

Anti-NMDA receptor encephalitis after Human Bocavirus infection

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Introduction

Anti-N-methyl-D-aspartate (NMDA) receptor encephalitis is a form of encephalitis associated with antibodies against NMDA receptor. This immunological response can be triggered by an infection or a tumor. Anti-NMDAR encephalitis after Herpes Simplex virus Encephalitis have been subsequently described both in adult and paediatric age. However, NMDA receptor encephalitis after Human Bocavirus(HBoV) infection is seen very rarely. In this case, NMDA receptor encephalitis after (HBoV) infection is reported.

Case report

3 years old boy with prematurity and epilepsy admitted to the hospital with febrile status. He had intubated, antiseizure medication and antibiotic treatment was started. HBoV was isolated from multiplex PCR test. After 10 days, he was extubated, but he had hyperkinetic movements, orofacial dyskinesia, lack of visual tracking and axial hypotonia. Biochemistry, viral PCR and limbic panel of both cerebrospinal fluid (figure 1) and serum were normal. After few days serum anti NMDA receptor antibodies (figure 2) were repeated, and the result was positive. Preceded to the serologic tests we started intravenous (IV) immunoglobulin treatment, because of resembling to the NMDA receptor encephalitis, clinically. Hyperkinetic movements partially recovered, He treated with 30 mg/kg IV methylprednisolone for 5 days and 375 mg/m² Rituximab weekly for a month. Unfortunately, lack of visual tracking and axial hypotonia were continued.

