

## Otorhinolaryngological causes of proptosis and their sequelae in an eye clinic in Osogbo, south west Nigeria

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### Case Series

#### Abstract

This was a one year descriptive-cases-series of proptosis presenting to a tertiary eye clinic between January to December 2011. Socio- demographic data were obtained. Subjects aged between 4<sup>1</sup>/<sub>2</sub> years to 75 years who had proptosis referred from the Otorhinolaryngology clinics were examined. Visual acuities, clinical examination of the anterior and posterior segment of the eye, ocular alignment and systemic examination were done. Otorhinolaryngologists' findings, laboratory results, radio diagnostic tests, and previous surgical intervention were noted. The major causes of proptosis were due to malignancy (66%) followed by infections and cystic lesions in equal proportions. Half of the subjects who developed visual impairment had improvement in vision and improved facial symmetry after appropriate treatments were instituted. Cases of strabismus were also corrected.

Co-management is here demonstrated to give the best cosmetic and visual outcome.

**Key words:** Otolaryngological causes, proptosis, visual impairment

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## Les causes de otorhinolaryngologiques proptosis et leurs séquelles dans une clinique ophtalmologique à Osogbo, du sud-ouest du Nigeria

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Series Case

### Résumé

Ce fut a un an descriptives-cas-série de proptosis présenter à une clinique des yeux tertiaire, entre Janvier et Décembre 2011. Socio- données démographiques ont été obtenues. Sujets âgés de 41/2 à 75 ans qui avaient proptosis visées dans les cliniques ORL ont été examinés. Acuité visuelle, examen clinique du segment antérieur et postérieur de l'œil, l'alignement oculaire et l'examen systémique ont été réalisées. Les conclusions de Otorhinolaryngologists, les résultats de laboratoire, les tests de diagnostic de radio, et une intervention chirurgicale précédente ont été notées. Les principales causes de proptosis étaient dus à une tumeur maligne (66%), suivie par les infections et les lésions kystiques en proportions égales. La moitié des sujets qui ont développé une déficience visuelle avait amélioration de la vision et amélioré la symétrie du visage après les traitements appropriés a été intentée. Cas de strabisme ont également été corrigées.

Co-gestion est ici démontré à donner le meilleur résultat esthétique et visuelle.

**Mots clés:** Les causes ORL, exophtalmie, déficience visuelle

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## INTRODUCTION

Proptosis can be defined as the protrusion or forward displacement of the eyeball when  $> 20\text{mm}$  from the lateral canthus or when the difference between both eyes is  $>2\text{mm}$  with the use of Hertel's exophthalmometer (1). Lesions within the muscle cone usually cause an axial proptosis, whereas masses in the anterior parts or the adnexae surrounding the orbit or from the Otorhinolaryngological (ORL) structures usually cause proptosis with displacement of the globe away from the site of the lesion. The Ophthalmologist's concern is about the lesions both from without and within the orbit that can cause danger to sight. A number of these diseases can be grouped under congenital or acquired causes.

A 5 year retrospective study carried out in Ilorin showed that 60% of patients with nasopharyngeal carcinoma (NPC) had neuro-ophthalmic manifestations with symptoms including protrusion of the eye and exposure keratopathy (2). Another study carried out in Ibadan showed that out of 294 analysed cases of unilateral proptosis, 45% were due to malignancy while infections constituted 36.7%. (3) Proptosis may affect all age groups. In children, benign and malignant causes need urgent attention as they are usually associated with explosive growth and damage to the eye. (4) Sino-orbital infections are very common in children especially because of the thin lamina papyracea in the nasal wall which allows easy crossing of infections (5). Inflammatory sinus diseases either from bacterial or fungal or other causes are also implicated, therefore the ORL surgeons must be skilled in diagnosis and management so as to reduce the possible sequelae of proptosis in terms of vision (6).

The eye is important both as a sensory organ and for its aesthetic value. The management is therefore pertinent to both the Ophthalmic and ORL surgeons.

Visually and ocularly cosmetically unacceptable presentations to the eye clinic stimulated the interest of the authors. This case series seeks to describe the common causes of proptosis referred from the ORL unit to the eye clinic, its common presentations, treatment and

ocular complications. It also aims at highlighting the importance of co-management so as to prevent blinding complications.

## METHODS

This was a one year descriptive-case-series of proptosis presenting to Ladoke Akintola University of Technology Teaching Hospital eye clinic Osogbo between January to December 2011. Socio-demographic data were obtained. All those who had proptosis and were referred from the Otorhinolaryngology clinics were examined. Visual acuities, clinical examination of the anterior and posterior segments of the eye, ocular alignment and systemic examination were done. Otorhinolaryngologists' findings, laboratory results, radio diagnostic tests, and previous surgical intervention were obtained. Data were analyzed by simple descriptive statistics.

