Proptosis: The ENT Surgeon's Perspective

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Abstract Proptosis is one of the commonest clinical manifestations of pathology involving orbit. Aim of this study is to evaluate causes of proptosis secondary to nasal and paranasal sinus pathology. Prospective study over 2 years. 44 cases of proptosis secondary to nasal and paranasal sinus pathologies studied. There were 63.6% males and 33.4% of females with peak age incidence between 41 and 50 years. Commonest cause of proptosis in our study is malignancy of nose and paranasal sinuses, of which squamous cell carcinoma is common. Frontoethmoid mucocoele is the second common cause. Fungal sinusitis account for 15.9% only. To conclude malignancy lesions of nose and paranasal sinuses constitute important cause of proptosis in our study followed by mucocoele. Prompt identification of proptosis, a clinical and radiological evaluation is required. The treatment modality has to be decided according to individual lesion.

Keywords Proptosis · Paranasal sinuses · Malignancy · Sinusitis · Mucocoele

Introduction

Proptosis is one of the commonest clinical manifestations of pathology in the orbit. This symptom reflects

encroachment of a disease into the orbit by which orbital volume is increased. It is defined as forward displacement of eyeball beyond the orbital margin, with the patient looking forward. Any increase in the orbital content usually resulting from mass lesions, vascular anomaly, inflammatory process or endocrine lesion will result in axial displacement of globe.

In present scenario even though proptosis is one of the common manifestations of orbital pathology it can be the only symptom of nasal and paranasal sinus pathology. So ophthalmologist should be careful in dealing with proptosis.

Lesions in the nose and paranasal sinuses invade the orbit most commonly by bone erosion or preformed pathways. Direction of proptosis is important and will indicate the site of lesion. The assessment of proptosis in otorhinolaryngology is of paramount importance because it could be an early and sometimes the only manifestation of nasal or paranasal sinus pathology [1]. It can indicate the site of lesion by direction of proptosis and an early prompt correction of the offender prevent further damage to orbital content. Neoplastic diseases of nose and paranasal sinuses, followed by inflammatory disease are the common cause of proptosis secondary to nose and paranasal sinus pathology [4]. Diagnostic role of CT scan in proptosis is important [7]. Early proper treatment of primary cause will bring back eye ball into normal position in most of the cases [2].

Materials and Methods

This prospective study was conducted in the department of ENT at Government Medical College, Kozhikode during the period of October 2007 to September 2009. A total of 44 cases of proptosis were studied. All these cases were

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proptosis secondary to nose and paranasal sinus pathology. These cases were subject to routine clinical examination and investigations including CT and MRI scan in order to reach the diagnosis. Histopathological diagnosis was obtained by biopsy in appropriate cases. An attempt has been made to classify them according to the etiology. All cases were offered appropriate treatment according to the nature and extend of the disease.

All patients were reviewed and followed up at 1 week, 3 weeks, 3 months, 6 months and 1 year. Detailed otorhinolaryngology examination and evaluation of the proptosis was done on each follow up visit.

Exclusion criteria Proptosis due to endocrine causes and primary orbital pathology were excluded.

Results

A total of 44 cases of proptosis due to otorhinolaryngology causes that presented to ENT department of Medical College, Kozhikode were studied. Most of the patients were from the age group of 41–50 years (20.5%) closely followed by those between 31 and 40 years (18.2%). We found that the incidence of proptosis secondary to ENT causes increases with advancing age up to the 5th decade as shown in the bar diagram.

The study showed a male preponderance with 63.6% as shown in the pie chart.

Apart from bulging of eye ball, the most common symptom was nasal obstruction in 29 cases (65.9%) followed by watering from eyes in 26 (59.1%). On examination in addition to proptosis the common finding was mass in the nose (63.6%).

Fig. 1 Proptosis due to frontal sinus mucocele

Fig. 2 Proptosis secondary to fungal sinusitis

A variety of causes of proptosis were come across with the malignancy of the nose and paranasal sinuses (27.3%) leading the list, to be closely followed by mucoceles (Fig. 1). Other causes were benign tumours, fungal sinusitis (Fig. 2), trauma, sinusitis and fibrous dysplasia. The results are tabulated in Table 1.

