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Case Report

Dysthyroid Orbitopathy In Three Different Presentations

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1. Introduction

Thyroid eye disease (TED), also called dysthyroid orbitopathy or Graves ophthalmopathy, is an autoimmune disease of the orbit and retroocular tissues that occurs in patients with Graves' disease and rarely in patients with Hashimoto's thyroiditis. In 90% it`s associated with Graves-Basedow disease (GBD) and 10% in patients with hypothyroidism and euthyroid. Although Muralidhar's study found that orbitopathy was present in patients with hyperthyroidism in 46%; hypothyroidism in 34% and euthyroidism in 20%. Between 30-50% of patients with GBS will develop TED throughout their lives [1-4].

When it: is linked to GBD, thyroid-stimulating antibodies (TSHR) are decisive in its pathogenesis, since they will act by stimulating thyroid hormone receptors located in fibroblasts, muscle and adipose tissue of the ocular cavity. It most frequently affects women between 40 and 60 years old. But when they do not have this underlying disease, their pathophysiology is still unknown. There is evidence linking TED with autoimmunity, since up to 80% of patients have positive anti-thioperoxides (anti-TPO) antibodies. In those with hypothyroidism and negative TSHR, 5.5% develop orbitopathy and 68% with positive TSHR Abs. Some studies report the presence of positive TSHR as a risk factor for bilateral ocular involvement [3-8].

In their clinical presentation they may have proptosis (exophthalmos), lacrimation and periorbital edema. The degree of proptosis depends on the increase in ocular muscles, fibrous tissue and retro-ocular adipose tissue. Euthyroid/hypothyroid patients tend to develop milder and more unilateral (asymmetrical) forms, sometimes progressing to being bilateral. the causes of orbitopathy should always be ruled out, such as: lymphoma-type orbital neoplasms, rhabdomyoma, sarcoidosis, infections, myositis, orbital pseudo tumors, diseases related to IgG4, histiocytosis [2-10].

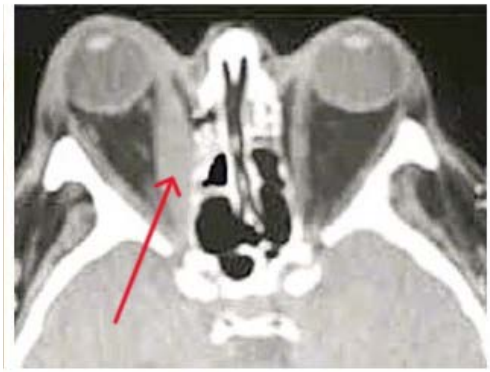
Case 1

Woman 49-year-old, smoker, who begins with palpitations, heat intolerance, profuse sweating, insomnia, irritability, distal tremor, polyphagia. After two months, there is a sensation of a foreign body in the eye, pain on movement, tearing, edema of the eyelids and conjunctiva. From the exam: verbosity, normal weight, sweaty and hot skin. Eyes: ocular retraction, lagophthalmos, chemosis (figure 1A).

A

Figure1A: Photo Showing Exophthalmos Predominantly in the Right Eye, Ocular Retraction and Upper Eyelid Edema.

Spontaneous pain and movement. Neck: thyroid gland cannot be seen or palpated. Normal cardiovascular. From the laboratory TSH 0.03 with normal FT3 and FT4. TSH is reiterated and the thyroid profile is TSH: 0.015 uIU/ml (NR: 0.55 - 4.2), FT3 6.3 pg/ml (NR: 2.60 - 4.4) and FT4 2.4 pg/ml (NR: 0.93 - 1.70). Ac thyroperoxidase (TPO) 1500 (NR < 35). Ac positive TSHR Computed tomography (CT) of the orbits showed increased intraorbital fat and increased inferior and medial rectus (figure 1B). Thyroid ultrasound showed diffuse goiter with increased vascularity.

