Hashimoto’s Encephalitis: Rare Manifestation of Hypothyroidism

Abstract
Hashimoto’s encephalitis is a rare, heterogeneous and completely treatable form of neuroendocrine disorder manifesting with seizures, stroke-like episodes, encephalopathy, dementia and variable neuropsychiatric manifestations. It is generally associated with a background of Hashimoto’s Thyroiditis, and the patient has high titers of antithyroid antibodies, especially antithyroid peroxidase antibodies. This entity responds dramatically to corticosteroids, hence should be always considered and excluded while treating a patient with encephalopathy in the background of a thyroid disease.

Keywords: Antithyroid antibodies, corticosteroids, Hashimoto’s encephalopathy, Hashimoto’s thyroiditis, hypothyroidism

Introduction
Acute and subacute encephalopathies have diverse and variable clinical profiles. The underlying etiology is mostly revealed by the clinical features, electroencephalography (EEG), neuroimaging (computed tomography or magnetic resonance imaging [MRI]), and cerebrospinal fluid (CSF) analysis. An autoimmune cause should be considered when metabolic and infectious causes have been ruled out. Hashimoto’s Encephalopathy (HE) is a form of autoimmune encephalopathy associated with autoimmune thyroiditis. First described in 1966,1 it is characterized by features of encephalopathy associated with high titers of antithyroid antibodies (antithyroid peroxidase antibodies [TPO] and anti-Tg). HE can have an acute, subacute or chronic onset and the disease may be self-limiting, progressive or relapsing-remitting in nature. There is often a dramatic response to corticosteroids, hence, an early diagnosis and treatment of HE are associated with a good prognosis. Here, we describe the case of a 40-year-old patient diagnosed as HE who presented with convulsions and altered sensorium, which an uncommon presentation of the above entity.

Case Report
A 40-year-old male presented to the emergency department with gradually progressive alteration in sensorium over the past 10 days, associated with recurrent episodes of generalized tonic-clonic convulsions. There was no history suggestive of fever, headache, vomiting, diplopia, or any focal neurological deficit. He was diagnosed with primary hypothyroidism, possibly due to Hashimoto’s thyroiditis, 2 years ago and was being treated with levothyroxine at a dose of 50 µg once daily.

Ongoing to general examination, patient’s vitals were stable, pallor-absent, icterus-absent, cyanosis-absent, clubbing-absent, lymphadenopathy-absent, and pedal edema-absent.

On examination, he was deeply comatose with a Glasgow coma scale score was 4 (E₂V₁M₁). Pupils were bilaterally normal in size and normally reactive to light. There was generalized hyperreflexia with increased tone in all four limbs. The patient was afebrile; vitals were stable. However, his oxygen saturation was 85% and showed a decreasing trend, due to which he had to be intubated and shifted to Intensive Care Unit for ventilator support.

Investigations revealed high titers of anti-thyroid peroxidase (anti-TPO) antibodies (>1000 IU/ml), while his thyroid functions revealed low levels of T3 and T4 with elevated TSH levels (58.5 µIU/ml). Besides low oxygen saturation on arterial blood gas analysis, his hemogram, renal and liver functions were within normal limits. His EEG showed diffuse slow wave activity, [Figure 1] while MRI

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showed nonspecific white matter changes. [Figure 2] CSF analysis did not reveal any abnormality and was negative for antibodies against common viruses (Herpes Simplex, Japanese encephalitis). Antinuclear and antidouble stranded DNA antibodies were negative.

Having excluded other possible infectious and noninfectious causes, we diagnosed our patient to be a case of HE. Besides anticonvulsants and other supportive measures, he was treated with intravenous methylprednisolone (1 g/day) for 5 days and subsequently shifted to oral prednisone (1 mg/kg/day). He showed gradual improvement in his sensorium with no further seizure episodes. He was extubated after 10 days and shifted to the general ward. Over a period of 1 month, he regained full consciousness without any residual neurological deficit and was seizure free. Prednisone dose was gradually tapered over the next 2 months without recurrence of symptoms.

Discussion

HE, first described by Brain et al. in 1966, is a rare and unusual neurologic disorder whose pathogenesis is still unclear. It has the prevalence of 2.1/100,000 with females more commonly affected. The mean age of onset is 42 years, with only around 130 cases been reported till date.

The pathophysiology of this rare disorder is still unclear. Previously, it was believed to be due to a toxic effect of thyrotropin-releasing hormone on the central nervous system, as some patients improved with thyroid supplementation. However, most of the evidence points toward the presence of an autoimmune vasculitis, with the cerebral microvasculature distorted by immune-complex deposits. Although HE occurs in a background of Hashimoto’s Thyroiditis with elevated levels of antithyroid antibodies, there does not seem to be any clinical correlation between them. Hence, it has been proposed to rename this entity as steroid-responsive encephalopathy associated with autoimmune thyroiditis.

