Euthyroid Graves’ Ophthalmopathy

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Introduction

Graves’ ophthalmopathy
- Average incidence rate: 16 women and 3 men per 100,000 population
- Typically associated with clinical features of hyperthyroidism and dermopathy
- Soft tissue enlargement in the orbit and most commonly involves the inferior rectus; it sometimes even leads to compressive optic neuropathy
- Secondary to increased fibroblast secretion of glycosaminoglycans in response to cytokine mediated inflammation
- Approximately 5%-10% of patients with Graves’ ophthalmopathy are found to be euthyroid or hypothyroid, commonly associated with low titers of anti-thyrotropin receptor antibodies (TRAb)

Illustration

*Sample image of coronal CT of the orbit illustrating:
A: Symmetric enlargement of extraocular muscles in both orbits
B: Asymmetric enlargement of extraocular muscles in both orbits

Case Presentation

Demographics: 41-year-old female smoker
Past Medical History: Non-significant
Complaints: Gradual onset dry eyes and blurry vision
Progression: Worsening over three months leading to right eye bulging, pain, and diplopia
ROS: All systems reviewed and negative except as stated above
Examination:
Right eye: Proptosis, superior eyelid retraction, mild redness and tearing
Left eye: Mild proptosis; otherwise normal
Thyroid: Normal in size and texture
Lab work:
Elevated TSI 370 and TRAB 8.03
Normal TSH, free T4 and T3
CECT orbits*: Asymmetric enlargement of the right inferior and medial recti
MRI orbits: Unilateral thickening, edema and prominent enhancement of the right inferior, medial, and lateral recti.
Left ocular muscles were of normal thickness without edema
Treatment:
Smoking cessation and patient was given high-dose prednisone tapered over two months
Course: Symptoms resolved; remained clinically and biochemically euthyroid thereafter

Discussion

Euthyroid Graves’ disease
- Definition: infiltrative orbitopathy occurring in the absence of past/present clinical or biochemical thyroid abnormalities without any antithyroid treatment
- Prevalence:
  - Thyroid associated ophthalmopathy
  - Hypothyroidism 10.36%
  - Hyperthyroidism 86.2%
- A diagnostic dilemma due to:
  - Asymmetrical manifestations
  - Occurrence of thyroid dysfunction 15-45 months after the onset of ophthalmopathy in 8%-25% of patients
  - Diversity in clinical phenotype suspected secondary to heterogeneity of antithyroid receptor antibodies and its signaling cascades
- Treatment options:
  - Same as Graves’ disease
  - Frequent longitudinal thyroid exams, thyroid function testing, and monitoring for signs and symptoms of thyroid dysfunction
  - Smoking cessation: Smoking is associated with more severe disease less responsive to immunosuppressive therapy
  - Euthyroid Graves’ ophthalmopathy generally shows better response to treatment due to milder ophthalnic symptoms and lower clinical activity scores

Conclusion

Euthyroid Graves’ ophthalmopathy presents a diagnostic dilemma that requires a high degree of clinical suspicion and necessitates longitudinal follow up occurrence of thyroid dysfunction

References