Among the malignant lesions, squamous cell carcinoma was the most common histological type constituting 58.4% of the cases. The other histological varieties were adenoid cystic carcinoma, embryonal rhabdomyosarcoma, malignant schwannoma and extra medullary plasmacytoma. The results are summarized in Table 2.

Angiofibroma was the most common benign tumor causing proptosis followed by inverted papilloma, chondroma of ethmoid, ossifying fibroma and fibrous histiocytoma.

Sl.no	The causes of proptosis	No. of cases	Percentage
1.	Malignancy of nose and paranasal sinuses	12	27.3
2.	Frontoethmoid mucocoele	10	22.7
3.	Benign tumors of nose and PNS	8	18.2
4.	Fungal sinusitis	7	15.9
5.	Complication of acute sinusitis	3	6.8
6.	Trauma	3	6.8
7.	Fibrous dysplasia	1	2.3
Total		44	100

Sl.no	Histology	No. of cases	Percentage
1.	Squamous cell carcinoma	7	58.4
2.	Adenoid cystic carcinoma	2	16.7
3.	Embryonal rhabdomyosarcoma	1	8.3
4.	Malignant schwannoma	1	8.3
5.	Extra medullary plasmacytoma	1	8.3
Total		12	100

CT scan of the nose and paranasal sinuses yielded more results than conventional X-rays. In malignancies, the CT scan showed bone erosion in many cases (Fig. 3). Route of spread into the orbit is more important for planning treatment and could be assessed from CT scan films.

All the cases were advised follow up at regular interval of 1 week, 3 weeks, 6 months and 1 year. Regression of proptosis was marked in cases of inflammatory, benign tumor and traumatic cases. Fungal sinusitis took longer period for regression up to 3 months. Proptosis due to mucocele regressed gradually over 2–3 months. Benign tumors took about 4–6 weeks to regress back to normal. One case of rhabdomyosarcoma showed marked improvement with chemotherapy.

Discussion

Benign tumors of the nose and paranasal sinuses like juvenile nasopharyngeal angiofibroma [3] and inverted papilloma also caused proptosis. In our study the most common benign tumours presenting as proptosis were juvenile nasopharyngeal angiofibroma as compared with study by Sinha et al. [4] followed by inverted papilloma. Proptosis was the presenting symptom in patients with frontoethmoid mucocele. Fungal sinusitis with proptosis was the fourth most common cause. The incidence of proptosis due to bacterial sinusitis is high in children in literature but our study had two cases in young adult male and one case in a child. Moore et al. [5] had reported 16

cases of fibrous dysplasia with proptosis. In our series there was one case of fibrous dysplasia presenting with proptosis.

Apart from proptosis the most common symptoms were nasal obstruction (65.9%) followed by watering from eyes (59.1%). A study by Frazell et al. [6] of 416 cases of malignancies of nose and paranasal sinuses showed nasal obstruction (35%), facial swelling (25%) and epistaxis (12.5%) as the presenting complaints.

CT scan evaluation is the best diagnostic modality to assess the disease process as shown by Mahsud and Bano [7].

Regarding treatment, one case of bacterial sinusitis with proptosis was treated with antibiotic and one case of traumatic proptosis responded to medical treatment. Of the malignant lesion one child with rhabdomyosarcoma underwent chemotherapy alone. In cases with mucocoele, endoscopic drainage was done in most of the cases. In few cases we had to go for external frontoethmoidectomy. All the three cases of angiofibroma underwent excision after pre operative embolisation. Two cases of inverted papilloma underwent medial maxillectomy. Seven cases of malignancy underwent total maxillectomy with radiotherapy and chemotherapy in indicated cases. Only one orbital exenteration was done as it was invading orbital fat. According to Conley and Baker [2] orbital exenteration was inevitable once the tumor has breached the periorbital.

Conclusion

Proptosis in nasal and PNS disease indicates the encroachment of lesion into orbit through bone erosion or

preformed pathways. Malignant lesion of nose and PNS constituted an important cause of proptosis followed by mucocoeles. Prompt identification of the protrusion of eye with correct correlation of nasal and sinus symptoms aided by CT scans helped in the early identification of disease process. CT scan assessment of lesion provides useful information regarding site and extend of lesion. The treatment modality has to be tailored according to the individual lesion.

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