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DIFFERENTIAL DIAGNOSIS OF GRAVES' ORBITOPATHY AND NON-HODGKIN'S LYMPHOMA OF THE ORBIT: A CASE REPORT

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Abstract

Purpose: The purpose of this study is to report, how Non-Hodgkin's lymphoma of the orbits can be easily confused with other diseases of the eye, causing difficulties in diagnosis and leading to delayed initiation of treatment. A clinical case of a patient with bilateral orbital lymphoma with a predominant lesion of the extraocular muscles, occurring under the guise of Graves' orbitopathy is presented.
Methods: this study included anterior segment assessment using a slit lamp, fundus examination, autorefractometry, exophthalmometry. For the final diagnosis, an orbitotomy was performed with a biopsy of the affected levator and surrounding tissues.
Results: Histological and immunohistochemical studies confirmed the diagnosis of MALT lymphoma in both orbits. The patient received anticancer treatment and has been in remission for a year.

Conclusion: bilateral non-Hodgkin lymphoma of the orbits is rare, may pretend to be Graves' orbitopathy and be the cause of inadequate treatment. In such cases, a biopsy of the affected extraocular muscles is required to clarify the diagnosis and determine the morphological subtype of non-Hodgkin's lymphoma

Keywords: *Graves' orbitopathy, bilateral non-Hodgkin's orbital lymphoma, MALT lymphoma, differential diagnosis.*

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Introduction

Exophthalmos is one of the main clinical symptoms of a large number of orbit diseases, unilateral exophthalmos is more common in orbital tumors. However, it can develop with granulomatous inflammation of the orbital tissues, including sarcoidosis, IgG4-related disease involving orbital tissues, etc. Bilateral exophthalmos mainly develops in thyroid pathology, as a manifestation of Graves' orbitopathy

Case Reports

We present a rare clinical case of bilateral orbital lymphoma with a predominant lesion of the extraocular muscles and masquerade as Graves' orbitopathy (GO). A 68-year-old man complained of bilateral exophthalmos, redness, and lacrimation from both eyes.
It is known from the patient's life history that in August 2019 he was diagnosed with B-cell lymphoma of the spleen, underwent splenectomy, and underwent 5 courses of CHOP immunochemotherapy. Since May 2020, he has been in clinical remission; in the summer of 2020, he noted redness in both eyes; he was treated for conjunctivitis without an effect.

At the time of examination: the eyelids were edematous; the mobility of the eyeballs was slightly limited in all directions. Exophthalmometric values were: for the left eye (OS) - 26 mm, for the right eye (OD) – 25 mm at a base 98 mm.

Bone walls accessible for palpation were without features, reposition of the eyeballs was sharply limited. The palpebral fissure did not close completely. Visual acuity was OD = 20/63 OS = 20/25. Reduced visual acuity of the right eye was associated with age-related cataract. Intraocular pressure (IOP): OU = normal. Red chemosis was presented in both eyes, more pronounced in the lower section. The cornea was transparent, shiny, but in the lower part there were small-pointed erosions. The anterior segment and fundus of the left and right eyes were without pathology (Fig. 1). Clinical symptoms are the following: eyelid edema, exophthalmos, eye redness, chemosis.

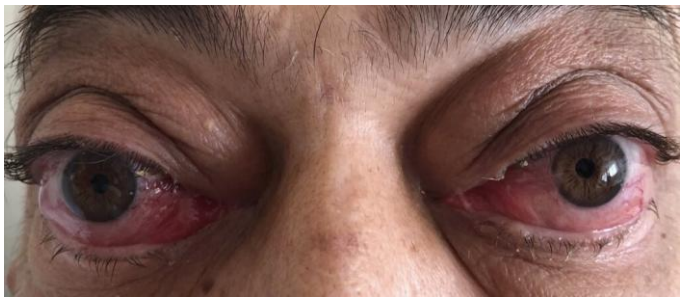


Figure 1. *The patient with lesions of both orbits before treatment. Clinical symptoms are the following: eyelid edema, exophthalmos, eye redness, chemosis.*

To identify the pathology of the extraocular muscles, computed tomography (CT) of the orbits was performed. There was a picture of ophthalmopathy, with uneven thickening of the rectus muscles and superior oblique muscle, bilateral exophthalmos (Fig. 2 A, B).