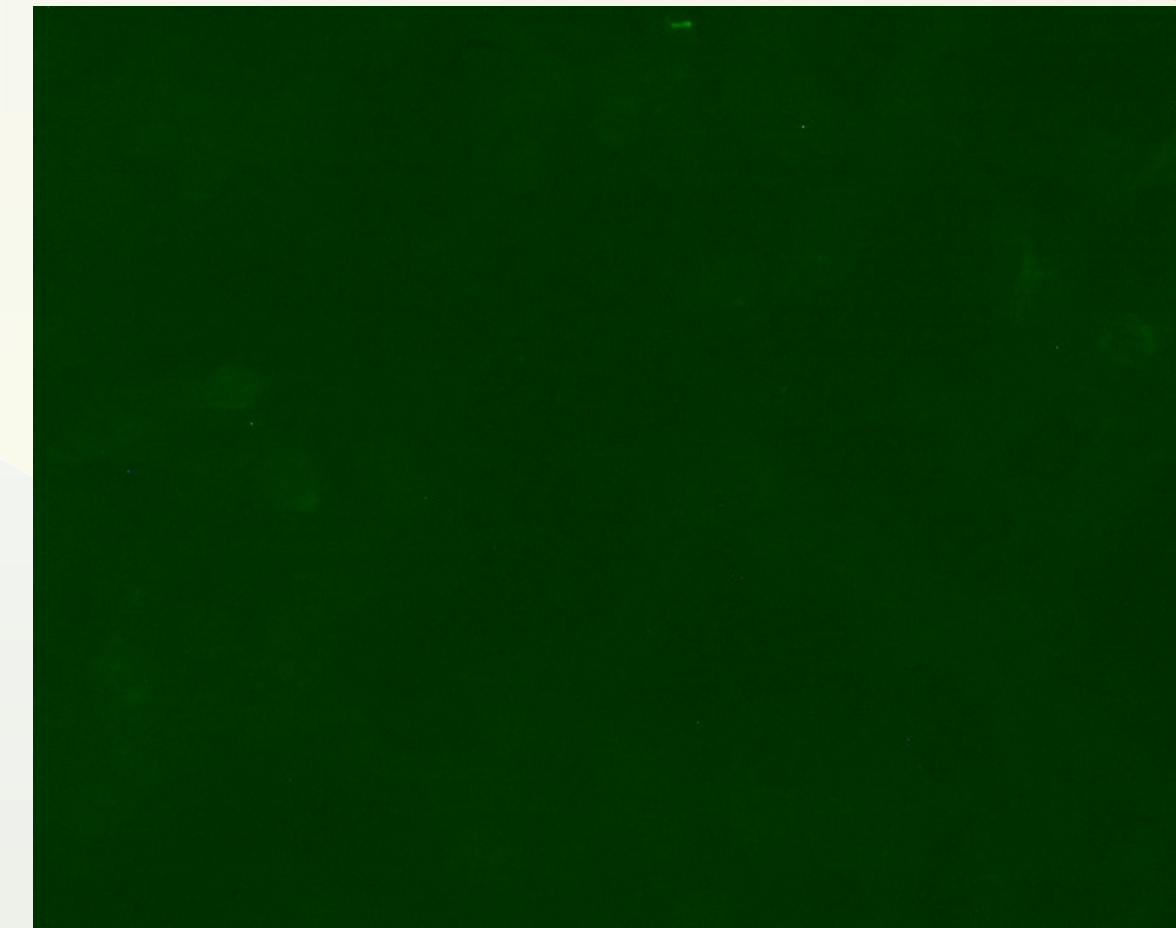


Figure 1: CSF sample

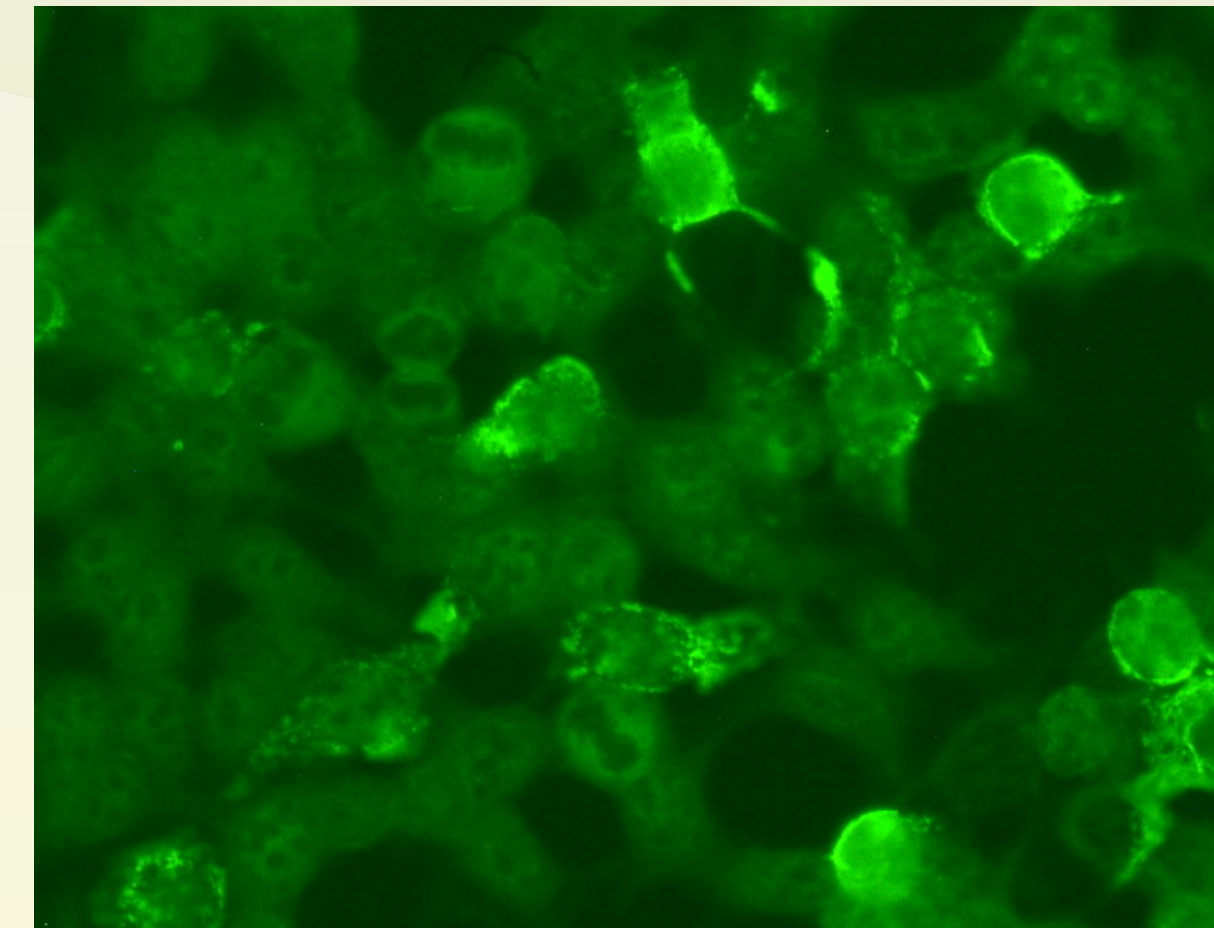


Figure 2: Blood Sample

Discussion

Various infectious agents can damage the blood-brain barrier and trigger a synaptic inflammatory response.

Sutcu et al. reported 7 pediatric cases of post-herpes simplex virus encephalitis relapses associated with autoantibodies against NMDA receptors.

Prüss et al. reported that 30% of patients with simplex herpes virus encephalitis had NMDAR antibodies detected in serum or CSF. In some patients with anti-NMDAR encephalitis, there are associations with other pathogens, including *Mycoplasma pneumoniae* and influenza viruses A and B, *Chlamydomphila pneumoniae*, *Bordetella pertussis*, *Bordetella parapertussis*, densovirus, varicella zoster virus, and Epstein-Barr virus.

Wang et al. suggested that, the sensitivity of NMDA receptor antibody testing is higher in CSF compared to serum. Other CSF abnormalities are present in some patients with Anti-NMDAR-encephalitis, however these changes do not appear to affect prognosis. Similar to our case, several case series have described successful diagnosis and treatment of anti-NMDAR encephalitis on the basis of positive serum testing alone, with negative or absent confirmatory CSF testing

Conclusion

Either CSF or blood analysis of anti-NMDA receptor antibodies should be repeated when postinfectious hyperkinetic movements were seen. Despite immunomodulatory treatment is effective to Anti-NMDA receptor encephalitis, the first and the second line immunotherapies could be ineffective to the post HBoV anti NMDA receptor encephalitis.

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