

Asymmetrical sero-negative thyroid associated ophthalmopathy in a hypothyroid patient

Sir,

A 48-year-old male patient, smoker, diagnosed as having hypothyroidism from last 3 years and was on levothyroxine replacement. The patient had been taking the treatment erratically and thyroid-stimulating hormone (TSH) was not in therapeutic range. He presented to us with protrusion of the right eye accompanied by discomfort, irritation and blurring of vision from last 1 year. There was no history of pain or pressure in the right eye. On examination there was proptosis of both eyes right > left eye with decreased movement of the right eye on upward and lateral gaze. The visual acuity was 6/12 right eye and 6/6 in left eye. The pupils were equal, reacting to light and fundus examination was normal. The thyroid was not palpable and pretibial skin and digits were normal.

Investigations revealed the hemoglobin (Hb) 13.4 g/dL; total leucocyte count (TLC) $7.4 \times 10^9/L$; differential leucocyte count (DLC): N 64% L 28% M 7%; platelet (PLT) $114 \times 10^9/L$; erythrocyte sedimentation rate (ESR) 10/1st h; urea 32 mg/dL; serum creatinine 0.9 mg/dL; bilirubin 1.1 mg/dL; aspartate transaminase (AST) 32 U/L; alanine transaminase (ALT) 34 U/L; alkaline phosphatase (ALP) 270 U/L, total protein (TP) 7.2 g/dL; serum albumin 3.8 g/dL; blood sugar (random) 112 mg/dL.

The patient had been diagnosed as hypothyroidism 2 years back with thyroid function revealing Thyroxine (T_4) 3.5 $\mu\text{g/dL}$ (normal range 4.0-13.0 $\mu\text{g/dL}$), thyroid stimulating hormone (TSH) 72.34 uIU/ML (normal range 0.5-6.5 uIU/ML). The patient had been taking treatment erratically and the latest TSH was 32.65 uIU/ML. The antithyroid peroxidase (anti-TPO) antibody was 48.9 IU/ML (40-50 IU/ML borderline, >50 IU/ML positive). Ultrasound of thyroid gland showed enlargement of right lobe of thyroid, thyroid scan was not performed as the patient was already on treatment for hypothyroidism. The chest X-ray and ECG was normal. The computed tomography (CT) of head and orbit revealed enlargement of extraocular muscles. The patient was encouraged to quit smoking and dose of thyroxine was adjusted to achieve euthyroidism. The patient's symptom remained stable over last 6 months and is following OPD regularly.

Thyroid eye disease or thyroid-associated ophthalmopathy (TAO) is usually associated with Graves disease but can also be associated with Hashimoto thyroiditis.^[1] The clinical signs and symptoms of TAO in primarily hypothyroid patients differ from those in primarily hyperthyroid patients; primarily hypothyroid patients usually show less soft-tissue involvement and more asymmetrical disease, and the clinical manifestations are less marked. Unilateral TAO has often been reported in case reports of primarily euthyroid patients,^[2,3] The diagnosis of TAO is made on clinical grounds. Specialized diagnostic tests are not required for bilateral eye disease in the presence of autoimmune thyroid disease. However, in primarily hypothyroid patients, the diagnosis of TAO is not thought by the primary care physicians for three reasons. First, the association of TAO with hypothyroidism is uncommon and second the clinical presentation of asymmetric involvement adds further to delay and lastly the antibody response may be equivocal. In all such patients specialized diagnostic tests including imaging are indicated. Antibody titers against TSH-R (thyroid stimulating hormone – receptor), thyroglobulin, or thyroperoxidase can help confirm a diagnosis of TAO. Interestingly the prevalence as well as the level of these antibodies has been found to be lower in hypothyroid as compared to hyperthyroid patients,^[4] which is in accordance with our case report. A CT scan of the head and especially of the orbits shows enlarged muscle bellies with sparing of tendons and provides anatomic details.

In conclusion, asymmetric TAO is usually associated with hypothyroidism and in such cases the antibody titers can be normal or equivocal, thus adding dilemma to diagnosis. These patients should be subjected to imaging and close follow-up. In addition to maintaining a euthyroid state and complete cessation of smoking, other measures are to be taken depending upon the severity of ophthalmopathy in order to decrease morbidity and prevent complications.

**Muzafar Naik, Tariq Bhat,
Mubarik Naqash, Irfan Yusuf,
Imran Ali, Mehmood Qadri, Manzoor Wani**

Department of General Medicine, Sher-I-Kashmir Institute of Medical Sciences Medical College and Hospital, Srinagar, India

Corresponding Author: Dr. Muzafar Naik,
Department of General Medicine,
SKIMS MCH Bemina, Srinagar, India.
E-mail: muzafarnaik@gmail.com

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