MALIGNANT EXOPHTALMOS IN HYPERTHYROIDISM WITH A HYPOTHYROID CRISIS

EXOFTALMOS MALIGNO EN HIPERTIROIDISMO CON CRISIS HIPOTIROIDEA

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ABSTRACT

Case report: We present the case of a 56-year-old male with a malignant exophthalmos in the context of Graves’ disease. He suffered a significant worsening coincident with a hypothyroid crisis, and various therapeutic approaches were required for reduction of the proptosis.

Discussion: When managing this condition, both the severity of the exophthalmos and the activity of the thyroid must be considered when choosing which of the different therapeutic approaches should be employed (Arch Soc Esp Oftalmol 2006; 81: 721-724).

Key words: Malignant exophthalmos, Graves’ disease, Dysthyroid ophthalmopathy, Hypothyroid crisis.

RESUMEN

Caso clínico: Presentamos un paciente varón de 56 años de edad con un exoftalmos maligno en el contexto de una enfermedad de Graves, que sufrió un claro empeoramiento coincidiendo con su entrada en crisis hipotiroidea, con una evolución tórpida, que requirió de distintas medidas terapéuticas para la reducción de la proptosis.

Discusión: En el manejo de este tipo de pacientes hay que tener en cuenta si cumplen o no criterios de gravedad y/o actividad para aplicar las distintas opciones terapéuticas en el momento preciso.

Palabras clave: Exoftalmos maligno, enfermedad de Graves, oftalmopatía distiroidea, crisis hipotiroidea.

INTRODUCTION

Dysthyroid ophthalmopathy (DO) is equivalent to hyperthyroidism and Graves’ disease (GD), even though 20% of patients exhibit GD in the context of euthyroidism (1). The prevalence of GD is about 2% of the population (2), and 50% of hyperthyroid patients with GD exhibit a clinically significant ophthalmopathy, reaching up to 90% if a computerized axial tomography (TAC) is performed. However, under 5% of these patients exhibit optic neuropathy (3). The age of emergence of the disease is distributed between a main peak at age 40-45 and a minor peak at age 60-69. As regards prevalence for each sex, women predominate (2-5:1), which is in contrast with the prevalence of the disease per se (5-10:1) (4).
CASE REPORT

A 56 year-old male with a history of larynx neoplasia, diabetes mellitus type 2, former smoker and former drinker, diagnosed with hyperthyroid crisis. At the time he exhibited and exophthalmos of 23 and 25 mm without limitation of ocular movements (fig. 1), visual acuity of 0.7 with correction in both eyes (BE), eye fundus with slight diabetic retinopathy and thickening of the internal straight muscles in the orbitary CAT.

One month later the patient exhibited retraction of both eyelids with limitation of superior and lateral motility in BE. Ocular pressure (OP) was of mmHg in right eye and 25 mmHg in the left one. Treatment was established with topical beta blocker and systemic corticoid treatment with 1 gr/24 h of 3-pulse IV methyl-prednisolone.

The exophthalmos and OP increased, so topical carbonic anhydrase inhibitors were added and the patient was referred to orbitary radiotherapy with 2,000 Gy.

The evolution was not favorable; proptosis increased to 27 and 30 mm and the CAT confirmed the increased thickening of the internal straight muscles (fig. 2). Ophthalmoplexy occurred in both eyes and corneal exposure in left eye (fig. 3), which led us to carry out a bilateral orbitary decompression with fracture of the inferior, internal and external walls (fig. 4). Hormone checkup revealed a severe hypothyroid crisis TSH 44.5 uUI/mL (0.5-5.0), T3 42 ng/dL (60-180), T4 Total 261 ng/dL (5.0-12.0), T4 Free 0,3 ng/dL (0.7-1.8). Exophthalmos continued to worse, so a lipectomy was performed in both orbits (1 cc of fat), which showed infiltrated orbitary muscles and tissues, enucleation of the left eye due to absolute glaucoma, and external and internal Tarsorrhaphy in right eye. Subsequently, the thyroid hormones returned to normal (TSH 14.3, T4 Total 5.9 and Free T4 1.1), proptosis reduced considerably and ocular motility increased, with the tarsorrhaphies opening. The RE exploration revealed a VA of 0,1 as a consequence of the severe optic neuropathy, IOP of 18 mmHg, and slight-moderate diabetic retinopathy. The patient remains stable after 9 years of evolution (fig. 5).

