A case of recurrent thyrotoxicosis associated with neuropsychiatric symptoms: thyroid storm or encephalopathy associated with autoimmune thyroid disease?

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We present a case of recurrent episodes of seizures, altered mental state and reduced consciousness, associated with autoimmune thyroid disease.

A 35-year-old Mongolian gentleman (BB) presented with pyrexia, headaches, partial focal seizures and a fluctuating GCS. He was treated initially with intravenous antibiotics, aciclovir and dexamethasone. Meningitis was excluded with a normal CT brain and lumbar puncture. Thyroid function tests incidentally revealed a suppressed TSH, fT4=49 pmol/l (NR 9-26 pmol/l) and fT3=25.1 pmol/l (NR 2.5-5.7 pmol/l). Serum anti-TPO antibodies were positive at 174 u/ml (NR 0-75 u/ml) as were anti-TSH receptor antibodies at >40 u/ml (NR 0-0.4 u/ml). Neurology review suggested a metabolic encephalopathy. He was switched to high dose prednisolone, carbimazole and an anti-epileptic, levetiracetam. Thyroid function tests normalised quickly, yet the encephalopathy took several days to improve. He was referred to the Endocrinologists as an outpatient and discharged home.

He was lost to follow-up and re-presented 18 months later off all medications, again with pyrexia, headaches, fluctuating GCS and partial focal seizures. He was treated with antibiotics, dexamethasone and aciclovir. CT brain showed evidence only of cerebral swelling. Lumbar puncture showed a mildly raised CSF protein level. An EEG was suggestive of encephalopathy or encephalitis, with no overt epileptiform features. He was biochemically hyperthyroid and serum anti-TPO antibodies were positive. He was discharged home with carbimazole, a tapering dose of prednisolone and levetiracetam.

Several weeks later, as a result of language barriers and non-compliance with medications, he was again thyrotoxic, with recurrence of symptoms. An urgent total thyroidectomy was recommended and BB had surgery six weeks later. Despite pre-operative close follow-up, potassium iodide and PTU treatment, at the time of surgery fT4 was 30.5 pmol/l and fT3 was 11.3 pmol/l. Post-operative recovery was complicated by seizures. CT and MRI brain did not reveal any abnormalities. Lumbar puncture was normal, including negative CSF anti-TPO antibodies. He was treated with antiepileptics and stabilised a few days later, when he became biochemically euthyroid.

Encephalopathy associated with autoimmune thyroid disease (EAATD, also known as Hashimoto's encephalopathy) is an uncommon disease, characterised by neuropsychiatric symptoms including seizures, cognitive alterations, inflammatory signs of encephalitis and/or meningitis, and rarely pyrexia. Thyroid storm may also present with neuropsychiatric symptoms. EAATD is usually associated with raised CSF and/or serum anti-TPO antibodies, raised CSF protein, and normal or slightly abnormal TFTs. Characteristically, the symptoms in EAATD are sensitive to steroid therapy as in our case, however we did not find anti-TPO antibodies in his CSF. This case demonstrates the challenge of distinguishing between thyroid storm and EAATD.