Anti-N-methyl-D-aspartate receptor encephalitis relapse in the brainstem

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DESCRIPTION

Anti-N-methyl-D-aspartate receptor (anti-NMDAR) encephalitis is an autoimmune disorder involving IgG antibody reaction against NMDAR. It typically develops in women with ovarian teratoma, and its characteristic clinical symptoms include acute behavioural change, psychosis, movement disorder, seizure and autonomic dysfunction. Long-term management in an intensive care unit and immunosuppressive therapy are necessary in most cases, but good prognosis is achieved with appropriate treatment.[1] Here, we report a case of anti-NMDAR encephalitis that improved without treatment, but relapsed involving a different brainstem lesion without any symptoms.

A 36-year-old woman was admitted with headache and a single partial seizure 2 weeks after influenza-like fever. At admission, her physical and neurological examination findings as well as routine blood examination results were normal. Cerebrospinal fluid (CSF) analysis revealed a cell count of 163/μL (neutrophil-to-lymphocyte ratio, 15:1) and protein level of 47 mg/dL. MRI showed slight swelling in the limbic system. Meningitis was suspected; however, various autoantibodies, malignant tumour markers and infection-related findings, including CSF herpes simplex virus PCR, were negative. Further, no tumours or ovarian teratomas were detected. Electroencephalography revealed no abnormality. This could be explained by acute symptomatic seizure, and she was further assessed. Temporary empty delusions and behavioural abnormalities developed 1 week later, and they disappeared quickly without treatment. Additional CSF examination revealed a cell count of 18/μL and protein level of 26 mg/dL. She returned to her baseline condition and was discharged. Because anti-NMDAR antibody was detected in her CSF, she was diagnosed with anti-NMDAR encephalitis. Three months after discharge, a brainstem lesion was identified on follow-up MRI. However, she did not exhibit any symptoms. Antiaquaporin-4 and antimyelin oligodendrocyte glycoprotein antibodies were negative. The lesion disappeared without treatment 2 months later (figure 1).

This case is extremely valuable because the patient showed improvement without treatment, but showed relapse involving a different lesion without symptoms. Some cases developed only with epilepsy and did not progress to severe conditions,[2] and the presence of undiagnosed mild cases is expected. Some patients may be misdiagnosed. Epilepsy and psychiatric symptoms developed in our patient after influenza-like fever were indicative of the typical course of anti-NMDAR encephalitis.[1] Therefore, the anti-NMDAR antibody should be checked in suspected cases. Our patient improved without treatment; however, tumour removal and immunotherapy can improve prognosis and are recommended.[1] Anti-NMDAR encephalitis is generally monophasic; however, in a previous report, 24% of patients showed relapse with less severe symptoms than in the first episode.[3] The risks of relapse were shown to be absence of a tumour and immunotherapy.[1 3] We should consider the risk of relapse. Brainstem–cerebellar symptoms were noted in 23% of relapse cases.[3] There were no symptoms with a brainstem lesion in the second episode. NMDAR is present

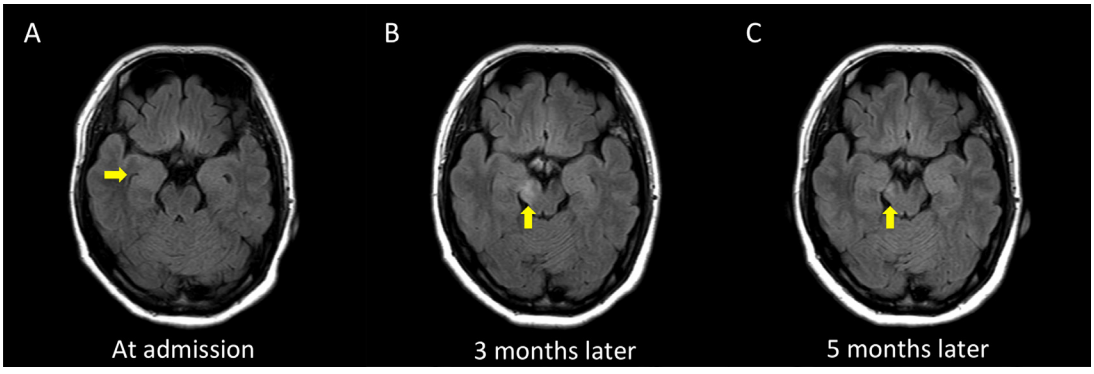

Figure 1 (A) At admission, high signal change and swelling in the limbic system are detected on fluid-attenuated inversion recovery MRI (arrow). There is no change on diffusion-weighted MRI. (B) Three months later, the ventral side of the right middle brain showed high signal change and swelling on fluid-attenuated inversion recovery MRI (arrow). The patient did not exhibit any symptoms. (C) Five months later, the change at the right middle brain disappeared without atrophy.

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on the cell surface, and it does not cause progression to tissue destruction. Therefore, the patient may not have symptoms at the time of relapse. In fact, on follow-up MRI, there was no atrophy. Relapse of an atypical lesion is unique, and the aetiology is unclear. Consensus for the prevention of relapse is necessary.

Learning points

- Anti-N-methyl-D-aspartate (NMDAR) encephalitis is generally monophasic. However, 24% of patients showed relapse with less severe symptoms than in the first episode, and the risks of relapse were the absence of a tumour and immunotherapy. We should consider the risk of relapse and consensus is necessary for the prevention of recurrence.
- A brainstem lesion is not common in anti-NMDAR encephalitis, however brainstem–cerebellar symptoms were noted in relapse cases.
- Patients with mild symptoms may be misdiagnosed. The anti-NMDAR antibody should be checked in suspected cases for appropriate treatment while carefully observing the progress.

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