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Research Article

ORBITAL COMPLICATIONS OF SINUSITIS–RETROSPECTIVE ANALYSIS

AJAY KUMAR B[1], SUHASINI N[2], HARINI M[3]*

[1]Department of ENT, Andhra Medical College, Government ENT Hospital, Visakhapatnam, Andhra Pradesh, India. [2]Department of Ophthalmology, KIMS Medical College, Amalapuram, Andhra Pradesh, India. [3]Department of ENT, GITAM Institute of Medical Sciences and Research, Visakhapatnam, Andhra Pradesh, India.
*Corresponding author: Harini M; Email: harini141@gmail.com

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ABSTRACT

Objective: The objective of this study is to consider and analyze patients who were treated for these complications in the last 2 years in our hospital, comparing with another 2 tertiary care hospitals.

Methods: It is a retrospective study. Out of the total number of ear, nose, and throat ENT cases attending our outpatient department, cases treated in the hospital with rhinosinusitis where surgical intervention is necessary, or those with a suspicion of complications. Between 2017 and 2019, there were 25 cases from three tertiary care hospitals, the clinical charts of which were reviewed. Consent has been taken from all the participants. The cases that are excluded from this study are those involving soft tissues, bone, and with intracranial complications. The diagnoses were determined based on history, anterior rhinoscopy, radiological imaging of the paranasal sinuses (X-ray), or computed tomography scan taken where there was a suspicion of a complication. In all cases, intensive treatment was initiated with a combination of cephalosporins and aminoglycosides and nasal irrigation with saline sprays.

Results: In our study, in GITAM Institute of Medical Sciences and Research we encountered 6 cases the average time that patients remained in hospital was 4–5 days; for those with orbital complications this was 7 days. Similarly in other two tertiary care hospitals Andhra Medical College Visakhapatnam encountered around 15 cases and Konaseema Institute of Medical Science, Amalapuram, encountered 4 cases total constituting of 25 cases.

Conclusion: The appearance of edema in the corner of the eye should be evaluated immediately, and the means to exclude acute sinusitis should be taken under serious consideration. Early diagnosis and aggressive treatment are important steps to be taken to avoid orbital complications like loss of vision.

Keywords: Sinusitis, Orbital complications of sinusitis, Treatment.

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INTRODUCTION

The complications of sinusitis include lesions that affect the soft tissues, the surrounding bones, the orbit, and the intracranial area. However, they rarely occur in soft tissues and are more often seen as orbital, bone, and intracranial complications [1,2]. The methods for the treatment are conservative, surgical, or combined. Surgical options include both endoscopic and open surgery. However, with the advent of endoscopic surgery of the nose and paranasal sinuses, functional endoscopic sinus surgery is the surgery of choice. In some reports, we observe the use of both techniques, while in some cases, we use only one. The aim of this study is to analyze treated cases of orbital complications of sinusitis admitted to the ear, nose, and throat department during February 2017 to February 2019, 2 years in three tertiary care hospitals.

METHODS

We selected all sinusitis cases, comprising 100 patients. In our practice, the cases that are admitted to the hospital are rhinosinusitis cases that need surgical intervention, particularly ones where intense pain is experienced, in those with a suspicion of complications developing, and in cases of complicated acute sinusitis. Complications in soft tissues, bone, or intracranial areas are excluded from our study. Consent has been taken from all the participants. The diagnoses were determined based on history, anterior rhinoscopy, X-rays of the paranasal sinuses in the Water's view, and, in certain cases where there was a suspicion of complication, computed tomography (CT) scans. In cases where there was a suspicion of complications, or when the clinical diagnosis was an orbital complication, there was an immediate consultation with the ophthalmologist, and a collaborative treatment approach was chosen. In all cases, extensive treatment was initiated with a combination of cephalosporins and aminoglycosides, along with nasal irrigation with nasal sprays in accordance with guidelines. In almost all the patient's improvement in the patient's condition occurred within 24–48 h. When the imaging produced a clear view of the intraorbital complication, or if the patient experienced problems with vision, the intervention was applied within the first 24 h.

RESULTS

From this study of 100 cases, there were 25 cases with orbital complications, which were further analyzed. The youngest case encountered in the series was a 2-year-old child, while the oldest was 75 years old. Cases affecting younger patients dominated the series. The average age was 25.3, which was an average similar to that reported by many other series. The average time that patients stayed in the hospital was 4–5 days, while for those with orbital complications, it was 7 days. Orbital complications of sinusitis were classified (Table 1) primarily by Hubert in 1937, but it was Chandler who categorized them in 1970, followed by later modifications by others [3-5]. The classifications of Chandler and Moloney remain the most commonly used to date [5,6]. Modifications were made in relation to CT scan and MRI findings. We have referred to Chandler's classification; however, in Table 1 both classifications were included. The difference between the two systems only appears in the palpebral region. The most common affected population is males (Table 2). The most common age group is 20–40 years (Table 3). The most common complication is inflammatory edema in all the three institutions followed by orbital cellulitis (Table 4).

