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Short Communication

Fungal Sinusitis in Debilitated Patients with Poor Oral Health

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ABSTRACT

Fungal sinusitis is a sinus infection that results from fungus. It occurs mostly in uncontrolled diabetes, debilitated patients and in patients on immuno-suppressants, antibiotics or steroids. There are several types of fungus sinus infections. Some types can cause serious health problems and death. Debilitated patients have a higher risk of complications from fungal sinusitis. The objective is to study the incidence and clinical profile of fungal sinusitis in debilitated patients with poor oral health. This was a prospective study in which 50 patients with fungal sinusitis who underwent treatment in School of medical science and research over 1 year were randomized into the study. So patients were selected from which 25 patients were male and 25 patients were female in age group of 45-70 years. Various examinations were conducted at different times which included microscopic, serological diagnosis and histopathological examination.

Fungal sinusitis was more common in the elderly age groups with debilitated diseases and poor oral health. Fungal sinusitis was comparatively more common among immunocompressant individuals. Surgery with chemotherapy offered better treatment outcome as compared to single modality. Early detection and treatment of fungal sinusitis is the key in tackling this clinical condition which can otherwise be fatal.

Keywords: Fungal sinusitis, Debilitated patients, Poor oral health

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DESCRIPTION

Fungal infections are important causes of morbidity and mortality in humans. Fungal infections of nose and paranasal sinuses (Blitzer A and Lawson W, 1993; Lund VJ, 1997) are not uncommon as it was thought earlier possibly due to our increasing use of immune suppressants and antibiotics, or simply the growing number of chronic diseases that suppress immune system (Iwamoto H, *et al*., 1972). Fungal infections can occur in any individual but symptoms differ based on the immunity status of the patient (Morgan MA, *et al*., 1984). Invasive fungal infections commonly occur in debilitated individuals with systemic illness like diabetes and other immunocompressed states and it should be considered in different diagnosis of unknown factors for deteriorating general condition of these patients (Berlinger NT, 1985; de Shazo RD, *et al*., 1997). Distinguishing invasive disease from noninvasive disease is important because the treatment and prognosis are different for each (Goering P, *et al*., 1988; Benett JE, 1991).

This was a prospective study in which 50 patients with fungal sinusitis who underwent treatment in school of medical science and research over 1 year were randomized into the study. So patients were selected from which 25 patients were male and 25 patients were female in age group of 45-70 years (*Table 1*). Various examinations were conducted at different times which included microscopic, serological diagnosis and histopathological examination.

Table 1: Age distribution of fungal sinusitis cases of debilitated patients with poor oral health

Age (in years)	No.of fungal sinusitis patients	Percentage
45-50	12	24%
50-55	9	18%
55-60	7	14%
60-65	15	30%
65-70	7	14%
Total	50	

Inclusion criteria

- Age group 45-70 years
- Both genders
- Established diagnostic criteria for fungal sinusitis

Exclusion criteria

- Age group less than 45 years and more than 70 years
- Patient unwilling to comply with the study
- Systemic diseases preventing participation in the study (*Table 2*)

Subjects were well informed and a signed consent was taken from each of them. History of every patient was taken in detail and importance was given to their presenting symptoms both local and general.

Table 2: Systemic diseases associated with fungal sinusitis

Medical illness	No.of cases
Diabetes Mellitus	15
Hypertension	13
Renal failure	12
No other illness	10
Gingival diseases	10
Periodontal diseases	40

Diagnosis and evaluation

To diagnose a fungal sinusitis physical examination is done. Symptoms, health history and medications are recorded. Then some mucus or tissue from sinuses is send to lab were fungus is tested. CT scan is done to locate infection or check for fungal infection. It also helps to develop an effective treatment plan (Zinreich SJ, *et al*., 1988). An endoscopy can also help to diagnose and evaluate a fungal infection. It helps to develop effective treatment plan. All 50 patients were worked up based on a proforma. The diagnosis was confirmed by fungal culture and histopathology examination (*Table 3*). Patient underwent with endoscopic sinus surgery or medical line of management or combination of both along with oral treatment. All patients were assessed clinically for improvement in symptoms following treatment.

Table 3: Histopathology in fungal sinusitis with poor oral health

Type of fungus	No.of cases	Percentage
Aspergillus	15	30%
Mucor	13	26%
Candida	12	24%
Mucor + Aspergillus	8	16%
No organisms seen	2	4%
Total	50	

The results have been evaluated primarily keeping in mind the aims of the study, namely to determine the incidence of fungal sinusitis in debilitated patients with poor oral health.

