

Adult Acute Disseminated Encephalomyelitis Associated with a Falsely Positive HIV Elisa Test

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Abstract

Acute disseminated encephalomyelitis (ADEM) is an acute disorder of the central nervous system that follows an infection or vaccination. It is a non-vasculitic inflammatory condition resulting in perivascular edema, inflammation, and demyelination that bears resemblance to multiple sclerosis.

The diagnosis of ADEM can be challenging since there is a wide set of alternative diagnoses, including opportunistic infections, vasculitis, and central nervous system lymphoma.

Case Presentation

A 39-year-old African-American man presented with leg weakness, altered mental status, and fever approximately three weeks after an upper respiratory infection. He had an oral and genital rash and fevers up to 103° that started few days prior to the presentation. He also had diarrhoea with fecal incontinence.

On physical examination, there was diffuse thrush on the tongue, hyperpigmented non-pustular macules on the genital area, as well as painful cervical lymphadenopathy. There was no neck stiffness, or Kernig sign. There was right facial droop, weakness in all extremities 3/5 in the upper extremities, and 4/5 in the lower extremities. Spasticity was noted in all extremities with bilateral ankle clonus. There was decreased pinprick sensation in the right upper extremity.

Magnetic resonance imaging of the brain with and without contrast showed hyperintense multifocal lesions in the deep grey nuclei, subcortical white matter and cortex. Magnetic resonance imaging of the spine showed longitudinal hyperintense signal involving the central cord from C1 downwards.

CSF studies showed 68 WBC, 96 RBC with 60% Lymphocytes, which may be consistent with viral encephalitis. Viral cultures and PCR were negative. There were no oligoclonal bands in the cerebrospinal fluid. Anti NMO antibodies and Anti MOG antibodies were negative. The patient had another HIV ELISA performed and a Western blot that were negative. At that time, with a majority of the patient's CSF studies negative, the patient was diagnosed with ADEM. The patient was started on intravenous methylprednisolone as well as a course of plasmapheresis every other day. The patient had a worsening paralysis and spasticity in the upper extremities followed by improvement. When the improvement showed a plateau, intravenous immunoglobulin (IVIG) was given for 5 days. The patient continued to improve, was ambulatory in about four weeks. His neuroexam at a follow up visit three months after this episode showed normal mental status, pale optic discs with normal visual acuity, no extremity weakness, his reflexes were brisk without the presence of clonus. The plantar responses were flat.

Discussion

The onset of ADEM usually occurs in the wake of a clearly identifiable febrile prodromal illness or immunization and in association with prominent constitutional signs and encephalopathy. After identification of ADEM by MRI and exclusion of other possible causes of disease, it is crucial to rapidly institute a trial of high-dose corticosteroids to alleviate neurologic symptoms. Because of this patient's severe altered mental status and fever on initial presentation, as well as the falsely positive HIV ELISA, our case illustrates a rare presentation of an adult with ADEM. Causes of falsely positive HIV ELISA include vaccination or cross reaction of antibodies, which would be in increased circulation in a patient with ADEM.

Acute disseminated encephalomyelitis (ADEM) is a monophasic episode characterized by a brief but widespread inflammation in the brain and spinal cord that damages myelin. ADEM often follows viral or bacterial infections, or vaccination for measles, mumps, or rubella. ADEM usually affects children more than adults. The symptoms of ADEM resemble encephalitis-like symptoms such as fever, fatigue, headache, nausea and vomiting, and in severe cases, seizures and coma. ADEM typically damages white matter, leading to neurological symptoms such as visual loss, weakness, and difficulty coordinating voluntary muscle movements.

Medical literature suggests ADEM should be considered when one or more of the following are present: multifocal, polysymptomatic initial presentation; signs and symptoms of meningoencephalitis; encephalopathy; bilateral ON; cerebrospinal fluid (CSF) pleocytosis without oligoclonal bands; magnetic resonance imaging (MRI)-detected lesions involving structures not typically affected in MS such as the deep gray matter or cortex; and MRI-detected lesions that are large and exhibit indistinct borders and enhancement following gadolinium administration [1].

A total of 18% of patients still went on to have a relapse at a different CNS site than the first attack and appeared to have a clinical course consistent with MS [2].

The pathogenesis in ADEM results in perivascular edema, inflammation, and demyelination. The onset of ADEM usually occurs

in the wake of a clearly identifiable febrile prodromal illness or immunization and in association with prominent constitutional signs and encephalopathy.

After identification of ADEM by MRI and exclusion of other possible causes of disease, it is crucial to rapidly institute an empiric trial of high-dose corticosteroids as they may result in rapid recovery of neurologic symptoms and signs. Because of this patient's severe altered mental status and fever on initial presentation and falsely positive HIV ELISA.

Evidence of an infectious etiology associated with ADEM is supported by winter and spring seasonal peaks in presentation observed in some studies. Infection may trigger the subsequent autoimmune attack on the CNS, possibly via "molecular mimicry" [3,4].

Causes of falsely positive HIV ELISA include vaccination or cross reaction of antibodies, which would be in increased circulation in a patient with ADEM. The patient had resolution of neurological symptoms after a seven-day trial of plasmapheresis and five days of

high dose methylprednisolone, followed by administration of intravenous immune globulin.

We could not find the trigger for the ADEM in this patient, he could not recall whether or not he received a flu shot outside this facility.

References

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