e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2022; 14(4); 81-85

Original Research Article

Prospective Observational Study to Evaluate the Etiology, Clinical Features and Management of Unilateral Proptosis

Rashmi Kumari[1], Amit Prakash[2], Ashish Kumar[3], Prakash Kumar[4]

[1]Post Graduate 3rd Year, Department of Opthalmology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India
[2]Senior Resident, Department of ENT, DMCH, Laheriasarai, Darbhanga, Bihar, India
[3]Associate Professor, Department of Opthalmology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India
[4]Professor, Department of Opthalmology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India

Received: 01-11-2021 / Revised: 29-12-2021 / Accepted: 23-02-2022
Corresponding author: Dr. Amit Prakash
Conflict of interest: Nil

Abstract

Aim: To study the etiology, clinical features, histopathology, and management of proptosis and its outcome.

Material & method: This was a two-year prospective study conducted after taking institutional ethical board clearance. All patients with unilateral proptosis that presented to the Department of Opthalmology, Narayan Medical College & Hospital, Jamuhar, Sasaram.

Results: This study includes a total of 50 patients with unilateral proptosis. Headache (96%) and protrusion of eye (100%) were the commonest presented complains in these patients.

Conclusion: Proptosis necessitates a complete ENT evaluation. A tiny number of instances may go unnoticed, but cancer must be ruled out in proptosis, regardless of how little the protrusion is. Malignancy was found to be the most common cause in prior investigations, while ours revealed an inflammatory genesis.

Keywords: proptosis, clinical profile, ophthalmology

Introduction

Proptosis is forward protrusion or displacement of eye ball.[1]It may be caused by local orbital diseases, diseases of paranasal sinuses or systemic disorders involving some distant organs. The etiological spectrum of proptosis is wide ranging from inflammation, infection, neoplasia to endocrine and vascular disorders.[2]

Throughout the world, eyes are regarded as a symbol of beauty and personality. Any irregularity of the eye can impair a person's eyesight as well as their exterior appearance, leaving them visually impaired and social outcasts.[3-5]

An otorhinolaryngologist should do a thorough evaluation of proptosis. Proptosis can be an early and, at times, the only manifestation of ENT pathology. As there is close anatomical proximity of the orbit to the nose, sinuses, and the nasopharynx,

the majority of ENT pathologies present with ocular manifestations.[6]

The ophthalmologist will be better able to suspect, diagnose, and treat patients if they have a thorough understanding of the etiologies. Thus, we aim to study the etiology, clinical features, and management of proptosis.

Material & method:

This was a two year prospective study conducted after taking institutional ethical board clearance. All patients with unilateral proptosis that presented to the Department of Opthalmology, Narayan Medical College & Hospital, Jamuhar, Sasaram, during the study period were included.

Methodology

Proptosis was defined by exopthalmometry (Luedde's exophthalmometer) value of >21mm or a difference of >2mm between both eyes. Presentation of proptosis was defined as acute (within hours to days), sub-acute (within weeks) and chronic (several months/years).

A written informed consent was obtained from all patients. The patients were evaluated by a detailed history, clinical examination, proptometry and relevant laboratory investigations. Orbital imaging by either CT and / or MRI was done in all patients. Medical and or surgical treatment was given according to standard protocol.

Statistical analysis:

Microsoft office 2007 was used for the statistical analysis. Descriptive statistical tools were used for the analysis.

Results:

This study includes a total of 50 patients with unilateral proptosis. Study participants were in between age of 6-75 years and majority of them belonged to above sixty years of age group. (Table 1) Among all the patients 80% were males and 20% were females. Axial Proptosis was found in majority of patients (76%) and eccentric propotosis was found in 24% of the study participants.

The minimum proptosis was 3mm and the maximum was 18mm above the normal. Axial Proptosis was found in majority of patients (76%) and eccentric propotosis was found in 24% of the study participants (Table 2). Headache (96%) and protrusion of eye (100%) were the commonest presented complains in these patients along with other complains like pain, defective vision, epiphora, and diplopia shown in Table 3. The most common etiology seen orbital cellulitis comprised of 18% patients, followed by Pseudotumours (6%), Squamous cell carcinoma (6%). patients were seen with causes of Orbital apex (4%) syndrome, Meningioma (4%) and Dermoid (4%) respectively, shown in Table 4. Inflammations (42%) were medically managed with systemic antibiotics and steroids. 30% patients were surgically managed by orbitotomies or orbital exploration, depending on the site, out of which 12% cases were done by the neurosurgeon. 16% underwent radiotherapy and chemotherapy. (Table 5)

In tumors, histopathology reports after biopsy wherever possible confirmed the diagnosis. Diagnosis was confirmed clinically and with the help of CT/MRI scans. Scans helped in localizing the lesions and gave an idea into the etiology of the condition and in making a decision in the management of the patient. References to ENT, neurosurgery, and oncology were given for any associated conditions. No complications were seen in follow-ups.

