

# Hashimoto's Encephalopathy – A Rare Cause of Neuro-Cognitive Dysfunction

Patange Aparna P<sup>1</sup>, Kiran Babu B<sup>2</sup>, Chaudhari Sumit D<sup>3</sup>

<sup>1</sup>Assistant Professor, Dept. of Medicine, KIMS, Krishna Institute of Medical Sciences, Deemed University, Karad, Maharashtra, India

<sup>2,3</sup>Resident in dept. of Medicine, Krishna Institute of Medical Sciences, Deemed University, Karad, Maharashtra, India

**Abstract:** Hashimoto's Encephalopathy (HE) is a rare neurological disorder of presumably auto-immune etiology. Originally described in 1966, it is associated with Hashimoto's Thyroiditis. It is generally seen in 4<sup>th</sup>- 5<sup>th</sup> decade of life, predominantly in females. It may present as one of the two types, a sudden vasculitic type and a progressive sub-acute type associated with cognitive dysfunction. This condition is also called as steroid responsive encephalopathy associated with Auto-immune thyroiditis (SREAT). HE, in ladies is relatively common, but, HE in males has hardly been reported. Here, we discuss a case of a 58-year-old hypertensive man who presented with altered sensorium and later on was diagnosed to have HE. This gentleman was treated with steroids to which he showed remarkable improvement

**Keywords:** Hashimoto's Encephalopathy, Steroids

## 1. Introduction

Hashimoto's encephalopathy is a term used to describe an encephalopathy of presumed autoimmune origin characterised by high titres of antithyroid peroxidase antibodies. In a similar fashion to autoimmune thyroid disease, Hashimoto's encephalopathy is more common in women than in men. It has been reported in paediatric, adult and elderly populations throughout the world. The clinical presentation may involve a relapsing and remitting course and include seizures, stroke-like episodes, cognitive decline, neuropsychiatric symptoms and myoclonus. Thyroid function is usually clinically and biochemically normal. Hashimoto's encephalopathy appears to be a rare disorder, but, as it is responsive to treatment with corticosteroids, it must be considered in cases of 'investigation negative encephalopathies'. Diagnosis is made in the first instance by excluding other toxic, metabolic and infectious causes of encephalopathy with neuroimaging and CSF examination.

## 2. Case

A 58-year-old hypertensive man presented with mild to moderate fever, anorexia, confusion and irritability for 5-6 days. On the 3<sup>rd</sup> day from the onset of first symptom, the patient was asymptomatic for one day followed by which the cognitive decline was persistent. The past history was unremarkable. On initial physical examination, the patient was afebrile (99°F), BP 130/80 mmhg & PR was 88bpm. CVS, Respiratory and Abdominal examination was unremarkable. In CNS examination, there was terminal nuchal rigidity, confusion and irritability. The motor system examination was normal. Based upon history and clinical findings, a provisional diagnosis of metabolic encephalopathy and Meningitis was considered and further investigations were ordered accordingly. Initial Haemogram was normal, but the biochemistry revealed a mild hyponatremia (Na 129 mEq/L) with a normal BSL (93mg/dl), the LFTs & KFTs were normal. Thus, considering hyponatremia as a possible cause of cognitive dysfunction, prompt metabolic correction was initiated.

Concurrently, the contrast CT scan of Brain revealed no abnormal enhancements or other apparent cause of cognitive dysfunction. The CSF studies demonstrated no nucleated cells, CSF sugar 23mg/dl & CSF proteins 290mg/dl. The blood sugar level just before lumbar puncture was 99mg/dl.

Hence, based upon the history of fever, meningism and results of CSF studies, a diagnosis of viral meningo-encephalitis was made and treatment with acyclovir was started. Hypertonic saline was continued as a measure against cerebral oedema. However, no improvement was noticed in the patient's condition over the next 72hours. Thus, a search for alternative diagnosis was undertaken. Considering persistent mild hyponatremia, bradykinesia, subacute onset of cognitive dysfunction and unresponsiveness to initial treatment, Thyroid function tests were ordered which revealed a distinctly high TSH level (33.3 IU/ml). T3 & T4 was 50 & 2.7 ng/dl respectively. This prompted the thought of autoimmune thyroiditis as a cause of encephalopathy. The patient's Anti thyroid peroxidase (Anti TPO) antibody titre was ordered which turned out to be remarkably high (104.1IU/ml).

