Original Research Article

DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20220142

A study of otorhinolaryngological diseases with ophthalmic complications: at a tertiary care center

Adhira Gobind*, Kavita Sachdeva

Department of ENT, NSCB Medical College, Jabalpur, Madhya Pradesh, India

Received: 05 November 2021 Revised: 04 January 2022 Accepted: 05 January 2022

*Correspondence: Dr. Adhira Gobind,

E-mail: dradhira.gobind@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The close proximity of the eyeball and the orbit to the ENT region, makes the involvement of the orbit and there of ophthalmological manifestations common in the practise of Otorhinolaryngology. The diseases of ENT with orbital extension must be considered whenever a patient presents with signs and symptoms of orbital disease such as proptosis, orbital mass, restriction of eye movements, neurological dysfunction of eye, chemosis, vision disturbances or epiphora.

Methods: Patients presenting with ophthalmological manifestations due to various ear, nose, throat and head–neck pathologies were constituted in this prospective study which was carried out on 50 patients of the age group 10 years to 60 years with ophthalmological complications along with ENT diseases who came to the department of ENT and department of Ophthalmology of N.S.C.B. Medical College, Jabalpur from August 2019 to August 2021.

Results: Males were affected more than female with ophthalmic complications. Sinonasal tumours were the most common cause of orbital complications, of which carcinoma of maxilla was the commonest, followed by sinonasal lymphoma. Nasal obstruction was the most common ENT complaint and proptosis was the commonest orbital sign.

Conclusions: A firmer knowledge of orbital anatomy with respect to sinonasal region is required for any surgeon dealing with this important area, for a safer and more secure management in this complex region. Surgery remains the main stay of treatment for sinonasal diseases with orbital complications. Rapid diagnosis and treatment are of utmost importance in preserving vision and life in these patients.

Keywords: Sinonasal tumours, Ophthalmic complications, Proptosis, Epiphora

INTRODUCTION

The eyeball and the orbit are neighbours of the ENT region. This close proximity, makes the involvement of the orbit and there of ophthalmological manifestations fairly common in the practise of Otorhinolaryngology. The bony walls of the orbit are perforated by various fissures and foramina that are natural pathways for the spread of pathology of nose, paranasal sinuses and nasopharynx to the orbit. The pathway of spread is further favoured by the valveless venous system in this area. The anatomical relationship of nose and paranasal sinuses to the orbit is important for an otolaryngologist

not only in understanding the symptoms and spread of the diseases but also in planning management. A wide variety of infective, inflammatory and benign and malignant neoplastic conditions of the nose, paranasal sinuses and nasopharynx can have ocular or orbital manifestations. 75% of bacterial infections in the orbit are caused by sinusitis. Orbital complications that can occur due to rhinosinusitis, although very uncommon these days, are preseptalcellulitis, orbital cellulitis, sub periosteal abscess, orbital abscess and cavernous sinus thrombosis. Facial nerve may be damaged in CSOM (unsafe), temporal bone malignancies and parotid malignancies causing eye symptoms like lagophthalmos,

epiphora, dryness, exposure keratitis and corneal ulcers. Petrositis, very often secondary to otitis media can cause diplopia (VI nerve palsy) and retro orbital pain (V nerve involvement). (Gradenigo's syndrome)

METHODS

This study was a prospective study. All the patients presenting with ophthalmological manifestations due to various ear, nose, throat and head-neck pathologies were constituted in this study. This study was carried out on 50 patients of all age groups with ophthalmological complications along with ENT diseases who came to the department of ENT and head-neck surgery and department of Ophthalmology of N.S.C.B. Government Medical College, Jabalpur from August 2019 to August 2021. The standard procedure of examination—a complete, detailed history was taken otorhinolaryngological examination was done with focus directed towards nose, paranasal sinuses, nasopharynx, neck and cranial nerve function. Examination of globes, the eyelids and surrounding structures was performed. A complete Ophthalmological examination was done in all cases. Diagnostic nasal endoscopy was done wherever necessary. Routine investigations, thyroid function tests, radiological investigations like X-ray of PNS, orbit, skull, CT of PNS and Orbit, fine needle aspiration cytology and biopsy for histopathology wherever necessary were done. After arriving at a diagnosis, proper management was done. Prior informed consent was signed by all the participants enrolled as per guidelines and standards of research using human beings. The study was given approval by the institutional ethics committee (IEC), Jabalpur.

RESULTS

The age of presentation most commonly seen in middle age group (41–60 years) followed by older age group.

