Unmasking of Neuropsychiatric Manifestations after Total Thyroidectomy for Graves’ Disease

Sir,

Besides the physical complaints commonly associated with hyperthyroidism, neuropsychological complaints are often overlooked and may persist or become aggravated after treatment. Although this has been seen after starting antithyroid medication, there is no report of aggravation of neuropsychological symptoms after surgery. We report two cases of Graves’ disease in whom the neuropsychological symptoms become manifest after total thyroidectomy.

A 40-year-old female presented to endocrine surgery outpatient department with a history of palpitations, sweating, and weight loss since 5 years along with anterior neck swelling. She did not take treatment or consulted any physician for such complaints and consulted doctor only 2 months back when she got admitted for fever and hence was diagnosed with thyrotoxicosis and started on anti-thyroid medication and referred to us.

The patient was not a known diabetic or hypertensive; however, she had some psychiatric illness 20 years back for which she was admitted however no documents were available. She was off any psychiatric medicine for more than 10 years.

Her thyroid scan showed a cold nodule. Ultrasonography showed a nodule in right thyroid lobe measuring 6 cm. Fine-needle aspiration cytology was reported as Bethesda II. Hence, the diagnosis of Graves with nodule was made, and the patient was planned for total thyroidectomy. Immediate postoperative recovery was smooth. The patient developed biochemical hypocalcemia which was managed with oral calcium supplements. The patient was started on thyroxine supplements. Hence, the patient was discharged on postoperative day 4 (POD4). On POD 5, the patient was readmitted in view of disorientation, irritability, irrelevant talking, and bed wetting.

All the biochemical parameters were normal. Serum sodium, potassium, and calcium were normal. Antipsychotic drugs were started after consulting with psychiatrist.

The patient was kept on observation and discharge after 2 days on antipsychotics.

A 27-year-old male was diagnosed as a case of Graves’ disease 4 years back due to the presence of a neck swelling and thyrotoxic features such as palpitations, tremors, proximal muscle weakness and was on irregular antithyroid medication since then. In view of large goiter, he was referred for surgery. After adequate preoperative preparation, he underwent total thyroidectomy. The weight of the specimen was 295 gm. Postoperatively, he had no signs and symptoms of hypocalcemia. On POD 4, he started irrelevant talk and was euphoric following which he developed repeated episodes of GCTS. He was seen by neurologist and was put on antiepileptic treatment after which the seizures stopped, but he continued to have altered behavior for which he was put on antipsychotic medication (Quetiapine) to which he responded and was then discharged.

The psychological and neurobehavioral changes associated with thyrotoxicosis are varied and include anxiety, dysphoria, emotional lability, intellectual dysfunction and insomnia and sometimes frank paranoia; although mania is rare. Out of these, tense dysphoria and impairment of cognition are perhaps the most common neuropsychiatric symptom. However, true incidence of neuropsychiatric symptoms is difficult to estimate. Important factors affecting the prevalence of neuropsychiatric illness include older age, family history of a bipolar disorder, and poor education. A possible explanation of the latter factor might be reduced compensatory mechanisms for poorly educated patients. It is also important to note that psychological stress may be associated with the onset of symptoms of thyrotoxicosis and may influence its clinical course as well as the severity of neuropsychiatric illness. Another factor that is speculated to be associated with the severity of neuropsychiatric illness is the positive correlation of T4 values. However, there is no objective evidence to support the influence of T4 values on neuropsychiatric illness.

The successful treatment of thyrotoxicosis usually leads to resolution of major mental disturbances. In a study of 15 patients, treatment resulted in improvement of dysphoric mood and cognitive ability. However, there are other studies that suggest that resolution is not complete. In one such study, thyrotoxic patients performed poorly on the Porteus Maze and trail-making tests, and they still had high MMPI scores before treatment. With treatment, the scores declined, but the profile of the test result did not change. In another study, almost 50% of patients continued to have tense dysphoria.

Conversely, in rare instances, successful treatment of thyrotoxicosis by drugs or thyroidectomy may reveal a depressive or manic illness which would require intervention. The mechanism could be thyreostatic – the precipitous reduction of thyroid hormone levels result in a thyroid (and thereby cognitive) deficiency.

It seems that rapid elevation of thyroid hormones induces depression in Grave’s disease patients and rapid reduction induces mania. This mood swing from severe depression to mania following the treatment of Graves’ disease has been rarely reported. Irwin et al. reported a case of a 33-year-old man with severe untreated Graves’ disease who was aggressively treated with rapid restoration of normal serum thyroid hormone levels for 4 days. Symptoms of mania with psychosis then developed and continued for about a month. Brownlie et al. also reported two patients, in their clinical study about thyrotoxic psychosis requiring in patient care due
to severe mood swings within weeks of starting carbimazole. Our two cases are perhaps the first reported cases in literature where the psychosis developed following total thyroidectomy. In these cases, including our own, a rapid reduction of thyroid hormone appears to be a common trigger of developing mania or depression. Larsen et al.\cite{15} reported that observed changes in mood occurred as a result of an HPT axis dysfunction which causes reduced thyroid-stimulating hormone (TSH) response to TSH-releasing hormone.

It will also be worthwhile to look into the presence of a positive family history of neuropsychiatric illness in patients who do not show complete resolution of neuropsychiatric symptoms after treatment.

Thus, one should be careful about mood swings in the postoperative period, and psychological support is desirable for many Graves’ disease patients after total thyroidectomy.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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There are no conflicts of interest.

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