Based upon the results of Thyroid function tests, a final diagnosis of Hashimoto's encephalopathy was made. Later, the patient was put on steroids (tab.fludricortisone) and Levothyroxine supplementation. Antiviral therapy was continued for a period of 7 days while hypertonic saline was withheld after 72hours. Over a period of 5-7 days after initiating corticosteroids, the patient showed dramatic improvement in his overall condition before he was finally discharged from the hospital on day 10 of admission. One month later, on follow up, no cognitive dysfunction was noticed and the thyroid functions also showed significant improvement. Fludricortisone was continued over a period of 3months until it was tapered and omitted from the treatment.

TFTs during hospitalization	T3 T3	T4	TSH	Anti TPO antibodies
	50ng/dl	2.7ng/dl	33.3 IU/ml	104.1IU/ml
TFTs, 1 month later, after treatment with Steroids & levothyroxine	80ng/dl	4.4ng/dl	20.4 IU/ml	-

### 3. Discussion

Hashimoto's encephalopathy, also known as steroid responsive encephalopathy with autoimmune thyroiditis is a rare but important syndrome. It is included in the list of treatable dementias [1]. The differential diagnoses include viral encephalitis, Creutzfeldt-Jacob disease, stroke, metabolic and paraneoplastic encephalopathies [2].

Clinical features include encephalopathy manifested by cognitive impairment and 1 or more of the following: neuropsychiatric features (e.g., hallucinations, delusions, or paranoia), myoclonus, generalised tonic-clonic or partial seizures, or focal neurologic deficits [2]. Two major patterns of presentation were described: (1) 25% of patients follow a stroke-like pattern of multiple recurrent episodes of focal neurologic deficits with a variable degree of cognitive dysfunction and consciousness impairment [3,4], and (2) the remaining 75% present with a diffuse progressive pattern of slow cognitive decline with dementia, confusion and hallucinations [3,4]. These two clinical patterns may overlap over the course of the disease. In this case report, our patient's clinical manifestations are more consistent with the second form of presentation, which is more common.

The accepted diagnostic criteria include a spectrum of clinical features, presence of thyroid antibodies (TPO or microsomal), euthyroid or mild hypothyroid state, exclusion of infective, neoplastic, structural, or vascular aetiology, and responsiveness to steroid therapy [2,5]. There is evidence that cerebrospinal fluid titres of antithyroid antibodies are pathognomic [6].

Antithyroid antibodies have also been related to other autoimmune conditions such as myopathy, depression, bipolar disease and dementia, but the prevalence of these antibodies in the general population (ranging from 2%-20%) make it difficult to establish whether a real association exists [8]. In CSF analysis, a lymphocytic pleocytosis has been found in 14% of reported patients; in 4% of patients, it showed more than 100 cells/mm<sup>3</sup>. An elevated protein concentration occurs in 78% of patients, and in 20% of patients, it may be greater than 100 mg/dL. The blood glucose concentration is usually normal [3,4].

In a review of 82 patients with HE, brain computed tomography or MRI showed abnormalities in 49% such as cerebral atrophy, focal cortical abnormality, diffuse subcortical abnormality and nonspecific subcortical focal white matter abnormality. The latter was observed in our patient as subcortical foci of demyelination [3].

The long-term prognosis is variable, although a high percentage of patients respond to treatment; others could have a progressive or a relapsing course [3,7]. The symptoms usually improve with glucocorticoid therapy. However, it is not necessarily because of treatment. A systematic review of 85 cases published of HE found clinical response in 98% of patients treated with glucocorticoids, 92% of patients treated with glucocorticoids and levothyroxine and 67% of patients treated with levothyroxine only [3].

### 4. Conclusion

Our patient responded dramatically to steroid therapy. We could diagnose HE in our patient with the help of raised TSH and positive antithyroid antibodies but not before ruling-out infective and structural causes for his encephalopathy. His response to steroid treatment confirmed the diagnosis. Hashimoto's encephalopathy, though rare, should be considered with high suspicion as it is treatable in most case. One should also bear in mind that Hashimoto's encephalopathy is a diagnosis of exclusion.

### 5. Conflict of Interest

The authors declare that they have no conflict of interest. All authors read and approved the final manuscript.

### 6. Consent

Written consent was obtained from the patient for the publication of this case report.

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