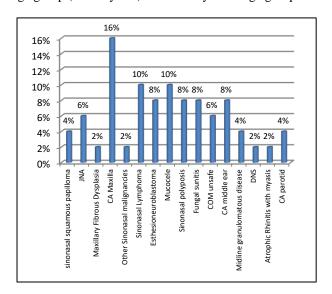


Figure 1: Various ENT diseases having ophthalmic complications.

Males were affected more than females with male to female ratio was 1.63:1.92% of the patients were from rural locality and the rest 8% from urban.

Various ENT diseases having ophthalmic complications (Figure 1)

Sinonasal tumours were the most common cause of orbital complications, (48%) among which, carcinoma of maxilla was the most common (16%), followed by sinonasal lymphoma (10%), esthesioneuroblastoma (8%), juvenile nasal angiofibroma (6%), sinonasal squamous papilloma (4%), and sinonasal malignancy and fibrous dysplasia (2%). 10% of the cases were mucocoele of frontal, ethmoidal and combined fronto-ethmoidal and 8% was due to sinonasal polyposis. Sinonasal infections constituted 8% of the cases, which were due to fungal aetiology. No bacterial cause was seen in our study. Out of the 14% of the otological causes, 8% was due to carcinoma middle ear and 6% was due to CSOM unsafe. Midline granulomatous disease and carcinoma of parotid constituted 4% of the cases. DNS and Atrophic rhinitis with nasal myasis were least common with 1 case each (2%).

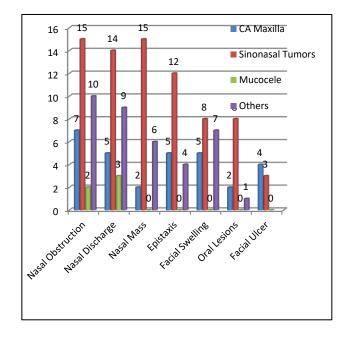


Figure 2: Signs and symptoms in patients of ENT diseases with ophthalmic complications.

ENT signs and symptoms in patients of ENT

Diseases with ophthalmic complications (Figure 2)

The common ENT complaints in the study groups were nasal obstruction (68%), nasal discharge (62%) and epistaxis (42%) followed by facial swelling (40%). Oral lesions (22%) and facial ulcers (20%) were less common. Most common ENT finding in these patients was nasal mass (46%) and least common were oral lesions (22%).

Ophthalmological signs and symptoms in ENT

Diseases complicating the orbit (Figure 3)

Most commonly, patient presented with proptosis 70% (35 cases) followed by epiphora 48% (24 cases) and orbital pain 42% (21 cases). Ectropion was the least

common, comprising 4 cases (8%). In maxillary carcinoma, proptosis, orbital pain and restricted eye movement were common presentations. Sinonasal tumours had proptosis and orbital pain as the major presentations followed by epiphora. Lagophthalmos associated with facial nerve palsy was most commonly found in otological causes which included CSOM unsafe and carcinoma of middle ear.

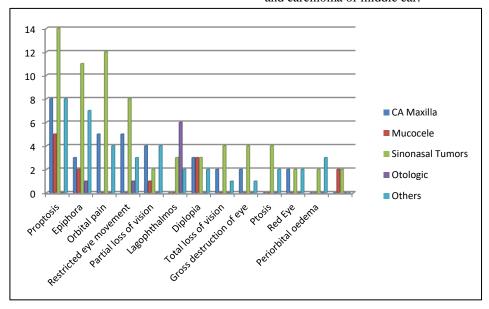


Figure 3: Ophthalmological signs /symptoms in ENT diseases complicating the orbit.

Computed tomographic evidence of orbital

Involvement (Figure 4)

32% of sinonasal tumours and 16% of maxillary carcinoma cases had evidence of orbital involvement in CECT PNS. 8% each of sinonasal infections and mucocoele had orbital extension.

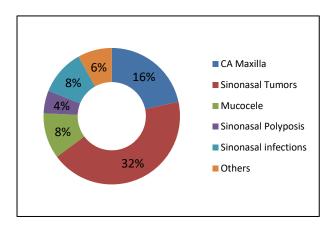


Figure 4: CT evidence of orbital involvement.

DISCUSSION

Maximum number of patients in this study, were in the age group of 41-60 years. In a study conducted by

Kumar et al, maximum number of cases 10 (26.32%) were between 41 and 50 years.² This was followed by 11–20 years (18%). Sinonasal tumours were distributed over a wide range of 11–60 years. Carcinoma of maxilla was distributed in the age group 31–70 years which is comparable with Sayed (1988–1993) study.



