Acta Biomedica Scientia
e - ISSN - 2348 - 2168
Print ISSN - 2348 - 215X
www.mcmed.us/journal/abs
Research Article

COMPLICATIONS AND TREATMENT OUTCOMES IN SINUSITIS: A RETROSPECTIVE STUDY IN A REFERRAL HOSPITAL

Dr Sajeel Dounde*

Assistant professor, Department of Otolaryngology, Katuri Medical College & Hospital, Chinakondrupadu, Guntur, India

ABSTRACT

The objective of the study was to determine the types of complications associated with sinusitis in a referral hospital and the outcome of treatment for each type of complication. Those with sinusitis admitted to a referral hospital were the subject of a retrospective study. Complications related to sinusitis were reviewed in the data. A total of 177 patients, of whom 100 were male, were included in the study. Thirty-eight of the patients were under 15 years old, and 27 of them had more than one type of complication. Children were more likely to develop orbital complications than adults (38% compared to 100%). Children as well as 90 adults recovered from the treatment, 16 adults died, and 18 adults had morbidity and were cured with morbidity. Complications were associated with poorer outcomes for patients. There was only one complication statistically significant for mortality when the types of complications were compared. Complications have a significant impact on the outcomes of treatment, with intracranial complications having the poorest results.

Keywords: - Intranasal, Mucus, Treatment, Sinusitis.

Access this article online	
Home page: www.mcmed.us/journal/abs	**Quick Response code**

Received: 04.02.2017	**Revised**:05.03.2017	**Accepted**:10.04.2017

INTRODUCTION

A viral upper respiratory tract infection can lead to sinusitis, which occurs in 1–3% of patients [1]. Nonetheless, it rarely causes complications. In patients admitted with acute sinusitis, the complication rate ranged from four to twenty percent.

In general, sinusitis complications fall into three categories: local (osseous), orbital, and intracranial complications [2, 3]. There is a greater chance of an orbital complication, followed by an intracranial complication, and finally a local complication. In many studies, the posterior or intracranial form of ethmoiditis or sphenoiditis has been seen to cause cranial nerve palsy [4–7]. Despite this, optic neuropathy alone has been considered a chronic sinusitis complication. 8.2% of sinusitis patients admitted had complications according to a study conducted by the senior author. However, the frontal sinus was not the common cause of intracranial complications, and neither meningitis nor brain abscesses were associated with cranial neuropathies [8, 9]. In the current study, the objective was to determine the type of complications related to sinusitis in a referral hospital and the outcome of treatment based on those complications [10, 11].

MATERIALS AND METHODS

Patients with sinusitis admitted to hospital were studied retrospectively. Following is the summary of the data gathered and grouped for patients with sinusitis complications and their operative schedules [12]. We collected data regarding the characteristics of the patients, the organisms that were involved, and the results of their treatment. There was no anaerobic culture available in the hospital's routine emergency situation. STATA version 11.0 was used to analyze the data. Complication proportions were determined using the

Corresponding Author: **Dr Sajeel Dounde**

exact probability test, and outcomes were determined using multinomial logistic regression [13]. This study protocol was approved by the Faculty of Medicine University Research Ethics Committee.

RESULTS

The 3300 sinusitis patients admitted to the hospital had 292 suspected complications. The remaining patients had been admitted for sinus surgery after medically controlling their sinusitis could not be achieved. The study included 85 patients (5.1%), based on a review of their histories. The 122 excluded cases, including 34 cases with incomplete data, included five cases of mucocele, eight cases of orbital complications, one case of meningitis with orbital complications, one case of cavernous sinus thrombosis, one case of intracranial (IC) and orbital complications, and one case of cerebellar abscess with cavernous sinus thrombosis. There were 50 cases of fungal sinusitis, 26 cases of mucocele without a history of sinusitis, and six cases of tumors. According to the clinical findings and the CT scans, the complications were diagnosed. Patients suspected of having meningitis were subjected to lumbar punctures and CSF examinations. As appropriate to the organisms involved in each case, intravenous antibiotics were administered empirically. In all but one case of adult meningitis that improved with medical treatment alone, surgical drainage of the involved sinus was performed, with or without the area of complication.

In the study, there were 100 males and 70 females. There were fourteen patients who were younger than 14 years of age (16.5%), while 142 were adults. There was a range of 43 to 80 years in age between the mean (43.5) and the median (23.3). In total, 54 patients suffered from more than one type of complication. Diabetes mellitus, chronic renal failure, malignancy, chronic liver disease, and HIV infection were all known to affect the immune status and outcomes of 50 patients. Complications of an orbital nature were most common.

In 30 cases, there was no other type of complication besides CN palsy. One patient had ethmoiditis, one had sphenoiditis and one had both maxillary sinusitis and frontal sinusitis. Nine patients had unilateral or bilateral sphenoiditis, four had pansinusitis affecting the sphenoid sinus, and four patients had both.