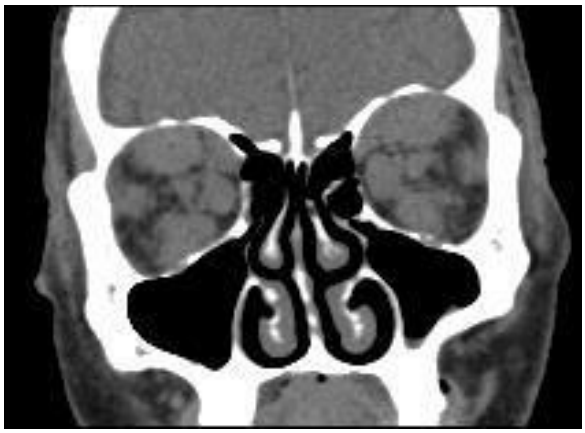


Figure 2A . *CT of the orbits: A- coronal image, B- sagittal image. Pathology of the extraocular muscles with pronounced thickening of the rectus muscles and superior oblique muscle.*

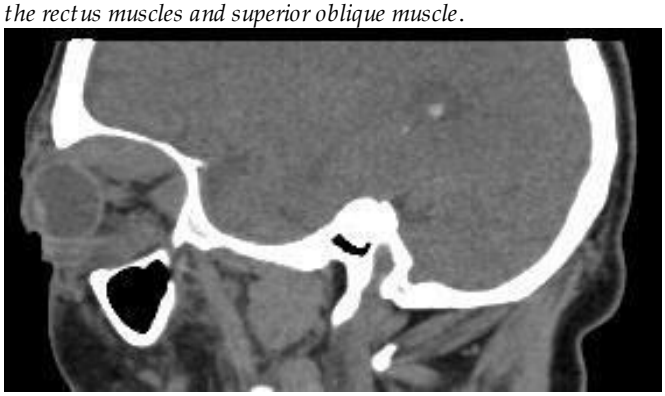


Figure 2B . *CT of the orbits: B- sagittal image. Pathology of the extraocular muscles with pronounced thickening of the rectus muscles and superior oblique muscle.*

Also, a laboratory blood test for thyroid hormones (TG) was performed. Euthyroidism was revealed. Ultrasound of the thyroid gland didn't detect any pathological signs.

Taking into account the clinical picture characteristic of GO on the one hand, the absence of thyroid pathology and the anamnesis data on the presence of lymphoma, on the other hand, it was decided to perform a diagnostic orbitotomy.

In the postoperative period before the results of the histological examination, systemic corticosteroids were prescribed to reduce inflammation.

Clinical symptoms reduced significantly on the second day (exophthalmos, eyelid edema decreased). Two days after the diagnostic orbitotomy, histological examination detected a relapse of non-Hodgkin's.

The immunophenotyping detected B-cell proliferation of lymphocytes with genotypes CD3+, CD20+, bcl2+, bcl6- (Fig. 3 A, B, C, D).

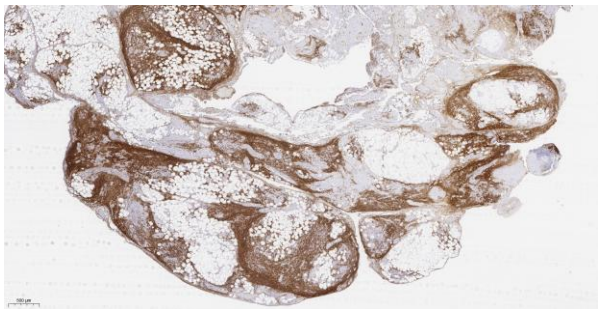


Figure 3A, B, C, D. Data of immunohistochemical examination. A- CD20+, B- CD3+, C- bcl2+, D- bcl6-.

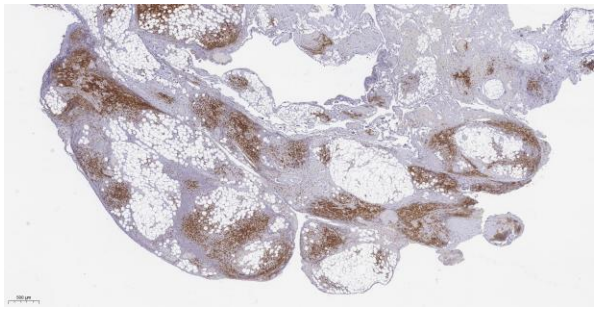


Figure 3B.

