

UNILATERAL PROPTOSIS: A LOCAL EXPERIENCE

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This paper presents the experience with unilateral proptosis at Allama Iqbal Medical College (Jinnah Hospital) and King Edward Medical College (Mayo Hospital), Lahore from July 1995 to October 2001. There were 45 patients of unilateral proptosis managed over a period of six years and three months. There was a male predominance with a ratio of 2:1. The age range was 2 - 70 years. The average age was 33 years. The commonest cause was a disease in the ethmoids (27/45 - 60%). Commonest pathology was chronic ethmoiditis and polyposis (10/45 - 22%). External ethmoidectomy performed through the Lynch Howarth approach has been the commonest surgical procedure required (20/45 - 44%). Unilateral proptosis is a multidisciplinary problem and requires collaboration of different specialties.

Key Words: *Unilateral proptosis, CT Scan, Surgical Treatment.*

INTRODUCTION

Proptosis is defined as any forward displacement or bulging of an eye, and is frequently used to describe a change in the position of the globe. The corneal apex is normally 15 to 18 mm anterior to the lateral orbital rim in adults, with more than 21 mm or a difference of 2 mm between the eye positions being abnormal. The otolaryngologist - head and neck surgeon is frequently called upon to evaluate and treat the patient with unilateral proptosis and must work closely with the ophthalmologist, neurosurgeon and radiologist to ensure a successful outcome in each case¹. Proptosis may occur from a variety of causes but in all cases it is associated with a mass effect within or around the orbit.

The causes of unilateral proptosis are innumerable. The aetiology and frequency of occurrence reported varies with age and the methods used to collect a series of patients². This paper presents the experience with unilateral proptosis at Allama Iqbal Medical College and King Edward Medical College, Lahore over a period of about 6 years and 3 months.

MATERIALS AND METHODS

It is an ongoing study of patients with unilateral proptosis in which ENT unit at Allama Iqbal Medical College (Jinnah Hospital) and later King Edward Medical College were involved in evaluation and management. Patients managed from July 1995 to October 2001 were included in the

present study. Forty - five patients of unilateral proptosis were evaluated and managed during this period. The proforma was filled up to determine the demographic data, associated symptoms, physical examination, laboratory studies and radiological workup. Treatment was also noticed along with follow-up.

RESULTS

Over a period of 6 years and 3 months from July 1995 to October 2001, 45 cases of unilateral proptosis were managed. There was a male predominance with a male to female ratio of 2:1. Age range observed was 2 to 70 years with an average age of 34 years. Median age was 32 years with a mode of 20 years. Distribution of cases with reference to duration of proptosis is depicted in Table 1. Fever was found as an associated symptom in 3 patients. Computerized tomography was performed in 44 cases. B-scan (ultrasonography) was performed in 11 cases. Magnetic Resonance Imaging was performed in 2 cases. In 16 patients biopsy was performed prior to definitive management (Table 2). Thirteen patients had a malignant tumours (Table 3). Seventeen patients had benign tumours (Table 4). Ethmoidal mucous polypi and chronic ethmoiditis was seen in 11 patients. Four patients had a frontal and ethmoidal sinus mucocoele. Four patients presented with acute orbit (Orbital cellulitis or acute abscess). Three patients were of invasive mucormycosis. One patient had a pseudotumour. Two patients had congenital encephalocele.

Table 1: *Duration of proptosis.*

1 month	07 Cases
> One month to 6 months	15 Cases
> Six months to one year	10 Cases
> One Year	13 Cases

Table 2: *Biopsy preoperative.*

Intranasal	13 cases
Trans conjunctival	01 case
Lateral Orbitotomy	01 case
Lynch Howarth	01case

Table 3: *Malignant tumours 13 Cases.*

Squamous Cell Carcinoma	01
Transitional Cell Carcinma	01
Undifferentiated CA	02
Adenoid Cystic Carcinoma	02
Ewing's Sarcoma	02
Rhabdomyosarcoma	01
Hodgkin's Lymphoma	03

Table 4: *Benign tumours (07 cases).*

Inverted Papilloma	02
Osteoma	01
Schwannoma	01
Neurofibroma	01
Nasopharyngeal angiofibroma	01
Meningioma	01

Table 5: *Treatment, modalities.*

Surgery	31
Radiation ± CT	07
To Neurosurgeon	03
Antifungal (Amphotericin-B)	03

Table 6: *Surgical approaches.*

Lynch Howarth	19
Lateral Rhinotomy	04
Weber Fergusson	02
Bifrontal Craniotomy	02
Orbital Exenteration	03
Intranasal Antrostomy	02

Treatment modalities applied are shown in Table 5. Surgical approaches adapted are shown in Table 6. Follow up ranged from 6 years 3 months to 3 months.

