

A CASE REPORT ON ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS

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ABSTRACT

Anti N-methyl-D-aspartate (NMDA) receptor encephalitis is an immune mediated disorder and it is a disorder of the limbic system that largely affects female children. Anti-NMDA receptor encephalitis was actually described as a paraneoplastic syndrome as it is associated with ovarian teratomas containing neural tissue with antibodies cross reacting to the NMDA receptors. Here we discuss a case of NMDA receptor encephalitis.

Keywords: Anti NMDA, Paraneoplastic Syndrome, Teratoma.

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INTRODUCTION

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is a disorder in which the antibodies are against the NR1 subunit of the receptor which usually binds to glycine [1]. Anti-NMDA receptor encephalitis was actually described as a paraneoplastic syndrome [2] as it is associated with ovarian teratomas containing neural tissue with antibodies cross reacting to the NMDA receptors [3]. Clinical manifestations include (1) Prodromal phase characterized by headache, fever and nausea (nonspecific symptoms), (2) psychotic phase with grandiose delusions, amnesia, cognitive decline, emotional disturbances and altered behavior, (3) unresponsive phase with catalepsy-like symptoms (rigid body, rigid limbs, slowing down of bodily functions like breathing, loss of muscle control) and athetoid dystonic posturing, (4) hyperkinetic phase with oro-facial limb dyskinesias, and (5) gradual or complete recovery during the recovery phase.

CASE REPORT

A female child, aged 17 years, came to our hospital with generalized tonic-clonic seizures. Earlier she was admitted in a government hospital for seizure, headache, and fever. She was treated with Mepresso (methyl prednisolone) 1 g OD, Esticef (ceftriaxone + salbactam) 1.5 g BD, Encorate (sodium valproate) 500 mg TID, Rabicon (rabeprazole) 20 mg OD and her conditions were improved. But then irrelevant talking and aggressiveness along with visual hallucinations occurred. So admitted in local hospital and was started with antipsychotics, but no significant improvement seen. Magnetic resonance imaging (MRI) was normal. Abdominal and pelvic ultrasonography done and showed mature ovarian teratoma and hence operated with left ovarian salpingo-oophorectomy. Again she had a fever, visual hallucinations, and seizure occurred, so came to our hospital. She had given tablet encorate (sodium valproate) 500 mg 1-0-1, injection Levipil (levetiracetam) 500 mg 1-1-1, tablet quetiapine 25 mg 1-0-2 and injection ceftriaxone 1 g 1-0-1 (empirical therapy) were given. Her liver enzymes were raised (serum glutamic oxaloacetic transaminase [SGOT] - 1.97 μ kat/L and serum glutamic pyruvic transaminase [SGPT] - 2.55 μ kat/L).

So on next day, she was given tablet Udiliv (ursodeoxycholic acid) 300 mg 1-0-1 was given. Neuroimmunology results showed positive for cerebrospinal fluid NMDA type of glutamate receptor antibody and serum NMDA antibody but negative for leucine-rich glioma inactivated 1 antibodies, voltage-gated potassium channel antibodies and CASPR2

antibodies by immunofluorescence on transfected cells. She was diagnosed with anti NMDAR encephalitis in March 2016 and was given first cycle intravenous (IV) immunoglobulin (Ig) (60 g) and injection solu-medrol (methylprednisolone) 1 g. Tablet encorate was stopped. Then, tablet clonazepam 0.25 mg 1-1-1, tablet bromocriptine 5 mg TID, tablet pacitane (trihexyphenidyl) 2 mg TID, mucomix nebulization (acetyl cysteine) BD, syrup ambrolite 5 ml TID were given. Her temperature increased (103°F), both respiratory rate (12 breaths/min) and blood pressure (BP) reduced (103/66 mmHg). Now ecchymosis was present on both radial due to the administration of prednisolone. For that supportive measures were taken. Urine culture report showed the presence of *Escherichia coli* (700 cfu/ml) and given injection cefoperazone + sulbactam 2 g 1-0-1. Again her liver enzymes raised (SGOT - 2.33 μ kat/L and SGPT - 3.03 μ kat/L) and she had gaze and catatonic features. Since she was not responding to first-line agents (IV Ig and prednisolone) started on second-line agent rituximab (500 mg IV). Tablet clonazepam was stopped because she was resistant to it. Since she is allergic to haloperidol, tablet phenergan 25 mg 1-1-1 was given. Then her temperature reduced (98°F), BP get normal (127/90 mmHg), eye contact occurred and was trying to speak. And for deep venous thrombosis prophylaxis, heparin was given. Now her conditions were improved. Her liver enzymes become 0.43 μ kat/L (SGOT) and 0.57 μ kat/L (SGPT). The patient was given four doses of rituximab and two doses of injection cyclophosphamide according to infusion protocol with strict monitoring infection parameters. Cataleptic symptoms reduced. She respond to the commands and tried to wake up. Then physical medicine and rehabilitation (PMR) consultation was done and their advice followed for rehabilitation. Plan is to discharge the patient and admit under PMR for active rehabilitation.

DISCUSSION

The patient brought to the hospital, with complaints of fever, headache, visual hallucinations, irrelevant speech, and abnormal behavior. In her progression phase, she had experienced insomnia, seizures, dyskinesias tremulousness of lower limb and alternating periods of agitation and autonomic instability characterized by tachycardia, bradycardia, central hypoventilation, hypotension, and hyperthermia [4]. MRI brain showed multifocal right parietal and occipital cortical T2 fluid attenuation inversion recovery hyperintensity which shows mild hyperintense signal on diffusion-weighted imaging and apparent diffusion coefficient sequence. Since the patient had mature ovarian teratoma, she underwent left ovarian salpingo-oophorectomy and started IV Igs (60 g) and methylprednisolone (IV Ig) as first-line therapy.

Since the patient did not respond to first-line treatment, she was started on second-line agent rituximab (500 mg, IV) and the patient was found to be gradually improving.

CONCLUSION

There is strong relationship between ovarian teratoma and NMDAR encephalitis. Hence, early diagnosis and the proper selection of medicine are essential to treat the patient's condition and diseases.

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