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Unilateral Proptosis Secondary to Orbital Tumors

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Abstract:
Introduction: *Orbit is a pyramidal structure consisting of innumerable structures such as the eyeball, fat, extra ocular muscles, nerves and blood vessels. Thus, the variety of tumours that can originate, grow, invade and lodge in the relatively small orbital cavity is amazing*
Methodology: *The study was conducted over one year period. It was an interventional case series.. The decision for surgical intervention was taken as and when required.*
Conclusion: *Knowledge of the demographic profile ,with a combination of clinical findings helps us to arrive at a clinical diagnosis. Imaging techniques are a must for accurate localization of the cause of proptosis. Inflammatory & neoplastic cases require immediate attention in order to save sight & life.*
Keywords: *proptosis, orbital tumors, orbitotomies.*

I. Introduction

Orbit is a Pandora's box consisting of innumerable structures such as the eyeball, fat, extra ocular muscles, nerves and blood vessels. In addition, it is surrounded by several important structures. The paranasal sinuses surround the floor and medial wall. It is also related to the anterior cranial fossa and temporal fossa. Orbit communicates with the surrounding areas through several bony canals and fissures. Posteriorly, it is contiguous with the extradural parasellar cavernous sinus through the superior orbital fissure; superiorly and posteriorly to the anterior cranial fossa through the optic canal. The inferior orbital fissure connects it to pterygopalatine area and the naso lacrimal duct connects the orbit to the nasal cavity.[1] In spite of being a relatively closed cavity, it vulnerable to infection and spread of neoplasias from all these sites by virtue of its location and communications. Thus, the variety of tumours that can originate, grow, invade and lodge in the relatively small orbital cavity is amazing.[2]

Apart from infection, the structures within the orbit themselves may develop pathological lesions and give rise to proptosis. These lesions may be either benign or malignant, may present in any age.. The other forms of presentation are visual loss, when the lesion involves the optic nerve; restriction of extra ocular movements etc.

Proptosis is the most common form in which these lesions present.[3]The mode of evaluation of proptosis has been described in detail in literature. A detailed history, good clinical evaluation and radiological investigations help us to to arrive at an accurate localization of the lesion, diagnosis and definitive management. Here we are discussing the presentation of proptosis in ten patients who were diagnosed to have orbital tumors.

II. Methodology

The study was conducted over a one year period. It was an interventional case series.. The decision for surgical intervention was taken as and when required.

Patients who presented with proptosis, either absolute or relative, were included in the study. Lower limit of age was taken as 12 years . The cut off value for absolute proptosis was taken as 20mm.Relative proptosis was one where the difference in proptosis between two eyes was 2mm or more. The patient was labelled as having relative proptosis if the difference between two eyes was equal to or greater than two mm. The patients with pseudoproptosis i.e. high myopes, buphthalmos patients, those with lid retraction, were excluded from the study.

A detailed history was taken in all patients paying special attention to the onset, duration and progress of proptosis and also the presence of known systemic morbidity. The demographic profile of all patients was noted. A complete physical examination was conducted in order to look for any associated co morbidity.

Ophthalmic examination was directed specifically towards visual acuity, corneal examination to look for any signs of exposure keratitis, pupillary reflexes, both direct and indirect, proptometry and fundus evaluation.

Relevant blood investigations were done, particularly, thyroid profile, complete blood counts, blood sugar estimation and ESR, as and when deemed necessary. Neuroimaging was conducted in all cases. The most common modality of imaging was CT, followed by MRI. Histopathological evaluation was performed post operatively on resected specimens, in order to arrive at a tissue diagnosis.

III. Results

Ten patients with proptosis secondary to intra ocular tumors were evaluated and treated over one year period.

Age of the patients ranged from twelve years to sixty five years, with the mean age of 35.1 years. Six if these patients were male. There were four female patients. The male to female ratio was 3:2.

Out of ten patients, seven had non axial proptosis (70%) and three had axial proptosis. Majority of them (70%) presented with proptosis, without any visual loss. Three patients had profound visual loss due to compression over the optic nerve, which was restored post operatively.

Meningioma was found to be the most common type of tumor and was seen in three patients . Two of them had a primary optic nerve sheath meningioma. One patient had sphenoid wing meningioma. The other tumors are shown in table 1.

Ninety percent were benign tumors, malignant tumor giving rise to proptosis was found in only one case. The patients were managed by appropriate surgery (table 2). Aim of surgery was cosmetic improvement and visual restoration which was achieved in all cases. (Table 3) (Figures 1,2,3).