Clinically, two patterns of presentation have been described for HE. It may present with a stroke-like pattern of multiple episodes of focal neurologic deficits with variable degrees of cognitive dysfunction. More commonly, a diffuse, progressive pattern is seen that presents as slowly progressive cognitive impairment with dementia, hallucinations, somnolence, or confusion. Other neurological features associated with HE include focal and generalized seizures, myoclonus, pyramidal tract signs, and psychiatric manifestations (hallucinations, paranoid delusions).
The diagnosis of HE is made by the demonstration of elevated antithyroid antibodies in the serum: anti-Thyroid Peroxidase (anti-TPO) and anti-Thyroglobulin (anti-Tg) antibodies. CSF abnormalities include elevated CSF proteins, lymphocytic pleocytosis with the occasional presence of oligoclonal bands and a normal glucose level. A nonspecific slowing of background activity can be seen in EEG of most affected individuals. The MRI of affected patients is usually normal, however focal or diffuse white matter changes may be present signifying primary demyelination. The thyroid status is variable among patients with HE. Most patients are euthyroid; up to 20% patients may have hypothyroidism while about 7% are hyperthyroid. CNS infections and other causes of delirium and confusional states must be thoroughly ruled out.

Corticosteroids are the mainstay of treatment of HE. The drug of choice is oral prednisone at a dose of 50 mg to 150 mg daily; alternatively, intravenous methylprednisolone in high doses may be used. The majority of the patients respond well to corticosteroids. In nonresponsive cases or patients intolerant to corticosteroids can be managed with other immunosuppressive drugs (cyclophosphamide, azathioprine), plasmapheresis and intravenous immune globulin administration.

**Conclusion**

Our patient presented with convulsions followed by altered sensorium, which is an uncommon presentation of HE. Any patient presenting with features of encephalopathy must be evaluated for autoimmune encephalopathies after ruling out metabolic and infectious etiologies since timely initiation corticosteroids result in almost complete reversal of the condition and a good overall prognosis.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Brain L, Jellinek EH, Ball K. Hashimoto’s disease and encephalopathy. Lancet 1966;2:512-4.
2. Marshall GA, Doyle JJ. Long-term treatment of Hashimoto’s encephalopathy. J Neuropsychiatry Clin Neurosci 2006;18:14-20.
3. de Holanda NC, de Lima DD, Cavalcanti TB, Lucena CS, Bandeira F. Hashimoto’s encephalopathy: Systematic review of the literature and an additional case. J Neuropsychiatry Clin Neurosci 2011;23:384-90.
4. Chong JY, Rowland LP, Utiger RD. Hashimoto encephalopathy: Syndrome or myth? Arch Neurol 2003;60:164-71.
5. Philip R, Saran S, Gutch M, Gupta K. An unusual presentation of Hashimoto’s encephalopathy. Indian J Endocrinol Metab 2014;18:113-5.
6. Rodriguez AJ, Jicha GA, Steeves TD, Benarroch EE, Westmoreland BF. EEG changes in a patient with steroid-responsive encephalopathy associated with antibodies to thyroperoxidase (SREAT, Hashimoto’s encephalopathy). J Clin Neurophysiol 2006;23:371-3.
7. Cantón A, de Fàbregas O, Tintoré M, Mesa J, Codina A, Simó R. Encephalopathy associated to autoimmune thyroid disease: A more appropriate term for an underestimated condition? J Neurol Sci 2000;176:65-9.
8. Philip R, Saran S, Gutch M, Tungveer Singh A. Steroid responsive myoclonus as a presentation of Hashimoto’s encephalopathy. Thyroid Res Pract 2014;11:133-5.
9. McKeon A, McNamara B, Sweeney B. Hashimoto’s encephalopathy presenting with psychosis and generalized absence status. J Neurol 2004;251:1025-7.
10. McCabe DJ, Burke T, Connolly S, Hutchinson M. Amnesic syndrome with bilateral mesial temporal lobe involvement in Hashimoto’s encephalopathy. Neurology 2000;54:737-9.
11. Nagpal T, Pande S. Hashimoto’s encephalopathy: Response to plasma exchange. Neurol India 2004;52:245-7.
12. Jacob S, Rajabally YA. Hashimoto’s encephalopathy: Steroid resistance and response to intravenous immunoglobulins. J Neurol Neurosurg Psychiatry 2005;76:455-6.