



THYROID EYE DISEASE

What is Thyroid Eye Disease (TED)?

Thyroid dysfunction is among the most common autoimmune disorders. In such conditions, the body inappropriately produces proteins called antibodies which are supposed to be directed against invaders but instead target the body itself. There is growing awareness of the symptoms of hyperthyroidism (overactive) or hypothyroidism (underactive) and patients often know to monitor for adverse effect on many body systems including integumentary (hair and skin), cardiovascular, gastrointestinal, gynecologic and neuropsychiatric. However, many do not realize that their eyes are also at risk from autoimmune thyroid disease (AITD).

More than half of patients with autoimmune thyroid disease will develop thyroid eye disease (TED). This is most likely in patients with autoimmune hyperthyroidism, known as Graves' disease, but has also been observed in patients with autoimmune hypothyroidism and even in a few patients who have normal thyroid function but are considered at risk to develop AITD based on elevated blood levels of antibodies targeting the thyroid. Risk factors known to increase the likelihood of developing TED include:

- Female sex
- Older age
- History of diabetes mellitus
- Uncontrolled hyperthyroidism
- History of treatment with radioactive iodine - especially if followed by uncontrolled hypothyroidism
- Smoking (It is critical that patients with Graves' disease who smoke immediately and permanently cease and all patients should avoid secondhand smoke)

TED results from inflammation around the soft tissues behind the eye and the muscles that control eye movements. Symptoms and signs of TED include dryness, excessive tearing, eyelid swelling, being able to see the white area all the way around the colored part of the eye instead of overlapping with the eyelid ("bulging eyes"), pain with lateral gaze, double vision or vision loss. Most cases will be classified as mild and the majority of these will spontaneously resolve. Management for symptomatic relief may include artificial tears or ointment for lubrication.

Moderate and severe cases can currently be treated with immunomodulating medications including steroids (usually oral prednisone or intravenous methylprednisolone) or a monoclonal antibody targeting B cells in the immune system called rituximab.

Treatment

The newest addition to the treatment arsenal, teprotumumab, had been undergoing expedited review by the United States Food and Drug Administration (FDA). Teprotumumab is a monoclonal antibody targeting the receptor for a protein stimulated by human growth hormone called IGF-1. On January 21, 2020 it was announced that teprotumumab was approved by the FDA for the treatment of thyroid eye disease.

There is not yet have a clear understanding of why an individual patient develops TED nor is there a means to prevent it. Therefore, a patient's vigilance and regular follow-up with an ophthalmologist are key.

Of note, the 2016 American Thyroid Association (ATA) Guidelines for the Diagnosis and Management of Hyperthyroidism recommend that hyperthyroid patients with Graves' disease and moderate TED who plan to receive radioactive iodine ablation (RAI) should be prophylactically treated with glucocorticoid steroids to prevent worsening of TED. Alternatively, the ATA advocates against RAI for patients with severe TED and counsel them to instead choose either thyroidectomy or medical management with the thyroid-slowing medication methimazole. Severe cases that do not respond to medical management or reveal an urgent threat of vision loss can be treated with surgical decompression