Among them 23 (51%) were cured, 9/45 (20%) are living with disease, 4/45 (9%) died of disease, and 8/45 (18%) were lost to follow up.

DISCUSSION

A complete history is essential in the evaluation of unilateral proptosis. The outset, progression and the presence of associated signs and symptoms such as fever, pain, visual loss and diplopia should be established. A history of allergies, sinus infection, epistaxis, nasal discharge, airway obstruction and tearing suggest a sinonasal origin². An associated fever with protosis may indicate acute inflammation of orbit. Three of our patients showed fever as an associated symptom and were shown to have orbital abscess or cellulitis. An essential method of evaluating proptosis is to perform Hertel exophthalmometry. The instrument projects a lateral view of the cornea on a millimeter scale and normal values range from 14mm to 20mm. It is uncommon for an eye to protrude more than 21mm beyond the orbital rim^{1,3}. A measurement that compares the position of one cornea with the other can also be recorded and any forward displacement of one globe 2mm greater than the other is clinically significant and represents relative proptosis¹.

Infections, inflammatory diseases and tumours invading the orbit from adjacent areas have rapidly evolving symptoms and pain. Chemosis and injection suggest an inflammatory lesion when combined with proptosis². Seven of our patients had proptosis for less than one month. There was one patient each of mucormycosis, preseptal cellulitis along with nasal polyposis and ethmoiditis, subperiosteal abscess, frontoethmoidal mucocoele. Inverted papilloma of nose may invade orbit and may represent to ophthalmologists as happened in two of our patients. Undifferentiated sinonasal tumours may also present with a similar presentation.

Sino nasal endoscopy with 0° and 30° telescopes is required in evaluation to exclude a disease in the nose and para-nasal sinuses. A biopsy must be performed prior to definitive treatment if a tumour is suspected. A total of 16/45 (30%) patient required biopsy prior to definitive treatment. Plain radiographs (occipitontal, occipitofrontal and lateral views) are useful for initial evaluation. Patients with mucocele of the fronto-

ethmoidal region showed dehiscence of the orbital floor and / or lamina papyracea^{4,5}. Computerized tomography was the main modality utilized. It was obtained in 44/45 cases. The advantage of visualizing the orbital soft tissues and surrounding bony walls simultaneously cannot be over - emphasized. Coronal images are particularly revealing when disease arises from the paranasal sinuses or the cranial vault. Neoplastic lesions may have an enhancing blush when intravenous, water soluble contrast is used^{1,5}. Magnetic resonance imaging is non-invasive imaging modality. It takes advantage of differences in the magnetic properties of various tissues and pathophysiologic processes. It has no radiation exposure and one can get images in all three dimensions. It was particularly useful in evaluating congenital or vascular lesions^{1,5}. In our series a patient with encephalocele and another patient with meningioma were investigated with this where angiography with this technique also showed the feeding vessels. B-Scan ultrasonography is a non-invasive method of recording the composite two - dimensional image from the echo pattern. Four general patterns of mass lesions are identifiable with B-scan ultrasonography (cystic, solid, angiomatous, and infiltrative)⁶. Lymphomas in our series showed infiltrative pattern.

The most common neoplasms involving the orbit are of paranasal origin. In our series 20/45 (45%) patients had a benign or malignant neoplasm. Whereas 11/13 malignant tumours had to be biopsied through nose. Benign neoplasm such as inverted papilloma may erode the bony orbital wall, but usually do not penetrate the periorbit and this structure can be encompassed as the resection margin as was done in two of our cases². In case of malignant tumours if periorbit are involved, orbital exenteration may be indicated². Orbital exenteration may also be required if it is a primary malignant tumour of the orbit. Only 3/45 (7%) of our patients required orbital exenteration.

Nasal polypses and chronic ethmoiditis can cause proptosis and may be associated with aspergillous fungal rhinosinusitis⁷. In our series 11/45 (25%) had nasal polyposis and chronic ethmoiditis. These patients had fungus balls or caseous material suggesting noninvasive aspergillois. They were managed through external ethmoidectomy

along with sphenoidotomy and approach to frontal sinus when required. Three (7%) patients were of mucormycosis. These patients required surgical debridement and intra-venous Amphotericin-B.

Patients with malignant tumours and mucormycosis showed a poor prognosis.

CONCLUSIONS

Non-thyroidal unilateral proptosis is a serious sign and must be dealt with in the early stage. Its management requires a multidisciplinary approach which includes an otolaryngologist alongwith ophthalmologist, neurosurgeon; oncologist and radiation therapist.

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