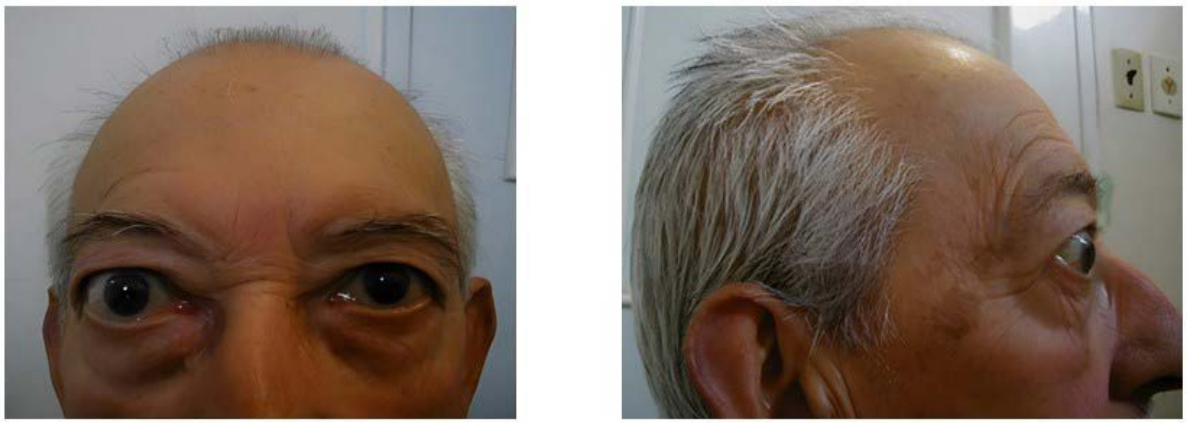


B

Figure 1B: Ct Of the Orbit Shown the Protrusion of The Right Eye and The Increase in The Internal Rectus on That Side (Arrow).

Case 2

A 77-year-old male, smoker, with no notable medical history or thyroid disease. He consulted because he noticed an increase in the size of his right eye, diplopia, sporadic tearing, and lower eyelid edema (figure 2 A-B).



A B

Figure 2 A-B: Photos of The Patient from The Front and Profile Respectively, Where the Protrusion Is Mainly Seen in The Right Eye.

On examination, he presented proptosis in the right eye without inflammatory elements. From the laboratory TSH of 80 uIU/ml (NR: 0.55 – 4.2); laboratory was reiterated and came to 96.3 uIU/ml, T4l: 0.38 ug/dl (NR: 0.55 – 4.2), Ac TPO: 195 IU/ml (NR < 35). In the visual field, bilateral abduction and elevation limitation, with difficulty in convergence. CT of the orbits reported edema of the peri-orbital muscles (figure 2 C-D). The ultrasound showed a decreased thyroid size with a pseudo nodular appearance.