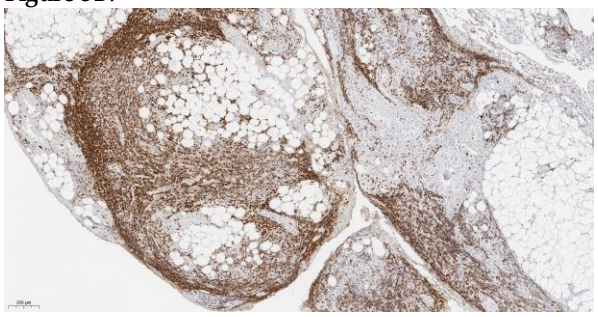


Figure 3C.

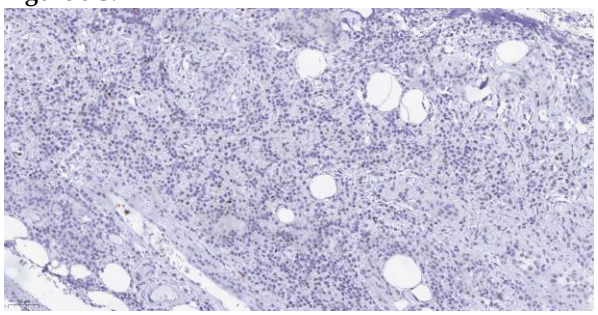
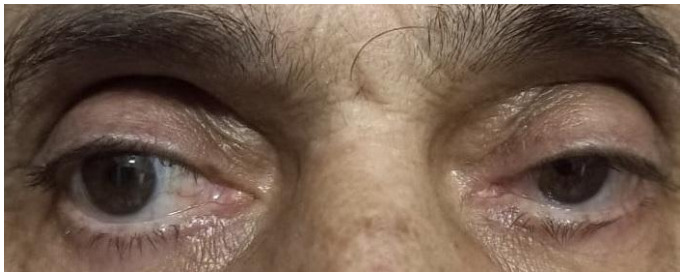


Figure 3D.

Histological and immunohistochemical studies revealed MALT lymphoma. The patient was examined by a hematologist.

The diagnosis of MALT lymphoma IV grade with involving the bone marrow, spleen, orbits, intrathoracic, abdominal and retroperitoneal lymph nodes was established. Treatment with bendamustine was carried out. One year follow-up patient is in clinical remission now (Fig. 4).



Discussion

GO develops after thyroid disease and is associated with hyperthyroidism or, less often, hypothyroidism. GO rarely develops without sings of thyroid gland damage or before the clinical manifestation of thyroid disease [1-5]. A symmetrical lesion of both orbits is observed with GO, characterized by bilateral exophthalmos, non-inflammatory eyelid edema, chemosis, and limitation of eye mobility.

In cases of unilateral exophthalmos and without signs of thyroid damage, the diagnosis of GO is particular difficult. So, C. Daumerie et al. (2008) retrospectively analyzed a cohort of 200 patients with GO and only 9 patients with euthyroidism were noted with a unilateral orbit lesions [6].

Among the diseases which GO has to be differentiated with, non-Hodgkin's lymphoma of the orbit is of particular interest.

In our patient, many signs pointed to GO: complaints, positive symptoms of Kocher, Graefe, Krause, Möbius, data of orbits CT. Also, the patient is a heavy smoker for 40 years (main risk factor).

Patients of 60 years old or more predominate among patients with GO. GO can occur with euthyroidism. However, the patient's history was alarming - B-cell lymphoma of spleen, normal ultrasound resulted of the thyroid gland. In this regard, it was decided to perform a diagnostic orbitotomy.

Conclusion

Bilateral non-Hodgkin lymphoma of the orbits is rare, may pretend to be GO and be the cause of inadequate treatment. In such cases, a biopsy of the affected extraocular muscles is required to clarify the diagnosis and determine the morphological subtype of non-Hodgkin's lymphoma.

Conflict of interests

The authors declare that there is no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Funding

None.

Study association

This study is not associated with any thesis or dissertation work.

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