Table 1: The most commonly accepted orbital classifications of sinusitis

Group	Chandler	Moloney
First	Inflammatory edema	Preseptal cellulitis
Second	Orbital cellulitis	Subperiosteal abscess
Third	Subperiosteal abscess	Orbital cellulitis
Fourth	Orbital abscess	Orbital abscess
Fifth	Cavernous sinus thrombosis	Cavernous sinus thrombosis

Table 2: Sex distribution

S. No.	Male	Female	Total
1	20	5	25

Table 3: Age distribution

Age	Male	Female	Total
0–20	2	1	3
20–40	11	2	13
40–60	6	2	8
>60	1	-	1

Table 4: Complications

S. No.	Complications	GIMSR	AMC	KIMS	Total
1	Inflammatory edema	3	7	2	12
2	Orbital cellulitis	2	5	2	9
3	Subperiosteal abscess	1	3	-	4
4	Orbital abscess	-	-	-	-
5	Cavernous sinus thrombosis	-	-	-	-
	Total	6	15	4	25

GIMSR: GITAM Institute of Medical Sciences and Research, KIMS: Konaseema Institute of Medical Science, AMC: Andra Medical Collge

DISCUSSION

Even though the occurrences are significantly lower than decades ago, complications of sinusitis, whether acute or chronic, continue to appear despite the advent of newer antibiotictherapy. The topographic anatomy of the orbit, which shows intimate relations with paranasal sinuses, provides a convincing explanation to these events. The Lamina Papyracea, which divides the orbit from the nasal space, is a thin layer of bone. Inside it are multiple thin blood vessels, which allow the spread of aggressive infection in the orbit. Inside the orbital vessels is where the palpebral vessels and those of the center of the face drain and travel parallel with the lamina papyracea toward the sinus cavernosus. None of these vessels contain valves; therefore, there is an accelerated spread of infection. The periorbita is a strong barrier to infection and provides clinicians with time before they are faced with serious complications. In our series, just as in many others, male patients dominated female patients with a ratio of 2:1. The question of why this happens has been repeatedly asked through the years, but there is still no definite explanation for this observation. It is believed that the female immune system is more proficient than that of males [7]. Furthermore, the higher number of occurrences of these complications in young patients is another observation noted not only here but by many other researchers [8]. As stated above, this study used Chandler's classification of orbital complications of sinusitis due to its simplicity, even though the classification was designed before computer imaging. The most commonly occurring complication is palpebral inflammatory edema, which Moloney referred to as preseptal cellulitis and reported as being encountered more often in children; this was noted in our study too. The upper eyelid becomes swollen and hyperaemic due to a blockage of vein drainage from ethmoidal sinusitis. Chemosis and proptosis are absent, both of which usually indicate postseptal infection. Vision remains unaffected and the eyeball moves in all directions. Usually, the edema is most notable in the morning and persists throughout the day, with a slight reduction. When the edema does not improve, it shows a postseptal inflammation inside the orbital cave. The appearance of proptosis indicates an advance of the orbital infection toward cellulitis. Proptosis, as well as chemosis, indicates the spread of an inflammatory process in the anterior of the orbit. The movements of the eyeball begin to become limited, and vision starts to weaken from the pressure on the optic nerve. Conservative treatment does not produce a fast reduction of the symptoms; therefore, surgical intervention is obligatory in these cases. Another complication is sub-periosteal abscess of the orbit, where an accumulation of pus between the bones of the orbit and the periorbita, usually between the lamina papyracea and the periorbita. Proptosis, chemosis, and limited movement of the eyeball are present, but the eyeball makes a lateral downward switch. Pain is experienced when the superior medial corner of the orbit is touched. All cases in this series were in patients over 20, all of whom underwent surgical intervention under the protection of combined antibiotic therapy.

When cases of orbital cellulitis do not receive appropriate treatment, the inflammatory edema can progress toward a purulent inflammation. An accumulation of pus begins in the retroorbital adipose tissue. This is a more severe complication because it makes up the precedents for the septic thrombosis of the cavernous sinus, or the passing of the infection through nervous routs into the intracranial space. Besides the symptoms that were mentioned, exophthalmos, ophthalmoplegia, and a weakening or loss of vision can also occur. The patient experiences constant pain and the affected eyeball is sensitive to touch. There were three such cases in our series, one of which was under the age of 20. Lastly, when bacterial infection is not stopped, or when treatment is delayed, the infection will follow the orbital veins toward the cavernous sinus. There was only one case with orbital complications involving bilateral edema of the eyelids and there was a suspicion of septic thrombosis of the cavernous sinus. All of the sinuses on one side and the orbital abscess were opened up. Today, there are discussions regarding endoscopic surgery of the sinuses as a treatment for these complications [7,9], but this does not seem the most appropriate in the presence of acute infection and hemorrhage that often accompany an intervention of this kind; however, it can always be kept under consideration. In our country, endoscopic surgery of the nose and paranasal sinuses is a new development since 2005 in private clinics, but is never used in cases of orbital complications. Young patients, especially children, respond better to conservative treatment. This is an observation in accordance with other observations [9], but our cases mainly presented with inflammatory palpebral edema. In other cases of orbital complications where conservative treatments did not show major improvements to the symptoms in the first 24 h, we moved forward with surgery.

CONCLUSIONS

We concur that, despite their classification, orbital complications of sinusitis should be considered severe pathologies. They are life-threatening and also threaten the patient's quality of life. The appearance of edema in the corner of the eye in a case with acute sinusitis should be recognized immediately and should be taken under serious consideration. Complications of sinusitis, whether acute or chronic, appear to be severe morbidity, which may sometimes have a fatal outcome. Early diagnosis and aggressive treatment are key to the reduction of unwanted manifestations. Compared to previous decades, these conditions have been declining thanks to proper and timely communication, diagnostic methods, and the intervention of a series of updated antibiotics. The otorhinolaryngologists, ophthalmologists, and general physicians should always be aware of symptoms that could indicate complications of sinusitis.

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AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

CONFLICT OF INTERESTS

None.

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