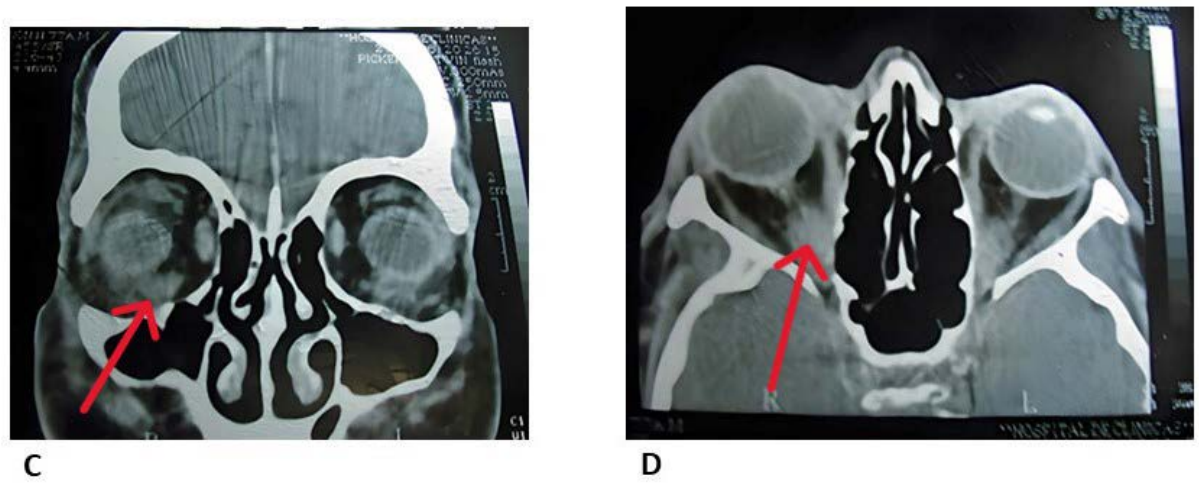


Figure 2 C-D: Coronal Section of Ct, Muscular Hypertrophy of The Right Inferior Rectus Is Observed (Arrow) And in The Axial Section the Increase in The Right Internal Rectus Muscle Is Seen (Arrow).

Case 3

Woman, 66-year-old, heavy smoker, untreated hypercholesterolemia and no history of thyroid disease. It began with bilateral proptosis, accompanied by significant ocular pain that was not relieved by non-steroidal anti-inflammatory drugs. In addition, tearing, foreign body sensation (figure 3 A-B).

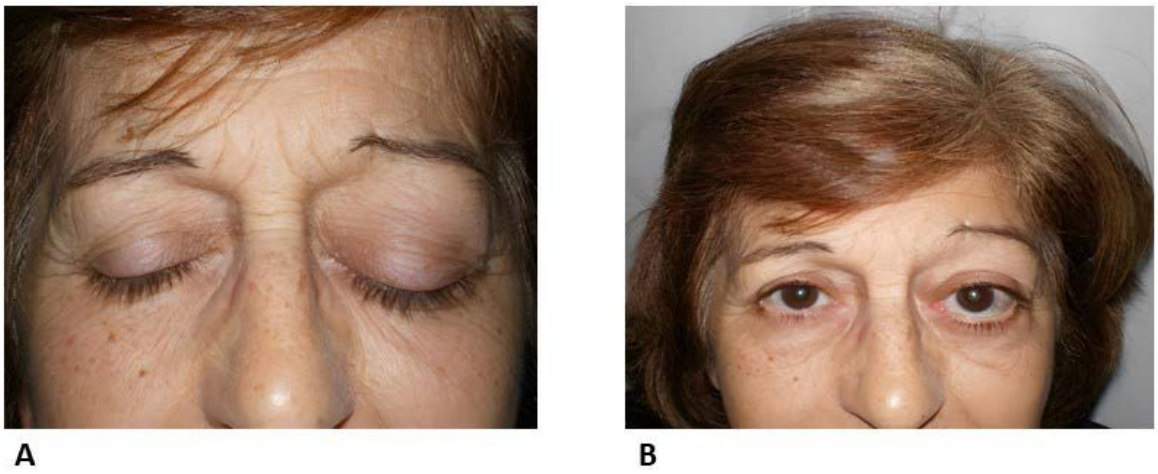


Figure 3 A-B: Photos Showing Exophthalmos Predominantly in The Left Eye.