There were 15 cases of facial cellulitis or abscesses, followed by mucocele (12 cases) and osteomyelitis (2 cases) of the 58 cases with local complications. The maxillary sinus was involved in all of the local complications with the exception of the mucocele.

A total of 82 cases of orbital complications were reported, of which 32 cases were subperiosteal abscesses, 20 cases were orbital cellulitis, 16 cases were periorbital cellulitis, 12 cases were cavernous sinus thrombosis, and 2 cases were orbital abscesses.

There were 48 cases of intracranial complications (ICs) in the 48 patients, five of whom had more than one IC. As a result of intracranial complications (ICs), 26 cases of meningitis were reported, 5 cases of brain abscesses were reported, and 11 cases of dural vein thrombosis were reported. In addition to intraventricular hemorrhaging and hydrocephalus, there were other uncommon ICN findings.

There were 20 cases of sphenoid sinus involvement in IC complications, either alone or combined with posterior ethmoid sinus involvement (8 cases). Twelve cases of pansinusitis occurred in this type of complication. Three involved the frontal sinus alone, three involved the ethmoid sinus alone, and one did not have any sinus involvement data available. Acute respiratory failure, disseminated intravascular coagulation (DIC), and liver failure were also found in systemic findings.

Three of the children had local complications, and one had meningitis, based on their ages.

There was a complete recovery of all 14 children (100%) and 45 of the adults (63.4%) following treatment. The mortality rate among adult patients was 11.3%, while the mortality rate after discharge from the hospital with residual morbidity was 25.3%. No cases of visual impairment, facial deformity/weakness, or hemiparesis recovered within 2 months of the follow-up period, but 8 cases of limited extraocular movement recovered. Two cases had orbital cellulitis and sepsis, and seven of the eight cases were associated with intracranial complications. It was found that blood cultures were positive in five out of eight deaths, with three of those identifying Chryseobacterium indologenes, Staphylococcus aureus (MRSA), and Micrococcus species, respectively.

We analyzed the outcomes using multinomial logistic regression adjusted for age, gender, and comorbid conditions like diabetes, liver disease, chronic renal disease, malignancies and HIV infection. A greater number of complications resulted in a poorer outcome. Complications fall into different categories.

Table 1: A multinomial logistic regression was used to analyze the risk of poor clinical outcomes based on the total number of complication types

Poor Clinical Outcomes	OR	95% CI		P value
Recovery with morbidity	4.97	1.26	4.68	**0.019**
Death	6.54	1.31	7.84	**0.014**

DISCUSSION

In spite of antibiotics being widely available worldwide, complications of sinusitis still occur. In line with the findings of previous studies, the most common complication was orbital [14]. As opposed to the periorbital cellulitis previously reported, we found more orbital cellulitis and subperiosteal abscesses in our hospital. Antibiotics used for treating periorbital cellulitis led to an improvement in the disease, so other hospitals were not required to refer patients for surgery. Also, children had significantly more orbital complications ($P< 0.001$) when the types of complications were compared between the age groups.

Complications linked to cranial nerve(s) palsy were the second most prevalent, followed by complications related to local anesthesia. The second most common complication, however, has been reported by other previous studies. The difference in findings may be explained by the high proportion of adults in this study, the severity of the disease, and the number of sinus cases that required surgery, since at the beginning of our study, no other local hospitals performed sphenoid sinus surgery. CN palsy presented either alone or along with other complications in 15 of the cases. A number of factors may contribute to this result, including poor hygiene, ethnicity, and differences in craniofacial complexes and cranial base orientations, such as Asians' high cranial base angles. It is also likely that the basicranium influences the bone thickness, configuration, and appearance of the neurocranium along with the cranial shape. Due to these factors, infections and inflammation can spread throughout the vasculature, bone, and cranial nerves. Based on literature studies, this study and Asian practices both commonly observe sphenoid sinusitis, which has a prevalence of 1–3%. The sphenoid sinus is more commonly responsible for IC complications in Thais than the frontal sinus, according to a previous study.

Studies have reported that treatment results vary depending on complications: 7% of people with IC complications died or became disabled as a result of their treatment. According to our study, IC complications are associated with a high death rate. In addition to systemic complications such as sepsis, these higher rates may be caused by the severity of IC complications, which will be monitored and improved through medical care. Patients with complications of sinusitis should be targeted for treatment based on these findings, which confirm those of other previous studies.

CONCLUSION

Children and adults were both most likely to suffer from orbital complications. Furthermore, CN palsy can occur either on its own or in conjunction with other types of complications in adult patients. A number of complications affected the outcome of treatment, with cases with IC complications having the worst outcomes.

