Abstract VVN

Autoimmune GFAP astrocytopathy: a case report to improve early recognition and treatment of a rare neuroinflammatory disease

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INTRODUCTION

Autoimmune glial fibrillary acidic protein (GFAP) astrocytopathy is a rare entity, first described in 2016. It manifests as a corticoid-responsive meningoencephalomyelitis and is associated with GFAP IgG antibodies. Recognition of this clinical syndrome and considering analysis of GFAP IgG in cerebrospinal fluid (CSF) is key in diagnosis. This is highly relevant as patients generally respond well to immunosuppressive treatment in the acute stage. Here, we describe a case in which clinical evolution, laboratory studies and imaging features could enhance recognition of this rare disorder.

CASE PRESENTATION

A 37-year-old man presented to the emergency department because of suspected syncope, with a six-day history of fever, headache, cervicalgia, and myalgia. Clinical examination showed meningeal signs but was otherwise normal. CSF showed lymphocytic pleocytosis (425/mcL, 95% mononuclear cells) and elevated protein (157 mg/dL) with normal glucose. Empirical antibiotic treatment was initiated. Bacterial, fungal and TBC cultures as well as viral PCRs remained negative. Over the next four days, he developed urinary retention, progressive paraparesis and confusion. Initial brain and spinal cord MRI were normal. Next, he experienced rapidly progressive respiratory failure with need for intubation and ventilation. Antimicrobial therapy was escalated to vancomycin-meropenem-fluconazole. After weaning, clinical examination showed binocular blindness, proximal paresis in the upper limbs, paraplegia, hyporeflexia and decreased vital sensation below Th10. Investigations were repeated. Lumbar puncture showed an increased opening pressure (48 cmH2O). CSF analysis showed persistent lymphocytic pleocytosis (78/mcL) and a positive EBV PCR, leading to initiation of acyclovir. Brain and spinal cord MRI visualised spinal T2-hyperintensity at the level of Th5-6, multifocal cerebral white matter T2-hyperintensities with a perivascular distribution, and gadolinium-contrast

enhancement of the basal ganglia, leptomeninges and multiple cranial nerves, including the optic nerves. GFAP IgG detection in serum was negative at admission, however GFAP IgG came back positive in CSF (titre 1/3.2) after one month. Because of high clinical and radiological suspicion for anti-GFAP astrocytopathy the patient was already treated with high-dosed intravenous methylprednisolone, intravenous immunoglobulins, plasma exchange and rituximab, after which he slowly recovered both clinically and radiologically. While he partially regained vision and strength in his limbs, perivascular and meningeal enhancement had disappeared. He was discharged to a neurorehabilitation facility on an oral methylprednisolone tapering schedule. Six months after initiation of treatment, the patient is ambulatory with a walker and MRI abnormalities have completely disappeared.

DISCUSSION

This case of autoimmune GFAP astrocytopathy illustrates the need for early recognition and start of immunosuppressive therapy while awaiting detection of GFAP IgG antibodies in CSF. The complete clinical and radiographical spectrum is not yet well-known due to its recent discovery. The most described phenomenology involves fever, headache, and behavioral change, followed by consciousness disturbance, myelopathy, autonomic dysfunction, movement disorders and visual loss. Characteristic imaging findings are bilateral hyperintensities of the posterior part of the thalamus and linear perivascular radial gadolinium enhancement. Corticoid-responsiveness also appears to be a hallmark.

We suggest anti-GFAP IgG testing in patients with meningoencephalomyelitis of unknown etiology, after the exclusion of infectious causes. Cell-based assay is the preferred method, which has high sensitivity and specificity in CSF, but not in serum.

A consensus on diagnostic criteria is needed to better identify and treat this disease.