Figure 5: Right lateral rectus palsy in mucormycosis.

In this study, the commonest ENT diseases causing ophthalmic complications were sinonasal tumours comprising 48% of cases. Among sinonasal tumours, maxillary carcinoma was the most common cause of ophthalmic complications with the maximum number of cases (16%), followed by sinonasal lymphoma (10%), esthesioneuroblastoma (8%), juvenile nasal angiofibroma

(6%), sinonasal squamous papilloma (4%), and sinonasal malignancy and fibrous dysplasia (2%).



Figure 6: Proptosis (inferolateral) in frontal mucocele.



Figure 7: Bilateral orbital cellulitis in midline granulomatous disease.



Figure 8: Orbital proptosis with displacement of globe in frontoethmoidal mucocele.

In Kumar et al study of orbital manifestations in ENT diseases, the most common ENT disease responsible for orbital complications were the different sinonasal tumours comprising 18 cases, in which maxillary

carcinoma constituted 6 cases.² In Henderson's study of 465 cases of orbital tumours, 7% originated from sinonasal region and 60% of these were antral carcinomas. Whereas, in our study the major cause of orbital involvement was sinonasal tumours (48%) with maxillary carcinoma as the most common cause. In a study done by Sinha et al, sinonasal tumours were the most common cause of proptosis.³



Figure 9: Gross destruction of eye in orbital and nasal myasis.

Various involvement studies orbital on sinonasaldiseases reported that squamous cell carcinoma of maxillary sinus mostly extends to the orbit.3,4 Our findings are similar to these. In Western populations, lymphomas of the maxillary sinus are more common than in the nasal cavity, on the contrary, in Asian patients the nasal cavity is more common as a primary site than the maxillary sinus.⁵ In our study, sinonasal lymphoma was the second most common cause of ophthalmological manifestation comprising of 10% of cases involving both nasal cavity and maxillary sinus, and extending to the orbit. Esthesioneuroblastoma (olfactory neuroblastoma) is a rare neuroectodermal malignant neoplasm that originates from the olfactory sensory epithelium.⁶⁻⁸ Esthesioneuroblastoma with orbital extension comprised 8% of the cases in this study. 6% of the cases of juvenile nasoangiofibroma in our study showed orbital extension. Orbital involvement, is relatively common in the setting of juvenile nasoangiofibroma in which the extension is through the inferior orbital fissure. Ophthalmic involvement in inverted papilloma is rare. Only 2.7% of inverted papilloma appears to invade the orbit. Ocular involvement tends to be more common in middle-aged men.^{9,10} In our study 4% of the cases had ophthalmic manifestations. Inverted papilloma that invades the orbit has a high incidence of malignancy and is a locally aggressive tumour.11 Orbital involvement in sinonasal polyposis is caused by the direct extension of sinus inflammation and can result in compressive ocular symptoms. In our study, sinonasal infections constituted 8% of the cases of ENT diseases with ophthalmic complications which were due to fungal cause in which patients presented with proptosis. No bacterial cause was seen in our study. In a study conducted by Sayed, sinonasal infections both bacterial and fungal, were a

major cause of orbital involvement (17 cases). Atrophic rhinitis with nasal myasis were least common with 1 case each (2%). Atrophic rhinitis with nasal myasis can involve the orbit as maggots can erode the mucous membrane and the bone of the nasal cavity and may invade the orbit. Irritation and inflammation due to maggots, may become intense and spread to the eyelids and cheek. The common ENT complaints in our study groups were nasal obstruction (70%), nasal discharge (64%) and epistaxis (44%) followed by facial swelling (30%). oral lesions (22%) and facial ulcers (18%) were less common.

Most common ENT finding in these patients was nasal mass (36%) and least common were oral lesions (22%). Frazell et al studied 416 cases of malignancy of the nose and paranasal sinuses, the symptomatology showed high incidence of nasal obstruction (35%), facial swelling (25%) and epistaxis (12.5%) as the presenting complaint.¹² In a study done by Sinha et al, ENT complaints included nasal obstruction in 42% cases, epistaxis in 28% cases and facial swelling and blood stained discharge in 12% and 6% cases respectively. In our study, most commonly, patient presented with proptosis 64% followed by epiphora 48% and orbital pain 42%.3 In a study conducted by Kumar et al the most common clinical presentation was proptosis caused by the orbital extension of maxillary carcinoma, inverted papilloma, JNA, nasopharyngeal carcinoma and frontoethmoidal mucocoele.² Sinha et al concluded that proptosis is the commonest clinical presentation in neoplastic lesions of nose and paranasal sinuses.³