REFERENCES

1. R. M. Rosenfeld, D. Andes, N. Bhattacharyya (2007), “Clinical practice guideline: adult sinusitis,” *Journal of Otolaryngology— Head & Neck Surgery*, 137(3), S1–S31.
2. W. J. Fokkens, V. J. Lund, J. Mullol (2012), “EPOS 2012: European position paper on rhinosinusitis and nasal polyps 2012. A summary for otorhinolaryngologists,” *Rhinology*, 50(1), 1–12,
3. V. A. Epstein and R. C. Kern, (2008). “Invasive fungal sinusitis and com- plications of rhinosinusitis,” *Otolaryngologic Clinics of North America*,.41(3), 497–524,
4. A. Friedman, P. S. Batra, S. Fakhri, M. J. Citardi, and D. C. Lanza, (2005). “Isolated sphenoid sinus disease: etiology and management,” *Otolaryngology—Head and Neck Surgery*, 133(4), 544–550,
5. M. G. Gu¨venc¸, A. Kaytaz, G. Ozbilen Acar, and M. Ada, (2009). “Cur- rent management of isolated sphenoiditis,” *European Archives of Oto-Rhino-Laryngology*, 266(7), 987–992.
6. Y. A. Nour, A. Al-Madani, A. El-Daly, and A. Gaafar, (2008). “Isolated sphenoid sinus pathology: spectrum of diagnostic and treat- ment modalities,” *Auris Nasus Larynx*, vol. 35(4), 500– 508,
7. D. S. Sethi, (1999). “Isolated sphenoid lesions: diagnosis and manage- ment,” *Otolaryngology: Head and Neck Surgery*, 120(5), 730–736,
8. S. Fooanant, “Complications of sinusitis,” in *Proceedings of the 14th ASIAN Research Symposium in Rhinology (ARSR ’10), Ho Chi Minh City, Vietnam, March* 2010.
9. F. S. Hansen, R. Hoffmans, C. Georgalas, and W. J. Fokkens, (2012). “Complications of acute rhinosinusitis in The Netherlands,” *Family Practice*, 29(2), 147–153,
10. K. D. Schlemmer and S. K. Naidoo, (2013). “Complicated sinusitis in a developing country, a retrospective review,” *International Journal of Pediatric Otorhinolaryngology*, 77(7), 1174– 1178,.
11. V. Siedek, A. Kremer, C. S. Betz, U. Tschiesner, A. Berghaus, and A. Leunig, (2010). “Management of orbital complications due to rhinosinusitis,” *European Archives of Oto-Rhino-Laryngology*, 267(12), 1881–1886,

12. M. Sulte´sz, Z. Csa´ka´nyi, T. Majoros, Z. Farkas, and G. Katona, (2009). "Acute bacterial rhinosinusitis and its complications in our pediatric otolaryngological department between 1997 and 2006," *International Journal of Pediatric Otorhinolaryngology*, 73(11), 1507–1512,
13. D. E. Lieberman, O. M. Pearson, and K. M. Mowbray, (2000)."Basi- cranial influence on overall cranial shape," *Journal of Human Evolution*, vol. 38(2), 291–315,
14. M. Hubbe, T. Hanihara, and K. Harvati, (2009). "Climate signatures in the morphological differentiation of worldwide modern human populations," *Anatomical Record*, 292(11), 1720–1733,
15. S. B. Sholts, P. L. Walker, S. C. Kuzminsky, K. W. P. Miller, and S. K. T. S. Wa¨rmla¨nder, (2011). "Identification of group affinity from cross-sectional contours of the human midfacial skeleton using digital morphometrics and 3D laser scanning technology," *Journal of Forensic Sciences*, 56(2), 333–338,
16. K. Kuroe, A. Rosas, and T. Molleson, (2004). "Variation in the cranial base orientation and facial skeleton in dry skulls sampled from three major populations," *European Journal of Orthodontics*, 26(2), 201–207.
17. J. A. Socher, M. Cassano, C. A. Filheiro, P. Cassano, and A. Felippu, (2008). "Diagnosis and treatment of isolated sphenoid sinus disease: a review of 109 cases," *Acta Oto-Laryngologica*, 128(9), 1004–1010,
18. Z. M. Wang, N. Kanoh, C. F. Dai (2002). "Isolated sphenoid sinus disease: an analysis of 122 cases," *Annals of Otology, Rhinology & Laryngology*, 111, 323–327,
19. D. Lew, F. S. Southwick, W. W. Montgomery, A. L. Weber, and A. S. Baker, (1983). "Sphenoid sinusitis. A review of 30 cases," *The New England Journal of Medicine*, 309(19), 1149–1154.

Cite this article:
Dr Sajeel Dounde. (2017). Complications and Treatment Outcomes in Sinusitis: A Retrospective Study in a Referral Hospital. *Acta Biomedica Scientia*, 4(3), 250-253.