in neuromyelitis optica spectrum disease (NMOSD), Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) and sarcoidosis. NMOSD arises from injury of glia cells for antibody attacking Aquaporin 4 of glia cells, MOGAD arise from injury of oligodendrocytes for antibody attacking oligodendrocyte glycoprotein. These two diseases corresponded to allergy type II. Meanwhile, sarcoidosis lesion composes of cell accumulation of immune cells of macrophages and T lymphocytes without caseous necrosis.

【References】

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