Investigations

Biopsy of suspicious tissue and FNAC of swellings were taken, all of which gave a positive diagnosis about the nature of the lesion. 24% of the cases were positive for squamous cell carcinoma. X-ray PNS showed varied positive results. CT scan of PNS and brain was the most conclusive investigation. Since CT scan accurately delineates bone and soft-tissue structures, it is indispensable in the planning of treatment and post therapy evaluation of sinus tumours. 37 cases (74%) in our study had CT evidence of orbital extension. CT is the most important single investigation and all patients with orbital complications should be candidates for CT scanning. In most cases, nasal endoscopy showed findings that were indicative of the causative pathology (60%), whereas in some cases, the nasal examination was inconclusive and even showed no abnormalities (12%). However CT scan is superior to nasal endoscopy.

Treatment offered in various ENT diseases with orbital complications

Out of 50 patients in this study, 38 underwent surgical management and 3 underwent medical management. 8 patients were treated with radiotherapy and chemotherapy

and one case was lost to follow up before any intervention could be done.

CONCLUSION

The diseases of ENT with orbital extension must be considered whenever a patient presents with signs and symptoms of orbital disease such as proptosis, orbital mass, restriction of eye movements, neurological dysfunction of eye, chemosis, vision disturbances or epiphora. A firmer knowledge of orbital anatomy with respect to sinonasal region is required for any surgeon dealing with this important area, for a safer and more secure management in this complex region. Surgery remains the main stay of treatment for sinonasal diseases with orbital complications. Rapid diagnosis and treatment are of utmost importance in preserving vision and life in these patients.

ACKNOWLEDGEMENTS

We thank the Head of the Department of ENT, Dr Kavita Sachdeva for her expertise and assistance throughout all aspects of this study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Chandler JR, Langenbrunner DJ, Stevens ER. The patho-genesis of orbital complications in acute sinusitis. Laryngoscope. 1970;80:1414-28.
- 2. Kumar A. Orbital complications of ENT diseases. Int J Otorhinolaryngol Head Neck Surg. 2017;4(1):210-6.
- 3. Sinha V, Bhardwaj D, George A, Memon RA. Proptosis through eyes of ENT surgeon. Indian J Otolaryngol Head Neck Surg. 2005;57(3):207-9.
- Sabharwal KK, Chouhal AL, Jain S. Evaluation of proptosis. Indian J Radiol Imaging. 2006;16(4):683-8.
- Longsdon M, Ha C, Kavadi V, Cabanillas F, Hess M, Cox J. Lymphoma of the nasal cavity and paranasal sinuses. Improved outcome and altered prognostic factors with combined modality therapy. Cancer. 1997;80:477-88.
- 6. Prakash Sampath P, Park MC, Huang D, Deville C, Cortez S, Chougule P. Esthesioneuroblastoma (Olfactory Neuroblastoma) with Haemorrhage: an unusual presentation. Skull Base. 2006;16:169-74.
- 7. Kiyota N, Tahara M, Fujii S. Non platinum-based chemotherapy with irinotecan plus docetaxel for advanced or metastatic olfactory neuroblastoma. Cancer. 2008;112:885-91.
- 8. Thompson LDR. Olfactory neuroblastoma. Ear Nose Throat J. 2006;85:569-70.

- 9. Jalilvand S, Saidi M, Shoja Z, Ghavami N, Hamkar R. The prevalence of human papillomavirus infection in Iranian patients with sinonasal inverted papilloma. J Chin Med Assoc. 2016;79(3):13740.
- 10. Lawson W, Ho BT, Shaari CM, Biller HF. Inverted papilloma: a report of 112 cases. Laryngoscope. 1995;105(3):282-8.
- 11. Zhao RW, Guo ZQ, Zhang RX. Human papillomavirus infection and the malignant transformation of sinonasal inverted papilloma: a meta-analysis. J Clin Virol. 2016;79:36-43.
- 12. Frazell BL, Lewise JS. Cancer of nose and paranasal sinus. Cancer. 1963;16:1293-313.

Cite this article as: Gobind A, Sachdeva K. A study of otorhinolaryngological diseases with ophthalmic complications: at a tertiary care center. Int J Otorhinolaryngol Head Neck Surg 2022;8:129-34.