ORBITAL COMPLICATIONS OF RHINOSINUSITIS IN A TERTIARY CARE HOSPITAL IN NEPAL

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ABSTRACT

Objective:

The objective of this study was to determine the prevalence of orbital complications of rhinosinusitis in a tertiary care hospital of Nepal.

Materials and Methods:

A retrospective study was conducted in the Department of Otorhinolaryngology of Tribhuvan University Teaching Hospital, Kathmandu, Nepal from January 2013 to December 2018. Ethical approval was obtained from the Institutional Review Committee. Patients of all age and gender diagnosed with orbital complications of acute and chronic rhinosinusitis were included in this study. The clinical records of 23 patients included in the study were reviewed. The diagnosis of rhinosinusitis was made according to European Position Paper on Rhinosinusitis and Nasal Polyposis. The classification of orbital complications of rhinosinusitis was done according to Chandler.

Results:

Twenty three patients were diagnosed with orbital complications of rhinosinusitis during the five years of study duration. The prevalence of orbital complications of rhinosinusitis was found to be 0.35%. There were 12 (52.2%) cases of preseptal cellulitis, eight (34.8%) cases of orbital cellulitis, one (4.3%) case of subperiosteal abscess and two (8.7%) cases of cavernous sinus thrombosis.

Conclusion:

The prevalence of orbital complications of rhinosinusitis is low in our centre. However, the result is comparable to other studies. Preseptal cellulitis was the commonest orbital complication of rhinosinusitis in this study.

Keywords: Complication, Orbital, Rhinosinusitis.

INTRODUCTION

Rhinosinusitis is the inflammation of lining mucosa of the nasal cavity and the paranasal sinuses. It is subdivided into acute and chronic rhinosinusitis depending upon the duration of symptoms lasting less than or more than 12 weeks respectively.[1] Rhinosinusitis is a common problem and it may rarely lead to complications. The complications of rhinosinusitis are classified into orbital, intracranial and osseous.[2]

The orbital complications of rhinosinusitis may be dangerous due to its potentiality to cause blindness or even death. The incidence of vision loss and mortality has been reported to be 3 to 11% and 1 to 2.5% respectively.[3] Orbital complications of rhinosinusitis has been classified according to Chandler as: Type I – preseptal cellulitis, Type II – orbital cellulitis, Type III – subperiosteal abscess, Type IV – orbital abscess and Type V – Cavernous sinus thrombosis.[4] Though rhinosinusitis and its complications may cause morbidity and mortality, there are no studies in Nepalese literature assessing this conditation.

The objective of this study is to determine the prevalence of orbital complications of rhinosinusitis in a tertiary care hospital of Nepal.

MATERIALS AND METHODS

This was a retrospective study conducted in the Department of Otorhinolaryngology of Tribhuvan University Teaching Hospital, Kathmandu, Nepal. Ethical approval was obtained from the Institutional Review Committee. Patients of all age and gender diagnosed with orbital complications of acute and chronic rhinosinusitis were included in this study. There were total of 23 patients between January 2013 to December 2018 and their clinical records were reviewed. The

diagnosis of rhinosinusitis was made according to European Position Paper on Rhinosinusitis and Nasal Polyposis.[1] The classification of orbital complications of rhinosinusitis was done according to Chandler.[4]

RESULTS

There were total of 6,478 patients visiting the ENT outpatient department with the diagnosis of rhinosinusitis during the study period. Twenty three patients were diagnosed with orbital complications of rhinosinusitis. The prevalence of orbital complications of rhinosinusitis was found to be 0.35%.

The age of patients with orbital complications of rhinosinusitis ranged from 13 months to 55 years and the mean age was 16.4 ± 15.5 years. All the patients with orbital complications secondary to acute rhinosinusitis were of age less than 15 years with the mean age of 5.6 ± 4.6 years. Eight (34.7%) patients had orbital complications due to acute rhinosinusitis and 15 (65.3%) patients had orbital complications due to chronic rhinosinusitis. There were 15 (65.3%) patients of age less than 15 years and eight (34.7%) patients of age more than 15 years. There were 11 (47.8%) male and 12 (52.2%) female patients.

There were ten (43.5%) patients with orbital complications due to rhinosinusitis during the summer season (March to August) and 13 (56.5%) patients during the winter season (September to February).

The distribution of patients according to Chandler classification is shown in table 1.

Table 1. Number of patients with rhinosinusitis according to Chandler classification (n=23)

Chandler stage	Number of patients (%)
Preseptal cellulitis	12 (52.2%)
Orbital cellulitis	8 (34.8%)
Subperiosteal abscess	1 (4.3%)
Orbital abscess	0
Cavernous sinus thrombosis	2 (8.7%)

All patients received intravenous third generation cephalosporin and metronidazole. The patient with subperiosteal abscess had to undergo surgical drainage by external approach combined with Functional endoscopic sinus surgery. All patients with preseptal cellulitis and orbital cellulitis responded to medical management. Both the patients with cavernous sinus thrombosis succumbed to death.

