A Case Report of Anti-N-methyl-D-aspartate Receptor Encephalitis Comorbid with Neuroleptic Malignant Syndrome

Case Report

Patient A is a 21-year-old female patient without any past and family history of psychiatric disorders. She had an acute-onset and intermittent disorganized speech, agitation, wandering behavior with poor sleep and poor intake few days before she presented herself to our emergency department with repeated seizure attacks and left upper limb weakness. The results of brain CT and MRI (without contrast) showed no active lesions.

The next day, the patient believed that someone was chasing her, and she jumped from the third to the second floor of a building as a suicide attempt. Then, she was admitted to our psychiatric ward. On admission, she showed decreased left arm muscle power and unsteady gaits. The results of mental status examination showed that she had clear consciousness, agitation, uncooperative attitude, distractibility, irritability, disorganized speech, agitation, disorganized behavior, delusions of persecution (the feeling of being chased by her ex-boyfriend) and visual hallucinations (seeing ghosts). She had received 10 mg/day of olanzapine and 1,000 mg/day of valproate since the first day of admission. Her psychotic symptoms were improved greatly on the second day, and all her muscle power, gait and movement were recovered gradually in the following few days. She and her family denied any possible psycho-social stress before the onset of psychosis. She was discharged without residual psychotic symptoms on the fifth day of hospitalization under the impression of acute psychosis with unclear predisposing and contributing factors.

The patient’s psychotic symptoms were relapsed within one week after discharge, and she received psychiatric inpatient care at another hospital. During this hospitalization, she developed a low-grade fever with confusing consciousness with seizures. She received haloperidol and valproate for symptom control. A physician there phoned us to discuss her psychiatric and medical condition. Because of acute-onset psychosis with progressive neurological symptoms and fever, we thought of having an anti-N-methyl-D-aspartate receptor (anti-NMDAR) encephalitis in this patient, and suggested the in-charge doctors to do cerebrospinal fluid (CSF) studies and to repeat brain MRI for the patient. After 10 days of hospitalization there, her family decided to transfer her to our hospital. Owing to unstable physical vital signs, she was admitted to our medical intensive care unit (MICU) three weeks after the initial admission to our psychiatric ward. According to the referral medical record, MRI of brain showed only the findings of minimal amorphous T2/FLAIR high signals in the periventricular white matter, while the results of virus isolation and antibody identification of CSF were pending.
After admission to our MICU, the patient developed high fever (up to 42°C), diaphoresis, confusion, and rigidity over four limbs along with increased serum creatine kinase (CK). Since she had been exposed to haloperidol, we suspected the diagnosis of neuroleptic malignant syndrome (NMS). But interventions aimed at NMS did not improve her disturbing consciousness level and behavior. Her mental and medical conditions were not significantly improved until she received pulse therapy with high-dose (1,000 mg/day) of methylprednisone after confirmation of positive anti-NMDAR auto-antibody in the CSF from the previous hospital. The patient had received pulse therapy for 5 days and she was discharged home 23 days after the last admission. After discharge, she had not received any medication for two years, and maintained full resolution of both psychotic symptoms and neurological deficits at the time of preparation of this manuscript.

Comment

Anti-NMDAR encephalitis has been discovered since 2007 and originally identified as a syndrome with prominent psychiatric manifestations in the context of encephalitis in four young women with ovarian teratoma [1, 2]. This disorder may develop either absence of a tumor or as a paraneoplastic manifestation of an underlying teratoma. In our patient, abdominal CT had been arranged to search the tumor with negative result. The clinical course of anti-NMDAR encephalitis may begin with non-specific flu-like prodrome such as low grade fever, headache, and general fatigue. Then most patients would experience prominent psychiatric symptoms including behavioral disturbances, paranoid thoughts, and visual or auditory hallucinations. They are followed by progressive neurological involvement (movement abnormalities, dysautonomia, hypoventilation, seizure and cognitive impairment), often requiring ICU care.

Catatonia, rigidity, mental status changes and autonomic dysfunction induced by anti-NMDA receptor encephalitis are similar to the clinical features of NMS [3]. Moreover, many such patients are treated initially by psychiatrists and are prescribed psychotropic medications to improve psychotic symptoms before diagnosis of anti-NMDAR encephalitis, which may increase the chance of NMS [4, 5].

Here, we report a case of anti-NMDAR encephalitis in a young adult female patient, who firstly presented herself with acute-onset psychosis, and later developed NMS-like symptoms after exposure to haloperidol. It is still controversial that NMS is simply a complication to neuroleptic use in patients with anti-NMDAR encephalitis. Due to the treatment responses, NMS is considered comorbidity in our patient. We highlight the importance of identifying the unusual initial symptoms accompanying acute psychosis such as seizures and muscle weakness, as well as symptoms that overlap with NMS including high fever, rhabdomyolysis, and rigidity. We believe that our report will draw more attention and further investigation on these vital situations in clinical psychiatry. (The institutional review board of Hualien Buddhist Tzu Chi General Hospital approved the case report for publication. All authors declare no potential conflicts of interest in writing this case report.)

References


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