Fig. 1: One year history of proptosis, dyplegia, chronic conjunctivitis and ongoing headache. The measurements of the Hertel-type exophthalmometry was: LE 27 mm; RE 30 mm.

Fig. 2: The CAT shows an increased size of the straight muscles, with increased intracone fat. A severe elongation of the optic nerves can also be appreciated.

Fig. 3: Clinical preop appearance with extreme proptosis, corneal exposure, large chemosis and complete ophthalmoplexy.
DISCUSSION

The pathogeny of GD is conditioned by the appearance of auto antibodies which stimulate the TSH receptor of the thyroid. Therefore, it is not only a glandular hyperactivity which is responsible for the increased production of thyroid hormones, but is also has a clear self-immune and inflammatory element, confirmed by the presence of infiltration of T and B lymphocytes in the thyroid tissue biopsies in patients with GD.

However, the pathogeny of the RE is more controversial. There is a certain degree of sympathetic hyperactivity but, with the new genetic processing techniques, TSH receptors have been isolated in fibroblasts and orbital grease identical to the thyroids. These act as attractors for the immune system cells which infiltrate the retro-orbital tissues and account for the synthesis of mucopolysaccharids by the orbital fibroblasts (highly hydrophilic substances which increase the volume) and collagen (responsible for the fibrosis and retraction of the muscles in the inactive stage of the disease).

The RE requires a multidisciplinary approach. The severity and/or activity criteria must be taken into account (Table I) for applying the therapeutic options at the right time to avoid iatrogeny. In the active stage, the measures seen as most efficient and recommended are high dosages of corticoids, orbital radiotherapy and surgical decompression. Other treatments with good results are the analogous of sometoeostatine and some immunosuppressants such as cyclosporine or metrotexate. If there is no activity, the only indication is surgery of the extraocular muscles to correct diplopia and the execution of tarso- and blepharorrafies for preventing exposure keratitis. In case the RE fulfills severity criteria, the decision of performing a surgical or medical decompression will depend on experience, although if compressive neuropathy is present, the tendency favors surgery (5).

It is necessary to carry out studies to confirm the results of the somatostatine analogous because these have less contraindications and side effects vis-a-vis corticoids, as well as the risk factors of GD and RE. It is proven that giving up smoking improves the situation and the prognosis of the disease and improves the effectiveness of the therapeutic measures.

Age and sex, as well as the tobacco smoking history, radiotherapy and diabetes mellitus, must be taken into account in hyperthyroid patients because, if a hypothyroid episode emerges the result can be a malign exophthalmos with severe ocular functional and aesthetic repercussions.

<table>
<thead>
<tr>
<th>Degree</th>
<th>Proptosis</th>
<th>Dytopia</th>
<th>Neuropathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight</td>
<td>19-20 mm</td>
<td>Intermittent</td>
<td>Sub-clinical</td>
</tr>
<tr>
<td>Moderate</td>
<td>21-23 mm</td>
<td>Non-constant</td>
<td>VA: 0.8-0.5</td>
</tr>
<tr>
<td>Severe</td>
<td>&gt; 23 mm</td>
<td>Constant</td>
<td>VA: &lt; 0.5</td>
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**Fig. 4:** Postop CAT showing bone fracture for decompressing the internal and lateral orbital walls, with an improved distribution of orbital contents. LE enucleated.

**Fig. 5:** After 9 years of evolution, the patient does not exhibit any signs of mixomatous activity.
REFERENCES