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Case Report

Orbital Mask! A case-report

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ABSTRACT

A 33-year-old male patient presented with swelling and pain in the left upper eyelid, forward protrusion and downward displacement of the left globe for the last 2 $\frac{1}{2}$ months. He was pretty good before that time. He has visited a nearby ophthalmologist and treated him as a non-specific orbital inflammatory disease (NSOID), and he has taken oral corticosteroids for the last two months. The pain was reduced but not completely regressed. Then, He referred to Oculoplastic services in a tertiary eye hospital and underwent an incision biopsy to confirm the diagnosis. The histopathology report confirmed high-grade lymphoma diagnosis and advised open biopsies for immunohistostaining. Orbital inflammation may mask malignancy.

1. Introduction

The spectrum of inflammatory orbital disease (IOD) varies from non-specific orbital inflammatory disease (NSOID) to specific orbital inflammatory disorders such as Wegener's granulomatosis or sarcoidosis.[1] The orbital inflammatory disease mimics malignancies, congenital mass lesions, infectious diseases, and occult or distant trauma. The orbital inflammatory disease consists of up to 10% of orbital diseases, involving all age groups of patients.[2–7] Pain and periorbital swelling are the most frequent presenting features.[8] So, everyone must consider a thorough local and systemic evaluation, assessing advanced imaging techniques to develop a comprehensive management plan.[1] Histophatogical analysis with immunologic monitoring may help diagnosis and a treatment plan and assess the prognosis.[1] There is always a debate orbital biopsy in managing orbital inflammatory disease. Usually, patients with OID are treated with systemic corticosteroids without an orbital biopsy. An orbital biopsy may require that they do not respond to corticosteroid treatment.[2,3,7,9]

2. Case Report

A 33-year young male patient presented with fullness and pain in the deep part of the medial aspect of the left upper eyelid for the last two months and 15 days. Forward protrusion and downward displacement of his left globe. He was pretty normal before that time. The pain was severe initially; then, he visited an ophthalmologist in his local area. The diagnosis was made as a Non-specific orbital inflammatory disease and treated by oral corticosteroids. The pain was reduced but regressed entirely on the treatment. Then he visited another ophthalmologist and was again treated by oral corticosteroid for reducing his inflammation. He took oral corticosteroid (Prednisolone) 60 mg to 80 mg daily doses for the last two months to relieve his pain and swelling. The patient has been referred to Oculoplasty services of Bangladesh eye hospital, Dhaka, Bangladesh. On examination, there was no abnormality in assessing the anterior and posterior segment of both eyes. Visual acuity was 6/6 unaided in his right eye

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and 6/9 unaided in his left eye. Mechanical ptosis was found in the left eye. Moderate proptosis (5 mm) with inferolateral dystopia was viewed in his left eye. A firm, mild to intermediate tenderness round mass was noted in the superomedial quadrant of the left orbit. Ocular motility showed reasonable restriction in adduction and elevation of the left eye. Pupillary reaction to light was regular in his both eyes. Systemic examination revealed a normal study. There was no enlarged lymphadenopathy in the locoregional area. Painful lesion not responding on oral steroid. The palpable mass was large in comparison to the duration of the symptoms. So, the clinical diagnosis was a malignant lesion of the left orbit, The tumour location excluding the Lacrimal gland carcinoma. The differential diagnosis might be high-grade lymphoma, Orbital sarcoma, multiple myeloma, metastatic lesion, or it may be the malignant characteristic benign tumour "Inflammatory myofibroblastic tumour (IMFT)".

Axial, coronal and sagittal images of CT scan of the orbit showed a well-circumscribed, oval-shaped, moderately enhanced, hyperdense to an isodense, heterogeneous lesion involving the superomedial quadrant of left orbit extending into the fronto-ethmoidal sinuses with subtle bone erosion suggestive of a malignant lesion. Complete blood count showed high ESR (111 mm in 1st hour). Rapid blood sugar was 26 mmol/L. The thyroid function test was in normal value. The clinical and radiological diagnosis was steroid-induced diabetes with primary orbital sarcoma. Fine needle aspiration biopsy (FNAB) was performed, stopped the oral prednisolone and referred the patient to an internist for diabetes and thorough systemic evaluation.

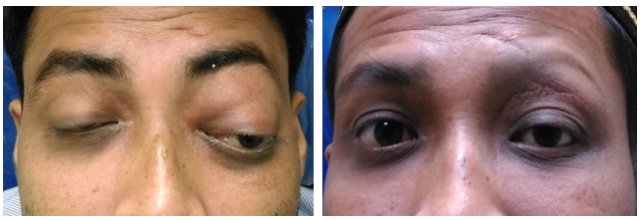

Fig. 1: a: A 33-year-old male patient presented witheccentric proptosis of the left eye with a palpable moderate tenderness lesionin the superomedial aspect of the left upper eyelid extending to orbit; **b:**Complete resolution of the tumour after completion of the treatment.

