

# Imaging diagnosis

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## Case 436

### 3. C, D

#### **【Progress】**

He was scheduled to be transported to the central hospital where neuro-medical internal medicine physician serves.

#### **【Discussion】**

There are three diseases with high signal intensity in the spinal cord on T2WIMRI that extend to three vertebrae or more; optic neuromyelitis now called neuromyelitis optica spectrum disorder (NMOSD); sarcoidosis; myelo-oligodendrocyte glycoprotein antibody associated disease (MOGAD). The etiology of NMOSD is reported (1-8) ; Aquaporin 4 present at the edge of glia cells that play a role of the gate for interstitial fluids taking from serum fluids with the use of arterial pulsation: antibodies of Aquaporin 4 create the disorder of glia cell function of water homeostasis inducing the damages to glia cell itself and dysfunction of neuron cells. This disorder mechanism is based on autoimmune disease of type II allergy reaction. Meanwhile, the etiology of MOGAD is reported (9-15); myelin glycoprotein is one of the components of myelin; antibodies to myelin cause the disorder of myelin function inducing dysfunction of neuron. This disorder mechanism is also based on autoimmune disease of type II allergy reaction. Meanwhile, the etiology of sarcoidosis is not yet to be clarified. The granuloma of sarcoidosis is composed of accumulation with immune cells of lymphocytes, macrophages and fibrocytes though the specific antibody is not found.

Diseases with high signal intensity in the spinal cord on T2WIMRI that extend less than three vertebrae are reported: multiple sclerosis (16), tuberculosis, syphilis, sarcoidosis and metastasis. The etiology of multiple sclerosis is reported that cellular immunity to oligodendrocytes by CD8 cells (cytotoxic lymphocytes) damages oligodendrocytes. This immune system corresponds to allergy IV (16).

As a result, Allergy II mechanism of NMOSD and MOGAD causes greater damage to the brain and spine parenchyma than allergy IV mechanism of multiple sclerosis.

Interestingly, sarcoidosis with cellular components causes either longer spine of three vertebrae level or greater as well as shorter segment than three vertebrae. Tuberculosis, syphilis, metastases that are composed of cellular components, causes the damage extent of less than three vertebrae.

## **【Summary】**

We presented a seventy-eight-year-old male presented in our hospital with motion disorder of bilateral lower extremities with sensory paralysis of pain. High signal intensity in the cervical spinal cord extending from C1 to C7.

It is borne in mind that when the lesion with high signal intensity is depicted in the spinal cord whose length is three vertebrae or more on T2WIMRI, three diseases are listed for the imaging diagnosis: neuromyelitis optica spectrum disorder (NMOSD); sarcoidosis; myelo-oligodendrocyte glycoprotein antibody associated disease (MOGAD).

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