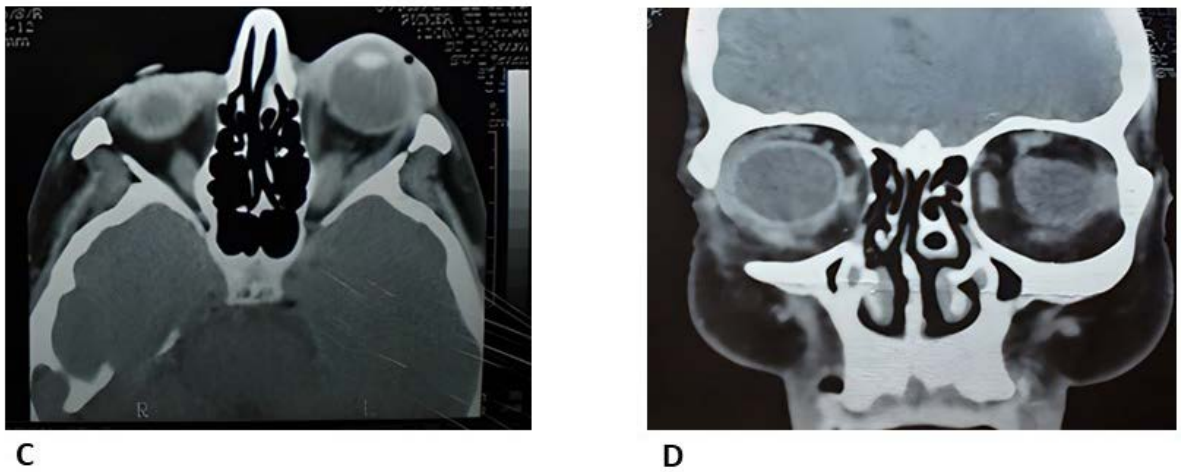


Figure 3 C-D: Axial And Coronal Section Respectively Of Ct Of The Orbit Where The Protrusion Of The Left Eye And The Increase Of The Inferior Rectus Can Be Seen.

On examination, he presented proptosis in the left eye, Moebius sign (+), impaired convergence, and exophthalmos measured by ophthalmometry in the left eye measuring 24mm. The laboratory showed TSH: 2.0 uIU/ml (normal), Ac-TPO: 150 IU/ml (NR < 35 IU/ml), positive TSHR Abs. On ultrasound: diffusely slightly enlarged thyroid gland.

2. Discussion

Thyroid-associated orbitopathy is an entity linked to autoimmune disease, which is mostly related to GBD. This pathology is the most common non-traumatic orbitopathy reported by ophthalmologists. The volume of both extraocular muscles and orbital connective tissue increases due to fibroblast proliferation, adipogenesis, inflammation, and accumulation of hydrophilic glycosaminoglycans (GAGs), mainly hyaluronic acid. GAG secretion by fibroblasts is increased by thyroid-stimulating antibodies and activated T cells (via cytokine secretion). The accumulation of hydrophilic GAG causes fluid accumulation, muscle inflammation and increased pressure within the orbit. These alterations, together with orbital adipogenesis, move the eyeball forward, causing dysfunction of the extraocular muscles and alteration of venous drainage, generating periorbital swelling [1-12].

The increase in the orbital muscles is noticeable in several patients in images such as computed tomography or magnetic resonance imaging, as evidenced in our cases, and the most affected ocular muscles are the internal rectus and inferior rectus. There are several risk factors for presenting TED, among them the female sex stands out. Smoking is another factor and the three patients mentioned had that condition. Cigarette smoking is associated with an increase in the volume of the connective tissue of the orbit, but not with the volume of the extraocular muscles. Different toxic effects of smoke on the eyes are proposed. Another of the risk factors mentioned is the presence of high levels of autoantibodies against the TSH receptor (TSHR) and they correlate with the presence and severity of extrathyroidal manifestations (thyroid eye disease and dermopathy) of Graves' disease. Even in patients with milder disease, there is an independent correlation between these autoantibodies and the prevalence and course of thyroid eye disease [13-16].

Elevated serum cholesterol levels correlate with the development of thyroid eye disease and statins have been shown to have a protective effect. In case 3 this condition existed and was untreated at the time of diagnosis [17-20].

Conclusion

Although ophthalmopathy is better known and associated with hyperthyroidism, we must consider that it`s not exclusive to thyrotoxicosis.

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