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Etiological Analysis and Management of Proptosis in a Tertiary Care Hospital in Burdwan, West Bengal

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Abstract: ***Aims & objectives: Proptosis can effect vision by causing exposure keratopathy, optic nerve compression etc depending on the causes. This study was done to investigate the etiological causes of proptosis and to treat them accordingly. Materials & methods: This is a prospective and interventional study conducted in the Department of Ophthalmology, Burdwan medical college, Burdwan. All the patients with proptosis attending our hospital during the study period were included. All the patients underwent investigations like exophthalmometry, orbital x-ray, B scan USG, MRI, CT scan. In endocrine cases, thyroid function tests were done. After diagnosis, according to the causes, patients were treated either conservatively or surgically. Results: Total 33 patients were included in the study. Infective, inflammatory, traumatic, neoplastic & vascular causes of proptosis were of 36.3%, 21.2%, 15.1%, 12.1% & 12.1% respectively. 2(6%) patients expired during treatment process. Conclusion: Depending on the causes, proptosis can cause blindness and even threatens life. So early diagnosis and treatment of proptosis is necessary.***

Keywords: Proptosis, Exophthalmometry, CT scan, USG B scan

1. Introduction

Proptosis is defined as protrusion or forward displacement of globe. The intraorbital portion of optic nerve is 7 mm longer than the distance between the back of globe & optic canal,which allows for forward displacement of eyeball without excessive stretching. Dystopia is defined as displacement of globe in coronal plane. Proptosis should be suspected if the distance between lateral orbital margin & corneal apex more than 20mm or difference of 2 mm or more in between 2 eyes . Any space occupying lesion in muscle cone will produce axial proptosis & extraconal lesions causes combination of proptosis & dystopia. Proptosis can be caused by various diseases.the causes include inflammatory, infective, neoplastic, traumatic, vascular with thyroid ophthalmopathy being the commonest cause of both unilateral & bilateral proptosis. Proptosis can cause serious threat to the vision by causing exposure keratopathy & optic nerve compression[1]. This study aimed to find the etiological causes of proptosis & management of the causes in the patients attending a tertiary care hospital in Burdwan.

2. Materials & Methods

This was 1 year prospective & intervention study being conducted between march,2016 to jun,2017 in the Department of Ophthalmology, Burdwan medical college, Burdwan, Westbengal. All patients with unilateral & bilateral proptosis attending Ophthalmology outdoor in the period of study was included in the study group. A written informed consent was taken from the patients. Detailed clinical history & examination, proptometry & relevant investigations including blood tests , orbital x-ray,CT scan, MRI,USG & histopathological examination of biopsy specimens was done. According to the disease presentations, the study group was divided into acute(within days), subacute (within several weeks), chronic(several months to years). Proptosis was measured by using plastic ruler resting on lateral orbital margin & measuring the distance of corneal apex from lateral orbital margin. Patients were also referred to Department of ENT, Neurology, Endocrinology , Surgery, Radiotherapy when needed. Standard Medical & surgical management was given. Treatment Outcome was measured by visual acuity improvement & reduction of proptosis on follow up visits.

3. Results

33 patients were included in the study group consisting of 17(51%) males & 16(49%) females. Proptosis was unilateral in 20(60.6%) cases & bilateral in 13(39.3%) cases.Proptosis was of acute duration in 18(54.5%) cases, subacute in 3(9%) cases, chronic in 12 (36.36%) cases. Axial proptosis was seen in 14 (42.4%)cases & non axial in 19 (57.5%)cases. Optic nerve involvement was seen in 6(18.1%)cases including 1 case of cavernous haemangioma, 3 traumaitc cases,1 idiopathic cause & 1 non Hodgkin lymphoma. Central retinal artery occlusion was seen in 2(6%) case .The most common cause of proptosis in our study is of infectious etiology(36.3%) followed by inflammatory etiology (21.2%). Among the study group , 5 cases were treated surgically, others were treated medically. Among them, 19(57.7%) cases have got cured of proptosis, 12(36.3%) patients are in regression phase, 2 (6%) patients died during treatment process.