Histopathology reported a high-grade haematolymphoid tumour and advised for excision biopsy to confirm the diagnosis with immunohistochemistry. Open Biopsy was performed with excision of the maximal lesion from the orbit after two weeks of FNAB. Excised tissue consisted of friable, multiple greyish white and greyish brown fragmented pieces measuring a total of 3×2×1 cm and looked like a malignant tissue. The microscopic section showed a neoplasm composed of round cells; mitoses are noted, and necrosis is present. The Histopathological diagnosis was High-Grade Non-Hodgkin's Lymphoma (NHL). And LCA CD3 Ki67, CD20 and BCL2 Immunostaining are recommended for further confirmation and future treatment planning. All the lymphoid cells are positive with LCA/CD-45, CD20, CD3, BCL2 & Ki67 and negative withCD3. The immunohistochemistry (IHC) findings along with morphology are compatible with Diffuse Large B Cell Lymphoma. The TNM staging is T4N0M0. T4 is Orbital adnexal lymphoma and extra orbital lymphoma extending beyond the orbit to adjacent structures, such as bone, maxillofacial sinuses, and brain; N0 is No evidence of lymph node involvement, M0 is No evidence of involvement of extranodal sites. The patient was referred to an oncologist for the definitive treatment, and he was treated by one cycle of CHOP regimen and five cycles of R-CHOP regimen in combination with radiotherapy (36 Gy into 20 fractions) over four over weeks. Complete resolution occurred after completion of the treatment protocol. The patient was followed up to one year of the primary surgery. There was no detected recurrence or complications in the follow-up time. We advised a PET-CT scan to assess the prognosis of the treatment and the recurrence and systemic involvement of the disease, but he didn't do that, and he was lost for follow up. During the COVID-19 pandemic times, we communicated with the patient or the patient's guardian. We informed that the patient was died after three years of the surgery due to systemic involvement.

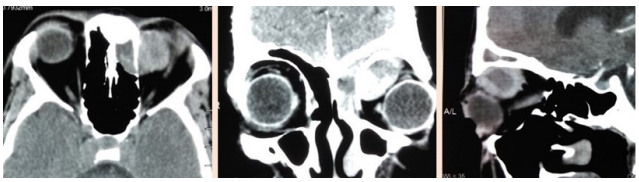

Fig. 2: Enhanced heterogeneous lesion involving the superomedial quadrant of the left orbit with subtle extending into the leftfronto-ethmoid sinuses on axial, coronal and sagittal images of CT scan of the orbit.

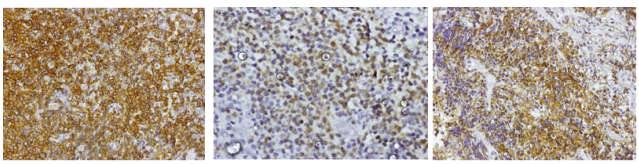

Fig. 3: a: LCA1positive; **b:** BCL2 positive, and **c:** CD20 positive on immunostaining.

3. Discussion

The Management strategy of hematolymphoid orbital tumours depends on the thorough clinical evaluation, assessment of advanced imaging study, various techniques