DISCUSSION

There were total of 23 patients with orbital complications of rhinosinusitis during the five years study period. The prevalence of orbital complications of rhinosinusitis was found to be 0.35%. Sijuwola OO observed 24 patients with orbital complications of rhinosinusitis in Nigeria during five years study period which is similar to our study.[5] Chaiyasate S et al in Thailand found 41 patients with orbital complications of rhinosinusitis during nine years of the study period.[6] A robust study showing prevalence of orbital complications of rhinosinusitis is still lacking.

Fifteen (65.3%) patients with orbital complications were of age less than 15 years in this study. Other studies have also found that the orbital complications are more common in children than the adults.[3,6,7,8] This may be due to certain anatomical factors such as fragile bone of lamina papyracea which separates the orbit from the ethmoidal labyrinth, patent bony sutures, porosity of the bone and wider neurovascular foramina in children.[7]

In this study, both the males and females had nearly equal distribution of orbital complications. However other studies have shown more complications in male as compared to females.[6,7] The orbital complications were common in winter season in this study than in summer season. This finding is similar to study done by Sijuwola OO.[5] The complications may be common in winter season due to high incidence of viral and bacterial rhinosinusitis.

The most common orbital complication secondary to rhinosinusitis was preseptal cellulitis followed by orbital cellulitis which is similar to study done by Al-Madani VM et al and Georgakopoulos CD et al.[9,10] All the paranasal sinuses share a boundary with the orbit. Therefore, infection from the paranasal sinuses could spread to the orbit via direct spread from the bone or via valveless venous channels.[2] Orbital infection could lead to blindness due to central retinal artery occlusion, optic neuritis and corneal ulceration secondary to proptosis.[11] Edema and erythema of the eyelid are the initial presentation of preseptal cellulitis. Features like proptosis, ophthalmoplegia, decreased visual acuity, loss of colour vision,

chemosis and bilateral orbital spread of disease denote increasing severity of orbital complications. Ophthalmology consultation is mandatory in cases of orbital symptoms. Aggressive and early treatment is essential in cases of orbital complications to prevent morbidity and mortality.

Twenty (86.9%) patients of preseptal cellulitis and orbital cellulitis responded to medical treatment while one (4.3%) patient with subperiosteal abscess required both medical and surgical treatment in this study. Study done by Al-Madani VM et al also reported good response with intravenous antibiotics for the cases of preseptal and orbital cellulitis while the patient with subperiosteal abscess required both surgical and medical treatment.[9] Georgakopoulos CD et al observed that most of the patients with periorbital and orbital complications responded to medical treatment while five (6%) patients required additional surgical intervention.[10] Searyoh K and Lubbe D have recommended surgical treatment for cases with worsening of orbital symptoms, not responding to intravenous antibiotics for 48 hours and for cases with subperiosteal or intraorbital abscess on CT or MRI.[2] Delayed treatment and immunocompromised status are the risk factors for irreversible blindness.[12] However, surgical drainage could be challenging during acute phase because of bleeding and swelling.[2]

In this study, two (8.7%) patients with cavernous sinus thrombosis had mortality. The mortality and morbidity rate of cavernous sinus thrombosis have been reported to be 30% and 60% in adults.[13] Lize et al reported 0% mortality, one case of unilateral vision loss and four cases of permanent neurological deficits in seven patients diagnosed with cavernous sinus thrombosis. All the cases were treated with high dose of intravenous antibiotics, anticoagulants and surgical drainage of the infected sinuses endoscopically.[14] Besides CT scan the diagnosis of cavernous sinus thrombosis may be confirmed by MR venogram.

Multidisciplinary team approach comprising of Otorhinolaryngologist, Ophthalmologist, Pediatrician, Neurosurgeon, Radiologist and Microbiologist is essential for better management of the patients. As there is possibility of concomitant orbital and intracranial complications. Though the orbital complications of rhinosinusitis are rare, they can have long lasting and devastating effects on patients. Therefore, there should be high index of clinical suspicion and initiate early treatment.

The limitations of this study are its retrospective nature, small sample size and single centre data. In future, multi-centre study may be conducted and long term sequelae or recurrence of the complications of rhinosinusitis may be studied.

CONCLUSION

The prevalence of orbital complications of rhinosinusitis is low in our centre. However, the result is comparable to other studies. Preseptal cellulitis was the commonest orbital complication of rhinosinusitis in this study.

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