From the table it is evident that maximum incidence of fungal sinusitis in debilitated patients with poor oral health was in age group of 60-65 years (30%) followed by 45-50 years (24%) age groups. Majority of patients were in age group of 45-65 years. Histopathological examination from 50 cases showed the presence of *Aspergillus* in 15 (30%) cases, mucor in 13 cases (26%) and candida in 12 cases (24%). No organisms seen in 2 cases (4%). The predisposing factors for fungal sinusitis in debilitated patients are: Environmental factors, immune status of the host and underlying co-morbid conditions and virulence of fungi. Fungal sinusitis may be present in different forms. Some of the main reasons for the lack of understanding of this disease entity have been the infrequency in the incidence of this entity and the lack of long term follow up of history of illness. However advances in imaging modality including computerized tomography and MRI have contributed a great deal in better understanding of the spectrum of fungal sinusitis (Stammberger H, 1985) (*Table 4*). The management protocol also depends on the exact identification of the fungal species and susceptibility of the organisms to antifungal agents. Fungal sinusitis treatments may vary. People with healthy immune systems may not need treatment for some types of fungal infections (Prabhakar S, *et al*., 1992). Treatment include antifungal medications to kill the fungus, nasal wash to was out sinuses and cleanse sinus cavities, corticosteroid medications to reduce inflammation and relieve sinus pressure and surgery depending upon type of infection (Marple BF, 2001).

Table 4: Modality of treatment for fungal sinusitis with poor oral health

Treatment modality	No.of cases
Only Surgical	18
Only medical	12
Surgical+Medical	20

CONCLUSION

In our study prevalence of fungal sinusitis was higher in the elderly age group and patients with weak immune system. They also have a higher risk of complications. Some types of fungal sinusitis can destroy the lining of the nose and infect the oral cavity. Nasal discharge, nasal obstruction, headache were the most common symptoms. Maxillary sinus was mostly common symptoms. Maxillary sinus was most commonly involved sinus. *Aspergillus* was more common followed by mucor in our study. Amongst fungal species complications were highest in cases of mucormycosis of debilitated patients. Fungal sinus infections have increased over the last few years. This may be because healthcare providers are prescribing more antibiotics and immunosuppressant drugs. The increase also may be due to a rise in the number of diseases that weaken the immune system. Functional endoscopic sinus surgery is an effective first line of management in fungal sinusitis. Antifungal chemotherapy combined with surgery offered better treatment outcome as compared to surgery/chemotherapy as a single modality of treatment.

REFERENCES

1. Blitzer A, Lawson W. Fungal infections of the nose and paranasal sinuses: Part-1. Otolaryngol Clin North Am. 1993; 26: 1007-1036.
2. Lund VJ. Anatomy of nose and paranasal sinuses. Scott Brown's Otolaryngol: Basic Scie. 1997: 1-30.
3. Iwamoto H, Katsura M, Fujimaki T. Mycosis of the maxillary sinuses. Laryngoscope. 1972; 82: 903.
4. Morgan MA, Wilson WR, Neel WB, Roberts GD. Fungal sinusitis in healthy and immunocompromised individuals. Am J Clin Pathol. 1984; 82(5): 597-601.
5. Berlinger NT. Sinusitis in immunodeficient and immunosuppressed patients. Laryngoscope. 1985; 95: 29-33.
6. de Shazo RD, O'Brein M, Chapin K, Soto-Aguilar M, Gardner L, Swain R. A new classification and diagnostic criteria for invasive fungal sinusitis. Arch Otolaryngol Head Neck Surg. 1997; 123: 1181-1188.
7. Goering P, Berlinger NT, Weisdorf DJ. Aggressive combined modality treatment of progressive sinonasal fungal infections in immunocompromised patients. Am J Med. 1988; 85: 19-623.
8. Benett JE. Fungal infections, Section 9 Chaper 151, Harrison's Principles of Internal medicine 12th edition Vol1, Mc Graw-Hill,1991.
9. Zinreich SJ, Kennedy DW, Malat J, Curtin HD, Epstein JI, Huff LC, *et al*. Fungal sinusitis: Diagnosis with CT and MRI imaging. Radiology. 1988; 19: 439-444.
10. Stammberger H. Endoscopic surgery for mycotic and chronic recurring sinusitis. Ann Otol Rhinol Laryngol. 1985; 119: 1-11.
11. Prabhakar S, Mehra YN, Talwar P, Mann SB, Mehta SK. Fungal infections in maxillary sinusitis. Ind J Otolaryngol Head and Neck. 1992; 1(2): 54-58.
12. Marple BF. Allergic fungal sinusitis: Current theories and management strategies. Laryngoscope. 2001; 111(6): 1006-1019.