of representative tissue sampling, modern histopathological examination, immunohistochemical analysis, and molecular diagnosis. Finally, the management strategy includes efficient TNM staging. A multidisciplinary specialists and management strategy better manage orbital malignancies, including high-grade non-Hodgkin's lymphoma (NHL), varies from patient to patient, and centre to centre based on available facilities. Lymphoma is the most common ocular adnexal malignancy, and it includes 1-2% of all hematolymphoid lesions and approximately 8% of all Extranodal lymphomas and comprises 20-30% of orbital tumours. Orbital lymphoid consists of 50-60% of ocular adnexal lymphomas.[10,11] The majority of primary orbital lymphomas are B-cell non-Hodgkin lymphomas. The relative frequencies of ocular adnexal lymphoma are in orbit, 37%-39%; conjunctiva, 29%; lacrimal, 20%-25%; and eyelid, 8%-14%. The majority of OAL are low-grade B-cell NHL. Unilateral 83% and the primary tumour is 72%. The most frequent primary OAL is Extranodal marginal zone lymphoma (ENMZL) in 42% of all lymphoid lesions and 62%-68% of all primary OAL. The second most frequent primary OAL diagnosis is follicular lymphoma (FL) 8%-17% followed by diffuse large B-cell lymphoma (DLBCL) at 9%-10%[10,12,13]. The most common secondary lymphoma subtype is mantle cell lymphoma which accounts for 22% of all secondary lymphomas.[14–16] The orbit and adnexal hematolymphoid tumours can occur at all ages, but they are most frequently seen in the fifth to seventh decades of life.[17] Clinical features may include gradual painless proptosis, mechanical ptosis, palpable rubbery mass in the eyelid, Motility deficits (diplopia), and salmon patch appearance of the conjunctiva. Painful lesion may present in < 10% of ENMZL, 20% of FL, and 30% of DLBCL.[10,18] CT Scan of the orbit helps identify the extent and location of the lesion and helps in planning out the surgical approach. Lymphoma is typically seen as well-circumscribed, homogeneous, hyper to iso dense lesion and mold around the globe, and other orbital structures may form the pancake-like configuration. Tissue invasion and bone erosion are rarely seen except DLBCL and Mantle cell Lymphoma. Lymphomas are usually absent on both T1 and T2 weighted images and show moderate enhancement with gadolinium. Newer imaging techniques, PET-CT scan, are performed to detect the early onset of malignancy, determine whether cancer has spread or metastasized in the body, and assess the treatment plan's effectiveness.[10,14,18,19] Open Biopsy is preferable compared to fine-needle aspiration biopsy to allow for sufficient tissue specimen. Tissues are sent in formalin for histopathology and as fresh tissue for flow cytometry and gene rearrangement studies. The convenient immune-histochemical analysis is done by an ocular pathologist.[18,20] Diffuse large B-cell lymphomas may positive for CD20, CD79a, PAX5, MYC, MYC, BCL2, and BCL6 rearrangements.[10,14,18] TNM staging helps document the disease, prognostication, and plan out the treatment and follow-up. Proper initial staging is critical and should include total-body positron emission tomography, bone marrow biopsy, and gastrointestinal endoscopy for MALT lymphoma and mantle cell lymphoma. Higher T staging involvement of nodes and distant metastasis is associated with poor prognosis.[21] Treatment of OAL is evolving and depends upon the staging at presentation, histologic classification, systemic involvement, patients with comorbidities, and potential ocular toxicity of treatment. Orbital radiotherapy and systemic chemotherapy form the mainstay of treatment. Newer treatment modalities include immunotherapy with interferon and anti-CD20 antibody rituximab that are useful when used alone or in combination with chemotherapy or as radioimmunotherapy. OAL are radiosensitive tumours, and the effective EBRT dose for DLBCL ranges from 30-40 Gy. Chemotherapy is combined with local radiotherapy to orbit synergistic effect for DLBCL. Rituximab (anti-lymphocyte monoclonal antibody against CD20) in combination with CHOP therapy known as R-CHOP regimen has improved the survival rate to a 5-year overall survival of 60%. For the patients younger than 60 years of age, the edition of etoposide shows a better outcome (R-CHOEP).[10,21,22] Radioimmunotherapy consists of combining radioisotope to the monoclonal antibody such as rituximab. The most commonly used radioisotope is yttrium 90 (Y90)-ibritumomab tiuxetan (Zevalin) and Iodine (I131).[23] Our case was presented with painful proptosis for the last three months; Tissue biopsy confirmed the High-grade DLBCL; the patient had been treated by one cycle CHOP regimen and five cycles of R-CHOP chemotherapy. Up to 1 year follow up; there is no recurrence and systemic involvement.

4. Conclusion

Every case is individualized and needs meticulous management of the patient. About one-third of high-grade lymphoma and others, orbital malignancy, may present as painful proptosis that mimics the orbital inflammatory disease. An advanced array of investigative techniques has been revolutionized in managing orbital malignancies. Management of Orbital Malignancies is going to be updated day by day.

5. Abbreviations

OAL (Ocular adnexal lymphoma), MALT (Mucosa-associated lymphoid tissue), DLBCL (Diffuse large B-cell lymphomas), FL (Follicular Lymphoma), TNM (Tumour-Node-metastasis), R-CHOP (Rituximab-cyclophosphamide, Adriamycin, vincristine, and prednisolone)

6. Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

7. Source of Funding

None.

