Encephalopathy Associated with Autoimmune Thyroid Disease: A Case Report

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Introduction

Encephalopathy associated with autoimmune thyroid disease (EAATD) is very rare in pediatrics. Contributing factors include: sudden change in thyroid levels, cerebral vasculitis with endothelial inflammation or immune complex deposition, global cerebral hypoperfusion, as well as cerebral tissue-specific autoimmunity.

The case

A 16-year-old female was diagnosed with hyperthyroidism and treated with Radio Iodine Ablation (RIA). Her total T4 level was followed from hyperthyroid levels of 18.6 ug/dl (239.4 nmol/L) until hypothyroid at 3.2 ug/dl (41.2 nmol/L). Her TSH remained suppressed. Therapy with Levothyroxine at 1.6 microgram/kg/day was started when she had low T4 levels which made the patient euthyroid within 1 month. The patient started having emotional lability symptoms with sudden crying, mild confusion, disturbed sleep pattern and deteriorated school performance. EAATD was suspected. Diagnostic workup revealed high anti-thyroid peroxidase antibody titers (Anti TPO) and anti-thyroglobulin (TG) antibodies in the cerebrospinal fluid (CSF). MRI of the brain was normal. The patient was initially treated with a course of Hydrocortisone orally. When symptoms persisted, Intravenous Immunoglobulin (IVIG) therapy was given after which, the patient had marked improvement of her symptoms.

Conclusion

The diagnosis of EATTD may be delayed due to the wide range symptoms of autoimmune thyroid conditions. It is important to recognize the association of autoimmune thyroid disease and encephalopathy as a separate medical condition since symptoms of both hyper and hypothyroidism can be associated with neuro – psychiatric symptoms. EAATD occurs mostly with thyroiditis but can also happen with hyperthyroidism and Graves' disease. The diagnosis of EAATD should be considered in all patients with signs of encephalopathy of unknown origin when associated with an autoimmune thyroid disease. Symptoms can be very variable and may include: Headache, confusion, involuntary movements, altered consciousness, decreased verbal fluency, dysarthria, hallucinations, altered hearing, cognitive impairment, disturbed sleep pattern, emotional lability and seizure.
The sudden change from hyper- to-hypothyroidism state could contribute to the symptoms on top of the antibody- mediated neuro pathology.
Most of the reported cases appear to be steroid responsive while immune therapy with IVIG can be considered in persistent cases. Careful follow up is warranted since some cases of EAATD may recur and the evolution of the disease in the long-term is unpredictable.