Table 1: Age distribution

Age in years	Number of cases	%
0–9	2	4.0
10–19	0	0.0
20–29	10	20.0
30–39	13	26.0
40–49	12	24.0
50–59	7	14.0
>60	6	12.0
Gender		
Male	40	80.0
Female	10	20.0
Total	50	100.0

Table 2: Type of proptosis

Type	Number of cases	%
Axial	38	76.0
Eccentric	12	24.0
Total	50	100.0

Table 3: Presenting symptoms

Symptoms	Number of cases	%
Proptosis	50	100.0
Diminished vision	31	62.0
Diplopia	4	8.0
Diminished motility	7	14.0
Epiphora	1	2.0
Headache	48	96.0
Chemosis	27	54.0
Orbital mass	18	36.0
Eye pain	49	98.0
Ptosis	9	18.0

Table 4: Cause of proptosis

Inflammatory	Number of cases	%
(a) Orbital cellulitis	9	18.0
(b) Orbital apex syndrome	2	4.0
(c) Frontal mucocele	1	2.0
(d) Mucormycosis	1	2.0
Pleomorphic adenoma of lacrimal gland	1	2.0
Pseudotumours	3	6.0
Trauma (Retrobulbar haemorrhage)	1	2.0
Hodgkin’s lymphoma	1	2.0
Squamous cell carcinoma	3	6.0
Lacrimal gland adenocarcinoma	1	2.0
Osteoblastoma	1	2.0

Meningioma	2	4.0
Haemangioma	1	2.0
Acoustic schwannoma	1	2.0
Retinoblastoma	1	2.0
Lymphangioma	1	2.0
Dermoid	2	4.0
Luxated globe	1	2.0

Table 5: Treatment modalities

Treatment modalities	Number of cases	%
Medical	21	42
Surgery	15	30
Radiation + chemotherapy	08	16
Referred cases	06	12

Discussion:

Proptosis is not very common in ophthalmology practice but its varied presentation and etiology need to be carefully evaluated as it may be vision threatening and even a sign of a life threatening systemic diseases. This study showed a male predominance similar to the finding by Khan et al Logana than and Radhakrishnan [7] and Sharma et al [8] but unlike the study by Zaidi SH et al [9] which showed a female predominance. Unilateral proptosis was more common in this study as was found by S. Guthorpe JD and Hochman M [10].

Orbital pathology usually presents as proptosis. Symptoms reflect the orbital volume increase. Direction indicates the site of lesion [10]. In comparison to other studies where neoplasms are seen to be more common, in our study, inflammations in the orbit were more common and contributed to most of the cases. Neoplastic variety found in this study. Similar results were obtained by several other studies.[11]

Anterior temporal lobe lesions into the orbit can lead to proptosis and blindness [12]. The causes of unilateral proptosis in a child include retinoblastoma in the first 5 years of life and infective orbital cellulitis [13].

The direction of exophthalmos may indicate the likely aetiology and site of lesion [14]. Axial proptosis is seen in tumours arising within the muscle cone like optic nerve glioma. The eyeball is displaced down and/or lateral in diseases of frontal or ethmoid sinuses. Lacrimal gland or temporal fossa tumours have a medial displacement [15,16].

The complications of orbital cellulitis are exposure keratitis, raised intra ocular pressure, central retinal artery or vein occlusion, optic neuropathy, endophthalmitis, subperiosteal abscess, intracranial complications like meningitis, brain abscess and cavernous sinus thrombosis.[9] In addition, Low Molecular Weight heparin (Enoxaparin 40mg s/c bd x 5 days) was given to patients with cavernous sinus thrombosis complicating orbital cellulitis and insulin injection was given for blood sugar control in diabetic patients.[2]

Conclusion:

Proptosis can cause significant disfigurement and visual deterioration. Proptosis necessitates a complete ENT evaluation. A tiny number of instances may go unnoticed, but cancer must be ruled out in proptosis, regardless of how little the protrusion is. Malignancy was

found to be the most common cause in prior investigations, while ours revealed an inflammatory genesis. Unilateral proptosis is a multidisciplinary issue that necessitates the participation of various ophthalmologist disciplines, as well as an otorhinolaryngologist, neurosurgeon, oncologist, and radiotherapist. Although a CT scan proved useful in analyzing an instance of proptosis, histological testing offers a definitive diagnosis of the exact cause.Timely intervention provided good visual outcome and regression of proptosis cosmetically for most and was life saving for many.

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