References

1. Gordon L. Orbital inflammatory disease: a diagnostic and therapeutic challenge. *Eye*. 2006;20(10):1196–206. doi:10.1038/sj.eye.6702383.
2. Gordon LK. Diagnostic dilemmas in orbital inflammatory disease. *Ocul Immunol Inflamm*. 2003;11(1):3–15.
3. Shields JA, Shields CL, Scartozzi R. Survey of 1264 patients with orbital tumors and simulating lesions: The 2002 Montgomery Lecture, part 1. *Ophthalmology*. 2004;111(5):997–1008. doi:10.1016/j.ophtha.2003.01.002.
4. Mccluskey P, Powell RJ. The eye in systemic inflammatory diseases. *Lancet*. 2004;364(9451):2125–33. doi:10.1016/S0140-6736(04)17554-5.
5. Rootman J. Inflammatory diseases of the orbit. Highlights. *J Fr Ophtalmol*. 2001;24:155–61.
6. Rubin PA, Foster CS. Etiology and management of idiopathic orbital inflammation. *Am J Ophthalmol*. 2004;138(6):1041–3. doi:10.1016/j.ajo.2004.09.032.
7. Yuen SJ, Rubin PA. Idiopathic orbital inflammation: distribution, clinical features, and treatment outcome. *Arch Ophthalmol*. 2003;121(4):491–9. doi:10.1001/archopht.121.4.491.
8. Pakdaman MN, Sepahdari AR, Elkhamary SM. Orbital inflammatory disease: Pictorial review and differential diagnosis. *World J Radiol*. 2014;6(4):106–15. doi:10.4329/wjr.v6.i4.106.
9. Mombaerts I, Rose GE, Garrity JA. Orbital inflammation: Biopsy first. *Surv Ophthalmol*. 2016;61(15):664–9. doi:10.1016/j.survophthal.2016.03.002.
10. Verdijk RM. Lymphoproliferative Tumors of the Ocular Adnexa. *Asia Pac J Ophthalmol*. 2017;6(2):132–42.
11. Olsen TG, Heegaard S. Orbital lymphoma. *Surv Ophthalmol*. 2019;64(1):45–66.
12. Hsu CR, Chen YY, Yao M, Wei YH, Hsieh YT, Liao SL, et al. Orbital and ocular adnexal lymphoma: a review of epidemiology and prognostic factors in Taiwan. *Eye*. 2021;35(7):1946–53.
13. Haider G, Mitra MR, Kadir AH, M S. Orbital lymphoma: clinical profile Bangladesh. *IJOOO*. 2017;3(3):177–9.
14. Verdijk RM. An Update of Ocular Adnexal lymphomas. *Diagn Histopathol*. 2015;21(1):26–33. doi:10.1016/j.mpdhp.2014.11.006.
15. Ferry JA, Fung CY, Zukerberg L. Lymphoma of the ocular adnexa: a study of 353 case. *Am J Surg Pathol*. 2007;31(2):170–84. doi:10.1097/01.pas.0000213350.49767.46.
16. Looi A, Gascoyne RD, Chhanabhai M, Connors JM, Rootman J, White VA, et al. Mantle cell lymphoma in the ocular adnexal region. *Ophthalmology*. 2005;112(1):114–9.
17. Auw-Haedrich C, Coupland SE, Kapp A. Long term outcome of ocular adnexal lymphoma subtyped according to the REAL classification. Revised European and American Lymphoma. *Br J Ophthalmol*. 2001;85(1):63–72. doi:10.1136/bjo.85.1.63.
18. Kamal S, Kaliki S. Ocular Adnexal Lymphoma: Clinical Presentation, Diagnosis, Treatment and Prognosis. *J Mol Biomark Diagn*. 2017;8(1):1–9.
19. Rath S, Connors JM, Dolman PJ. Comparison of AJCC TNM Based staging system and Arborr classification of predicting outcome in ocular adnexal lymphoma. *Orbit*. 2014;33(1):23–8. doi:10.3109/01676830.2013.842257.
20. Matsuo T, Ichimura K, Okada H, Shinagawa K, Fukushima K. Clonal analysis of bilateral, recurrent, or systemically multifocal ocular adnexal lymphoma. *J Clin Exp Hematop*. 2010;50(1):27–38. doi:10.3960/jslrt.50.27.
21. Savino G, Battendieri R, Gari M. Long term outcomes of primary ocular adnexal lymphoma treatment with intraorbital rituximab injections. *J Cancer Res Clin Oncol*. 2013;139(7):1251–5. doi:10.1007/s00432-013-1438-9.
22. Rasmussen PK, Coupland SE, Finger PT. Ocular adnexal follicular lymphoma: a multicenter international study. *JAMA Ophthalmol*. 2014;132(7):851–58. doi:10.1001/jamaophthalmol.2014.376.
23. Shinder R, Esmaeli B. Primary Orbital Cancers in Adults. *Ophthalmic Oncol*. 2011;p. 3–11. doi:10.1007/978-1-4419-0374-7_1.

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