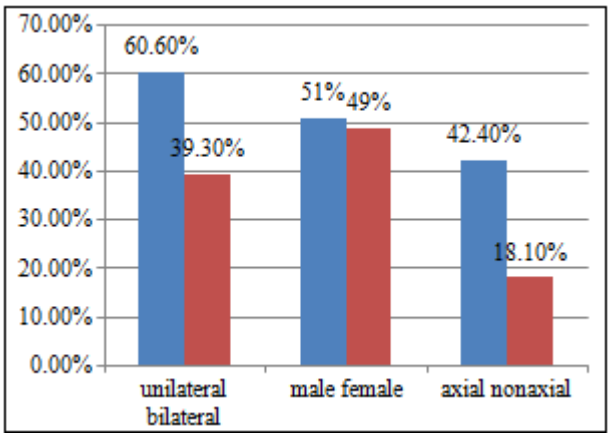

Figure 1: Showing laterality,sexual distribution & types of proptosis

Causes	*No of cases*	*Percentage of cases*
Infective		
Orbital cellulitis	6	18.2%
Cavernous sinus thrombosis	6	18.2%
Inflammatory		
Thyroid ophthalmopathy	6	18.2%
Pseudotumor	1	3%
Vascular		
Capillary haemangioma	1	3%
Cavernous haemangioma	2	6%
Carotid cavernous fistula	1	3%
Tumors		
Dermoid	3	9.2%
Lymphoma	1	3%
Traumatic	5	15.2%
Idiopathic	1	3%

Fig 2-etiology of proptosis

Comparison of Various Studies

Study	*Infective*	*Inflammatory*	*Traumatic*	*neoplastic*	*Vascular*
Present study	36.3%	21.2%	15.1%	12.1%	12.1%
Teja N et al[2]	25.92%	37.03%	7.40%	18.51%	7.40%
George TA et al[3]	67%	20%	4%		
Sharma P et al[4]	3%	47%	3%	37%	10%

4. Discussion

The most common cause of proptosis in our case series is of infective origin(36.3%), which is similar to George TA et al[3] study, but contradictory to Teja N et al[2] study & Sharma P et al[4] study. Among them, 6(18.2%) cases were orbital cellulitis, 6 (18.2%) cases were of cavernous sinus thrombosis . They were admitted & were treated with intravenous broad spectrum antibiotics, topical antibiotic drops etc. 2 cases of cavernous sinus thrombosis expired during treatment. George TA et al[3] study found various complications in orbital cellulitis patients e.g. central retinal artery occlusion, cavernous sinus thrombosis, optic neuropathy, subperiosteal abscess. In our study , we found 1 case of central retinal artery occlusion & 1 case of meningitis.Teja N et al[2] & Sharma P et al[4] study showed inflammatory etiology of proptosis to be the commonest. Whereas in our study,it lies in 2nd place. Among the cases of inflammatory origin, we had 6 (18.1%) cases of grave's ophthalmopathy & 1 (3%) case of idiopathic orbital inflammatory disease or pseudotumor. Both the diseases were treated with oral prednisolone 1-1.5 mg/kg body weight for several weeks in tapering doses, topical NSAIDS & teardrops with additional antithyroid drugs for thyroid ophthalmopathy. All of the patients showed improvement with the treatment.In our study, tumors include 12.1% of cases, whereas Sharma P et al[4] study constitutes 37% & Teja N et al[2] study constitutes 18.51%. Among them 3 cases were dermoids,which were surgically excised & sent for histopathological examination.1 cases was of B cell non hodgkin's lymphoma, which was diagnosed by histopathological examination with CD 20 positive. Patient was referred to Radiotherapy department for chemotherapy. Proptosis reduced, but vision couldn't be saved. Traumatic pneumo orbit cases showed complete improvement of proptosis & visual acuity following treatment with oral broad spectrum antibiotic & oral NSAIDS. 1 case of retro orbital haemorrhage following Functional endoscopic sinus surgery needed urgent lateral canthotomy with cantholysis. Despite measures ,patient developed central retinal artery occlusion. In our study, we found 42.4% cases of axial proptosis & 57.5 % cases of non axial proptosis. Teja N et al[2] study found axial & non axial proptosis to be 48.14% & 51.85% respectively. In George TA et al [3]study ,they have found several complications along with proptosis Including diplopia, reduction in visual acuity, disturbed colour vision, extraocular muscle restriction, cranial nerve palsies. In our study too, we have found the similar complications.

5. Conclusion

Proptosis occurs due to variable etiology, among them some are life threatening. So timely diagnosis & treatment is of utmost important. In our study conducted in Dept of Ophthalmology, Burdwan medical college, we conclude that the most common cause of proptosis is of infective origin followed by inflammatory etiology.

6. Funding

Nil.

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