

The proper regime for this patient is

Case 385

3. Mild encephalopathy with reversible splenial lesions (MERS)

【Progress】

The patient was transported to stem hospital for health care center of mother and children with a referring doctor.

【Discussion】

Corpus callosum is a pathway between right and left hemispheres. It comprises of rostrum, genu, trunk(body), and splenium. Rostrum connects orbital surfaces of frontal lobes, genu connects frontal lobes, trunk connects temporal and parietal lobes, and splenium connects occipital lobes. Corpus callosum is the highest density of the white matters of brain, containing 200,000,000 axons.

Corpus callosum functions exchange of information between both hemispheres and harmonies functions between both hemispheres. Further, it comes to take a role of cognition based on studies that electric signal lowering of corpus callosum in aged people is related to declining of cognition, that thickening of corpus callosum becomes thickening as time advance and that thickness of corpus callosum correlate to intelligence, velocity to moving things forward, and ability of solving problems.

Mild encephalopathy with reversible splenial lesions (MERS) subjects to disability of corpus callosum. Although MERS is known to arise from influenza virus, it occurs in various diseases (1-5). As infectious diseases, rotavirus, adenovirus, salmonella, E coli are listed. As non-infectious diseases, MERS occurs immediately after one session of chemotherapy or after dose loss of anti-coagulants (1-7). The symptoms of MERS are consciousness disorder, convulsion, headache and fever. They naturally come to abate within one month (2-4).

The radiologic image of MERS is high signal intensity of corpus callosum splenium accompanied with lowering of ADC (2-4, 6). In our case, an ADC value of splenium and genu of corpus callosum was 0.347. It indicates cellular edema implying organic damage such as acute brain infarction. However, the symptoms are reversible, and complete recovery can be expected, implying neural damages are slight or nothing. Axon is covered with myelin that helps the electric signal of neuron flow smoothly and rapidly. Although this mechanism is yet to be clarified, myelin damage causes edema of axon that is a part of neuron, leading high signal intensity of corpus callosum splenium associated with lowering of ADC. As recovering myelin sheath, axon edema indicative of neuron edema without necrosis, return to normal axon.

On a similar event, posterior reversible encephalopathy syndrome (PRES) is listed with high signal intensity on Diffusion WI associated with high values of ADC, indicative of vasogenic edema, and T2 shine through, not of cellular edema.

【Summary】

We presented a nine-year-old girl with high fever, throat pain and vomiting. She got influenza virus infection. Day 2 after admission, she experienced consciousness disorder, and inexplicable response. Brain MRI depicted high signal intensity of corpus callosum splenium and genu associated with lowering of ADC values, compatible with mild encephalopathy reversible splenium lesions (MERS). It is borne in mind that corpus callosum of MERS with high signal intensity of DWI associated with lowering of ADC values is considered to arise from myelin sheath damages inducing edema of axon a part of neuron. This point is different from PRES (posterior reversible encephalopathy syndrome) with high signal intensity on Diffusion WI associated with high value of ADC values indicative of vasogenic edema.

【References】

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