IV. Discussion

Orbital tumours is a rather complex group of conditions which comprise not only primary tumours both benign and malignant arising from orbit itself, but also due to certain congenital defects, tumours extending from neighbouring structures through the various foramen in orbit and the thin bones and metastatic lesions.[4]

Variable incidence of primary orbital tumours has been reported by different workers in their series[5] . Silvab reported that amongst the primary orbital tumours the pseudotumours followed by dermoids occur most frequently. Haemangioma was found to be the commonest by Ingalls and Reese. [6,7] On the contrary ,meningioma was reported to be the commonest by Dandy and pleomorphic adenoma of lacrimal gland topped the list of primary orbital tumours in the studies of Forrest, Dass and Mohan et al. Nath and Gogi in a study of 120 histologically proved cases of primary orbital tumours have reported that pseudotumours are the commonest cause of proptosis. Other causes include a wide spectrum of tumours such as dermoids (26), vascular growths (19), optic nerve tumours (14), mesenchymal tumours (12), peripheral nerve tumours (11), and epithelial tumours .[7] In the present study, meningioma was found to be the commonest intra ocular tumor giving rise to proptosis, similar to the findings of Dandy. The difference in incidence can also be attributed by variations in approach to the subject.

In a similar study done earlier, the orbital tumor was located intraconally 7 cases, intra- and extraconally 8 cases, and extraconally 41 cases.[8] In our series, only two tumors were intraconal and the rest were extraconal.

There are 2 major types of surgical approaches used for the removal of orbital tumors : transorbital approaches and extraorbital or transcranial approaches. While anterior lesions are treated via transorbital approaches, lesions of the posterior third of the orbit and periorbita can be treated via an extraorbital approach .When surgeons select surgical approaches, in addition to the location of the tumor, other factors, such as the size of the lesion, goal of the surgery (biopsy, debulking, or gross-total excision), and the characteristics of the tumor, must be considered. Transcranial approach is suitable for lesions in the orbital apex and the superior orbital fissure, such as glioma, meningioma and lymphoma.[9] In our series, lateral orbitotomy was the most common surgery performed and was found to be adequate with good cosmetic and visual outcome.

V. Conclusion

Orbital tumors encompass a heterogeneous variety of lesions. Careful evaluation of a patient's history and examination along with modern high-resolution imaging studies provide invaluable information regarding the possible origin of an orbital lesion. For most tumors, surgery is the treatment of choice.

Table 1: Type of orbital tumors

Tumor	Number of cases
Lymphangioma	1
Osteoid osteoma	1
Mucormycosis	1
Meningioma	3
Inverted papilloma	1
Ameloblastoma	1
Hemangioma	1
Pleomorphic adenoma	1

Table 2: Modes of surgery

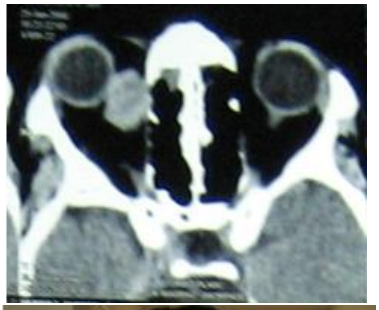
SURGICAL APPROACHES	CASES
Lateral orbitotomy	Pleomorphic adenoma Meningioma
Medial orbitotomy	Lymphangioma Inverted papilloma
Transcranial approach	Osteoid osteoma
Exenteration	Mucormycosis

Table 3: Visual outcome

	Visual Acuity	
	Pre op	Post op
Meningioma	6/6	6/6
Lymphangioma	6/18	6/18
Osteoid osteoma	6/9	6/9
Pleomorphic adenoma	6/6	6/6
Inverted papilloma	CF 2m	6/18
Meningioma (2)	HMCF	CF 4m

Fig 1: Pleomorphic adenoma

Fig 2: Lymphangioma CT scan



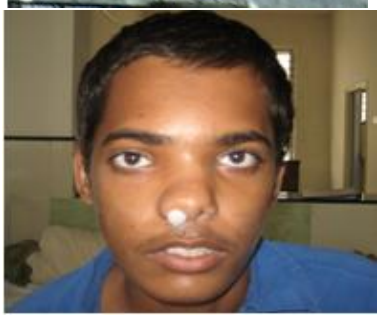


Fig 3: Osteoid osteoma Pre and post op

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