## Case Reports

### Case 1

A 24 year old male apprentice with a history of trauma to the left maxillary area and epistaxis of 8 months. Does not take alcohol or smoke. Developed a left frontal mucocoele leading to non-axial proptosis of about 10mm. Visual acuity (VA) in the left eye was 6/9. Anterior and posterior segments examination were essentially normal.

Treatment: Frontoethmoidectomy, ocular lubricants with ointment and topical antibiotics

### Case 2

A 16-year old female Senior Secondary (SS) 2 student with a 7 month history of progressive left cheek swelling, left eye watering, diplopia, bilateral nasal obstruction, anosmia, and vertigo after blowing nose. Had facial asymmetry, bony hard mass 2 x 2 x 2cm lateral to left nasal bridge with slightly pale hard palate. A diagnosis of left ossifying fibrous, benign maxillary tumour leading to non-axial proptosis of about 13mm was made. The left VA was hand movement (HM). Anterior segment showed chemosis, conjunctival hyperemia, exposure keratopathy and sluggish pupil. Eye was also deviated to the left.

Treatment: Debulking of the tumour and

tarsorrhaphy. Generous ointment was applied to the cornea and external eye. VA improved to 6/18

### Case 3

A 75-year old male farmer with a history of left nasal discharge and obstruction, protrusion of the left eye and forehead with blurring of vision of 9 months duration. Past history of tooth ache for 1 year. Took alcohol occasionally. Developed left axial proptosis of about 15mm from pansinusitis and orbital cellulitis since 2 weeks. He complained of poor vision with VA of light perception (LP), severe conjunctival hyperaemia and chemosis, cornea ulceration, sluggish pupils and swollen disc. He was referred with a diagnosis of frontal mucocoele and ocompression syndrome.

Treatment: Left frontoethmoidectomy, systemic antibiotics and metronidazole; ocular lubricants and antibiotics; padding.

### Case 4

A 4<sup>1</sup>/<sub>2</sub> year old boy with 3 months history of right eye swelling, epistaxis of 1 week, no weight loss and a narrow right nasal cavity. Child is from a polygamous home, 7<sup>th</sup> child of mother and 3<sup>rd</sup> child of father who are petty traders. Developed right non-axial proptosis of 8mm up and left with exposure keratopathy and blurring of vision. VA was HM. A diagnosis of Burkitt's lymphoma was made after radiological, histological and haematological investigations. Treatment with chemotherapy; Vincristine, Actinomycin D and Cyclophosphamide (VAC) were used. Temporary tarsorrhaphy and ocular lubricants were used for the eye. VA improved to 6/18

### Case 5

A 50 year old male cocoa farmer with a history of right nasal bleeding of 10 months and right nasal blockage of 8 months. Smoked 2 sticks of cigarettes per night for 10 years, but stopped smoking 20 years ago. Had been taking alcohol since adolescence. Developed a 5mm axial proptosis on the ward after the 4<sup>th</sup> day of admission, secondary to a bleeding foul-smelling nasal mass which totally occluded the right nasal cavity. VA and other ocular structures were normal. Diagnosis was papillary carcinoma of the

antrum.

Treatment: Nasal clearance and biopsy. Ocular lubricants also used.

### Case 6

A 44 year old butcher with a history of right nasal discharge and cheek swelling of 2 years, epistaxis of 1 year, past medical history of trauma to the right cheek with progressive swelling. Alcohol intake was 4 to 5 bottles per day, and smoked 4 sticks of cigarettes per day, for 30 years. Had a massive degree of facial asymmetry, forward swelling of the right cheek with ulceration at the pointed end, non-axial proptosis up and out about 20mm. Examination revealed VA of counting fingers (CF), strabismus, conjunctival injection and exposed dry cornea. Biopsy showed squamous cell carcinoma of the maxilla.

Treatment: Radiotherapy, chemotherapy, temporary tarsorrhaphy and ocular lubricants.

## DISCUSSION

A total of 6 cases were seen within the one year period of study in 2011. There was a male preponderance with a ratio of 5: 1 (M: F). The age range spanned between childhood to adult-hood. This is presumed to be due to the many existing causes of proptosis from the ORL region which can affect all ages. Similarly, Sinha et al in India found a male preponderance with M:F ratio of 5:2 as well as a wide age range of 13 years to 70 years in a study of 50 cases of ENT causes of proptosis (7).

It is pertinent to note that all the cases were unilateral. This similarity was also recorded in other studies (7). Complaints of facial asymmetry, epistaxis, bloody nasal discharge and or obstruction, swollen cheeks and eye protrusion were noticed. Similar complaints were also seen in India where nasal obstruction occurred in 21 (42%) cases, epistaxis in 14 (28%) cases while others were facial swelling and blood stained discharge (7). Exposure keratopathy was seen in half the cases. Other complaints included seeing double, reduced vision and redness of eyes. Some features of neuro-ophthalmic manifestations like frozen globe and deviation of the eye were noticed in some cases. These features were also seen to accompany certain malignancies such as

nasopharyngeal carcinoma in another study (2). Deviation of the eye was also noticed in 1/3<sup>rd</sup> of cases.

The study revealed that majority of the cases (66%) were due to tumors while infections and cyst constituted (16.7%) each therefore making tumors the highest cause of proptosis referred from the ORL department. In another part of western Nigeria, ophthalmologically related complications of all cases seen in the ORL unit of the hospital made up (7.9%). Some of the complications included proptosis with or without restrictive myopathy, enophthalmos and visual loss (8). Studies by Venugopal et al. in India similarly recorded cases of nasal and paranasal tumors particularly squamous cell carcinoma as the commonest causes of proptosis followed by frontoethmoidal mucocoele (9) while Mohan et al recorded that one third of the causes of proptosis from the ORL unit were due to sinus problems (10). In a retrospective study of mucocoeles in blacks, it was seen that the commonest types were frontoethmoidal, frontal and maxillary in descending order. It was also concluded that proptosis is a common feature of mucocoeles of the paranasal sinuses and that visual affectation was rather uncommon (11).

In treating mucocoeles particularly the fronto ethmoidal types, some authors found that the Lynch procedure led to a significant improvement of proptosis (12). Another study in Ankara obtained good results with reversal of vision loss in most cases when endoscopic sinus surgery and osteoplastic flap techniques were used in time for treatment in most patients. Delay was said to affect reversal of sight loss since the mucocoeles directly compress on the optic nerve (13). A similarity was noticed with case 3 which went blind from optic nerve compression syndrome.

Social habits also seem to have played a role *e.g* in cases 5 and 6 in which the patients had histories of cigarette smoking and alcohol intake. They were diagnosed to have squamous cell carcinoma of the maxilla. Similar cases were seen in other studies whereby alcohol and cigarette smoking had associated high risk of developing carcinomas but in the oral cavity and pharynx (14). ORL tumors' treatment depend on the cause

and extent of infiltration. However, Hakeem et al. had shown that traditional open surgery for these cases are very effective (15). Two of the cases (2 and 4) had their vision improved to normal after treatment. The deviation of the eye or strabismus was managed at a second stage plan of treatment following the resolution of initial treatment from drugs and surgery.

It was noticed that proptosis secondary to thyroid disease were never referred from the ORL department. These we presume was due to the fact such cases were primarily seen by Surgeons while the ophthalmologists took care of the proptotic eye. The management of proptosis usually requires a multidisciplinary approach or collaboration of different specialties. It should be noted that cure of proptosis and cause may be incomplete in some cases.

## CONCLUSION

This study showed that most of the causes of proptosis were due to neoplasms, followed by infections among all age groups. Accurate diagnosis and treatment of the predisposing factors with co-management will prevent or reduce blinding complications of proptosis.

**Conflict of interest:** No conflicts of interest declared.

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**Table 1: Summary of findings in the 6 cases**

Findings	Age in years	Sex	Laterality	Visual Acuity	Proptosis	Anterior segment	Posterior Segment	Diagnosis
Case 1	24	Female	Right	Normal	Non-axial	Normal	Normal	Frontal mucocoele
Case 2	16	Male	Left	Hand Movement	Non-axial	Affected	Affected	Maxillary Tumour
Case 3	75	Male	Left	Light Perception	Axial	Affected	Affected	Frontal mucocele/ Optic nerve compression syndrome
Case 4	4 and 1/2	Male	Right	Hand Movement	Non-axial	Affected	Affected	Burkitts lymphoma
Case 5	50	Male	Right	Normal	Axial	Normal	Normal	Antral Carcinoma
Case 6	44	Male	Right	Counting Fingers	Non-axial	Affected	Affected	Maxillary carcinoma



**Figure1 : Showing sequelae of maxillary tumour - (facial asymmetry, bony hard mass lateral to left nasal bridge with left ossifying fibrous, benign maxillary tumour leading to non-axial proptosis of about 8cm).**