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Clinicopathological Profiling of Fungal Sinusitis

KEYWORDS

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ABSTRACT ***INTRODUCTION:*** *Fungal rhino sinusitis has recently gained importance in last two decades. The knowledge of incidence, prevalence, type of fungal disease will help the medical fraternity in advocating better care*

MATERIALS AND METHODS OF THE STUDY: *Prospective Prevalence Study in a Teaching Government ENT Hospital, Koti, Hyderabad , over a Study period of 2 years.*

RESULTS: *Of 1,52,435 Out-Patients screened, 75416 (49.47%) patients had nasal symptoms and of these 485 (0.64%) patients had Nasal Polyposis and underwent Functional Endoscopic Sinus Surgery with Polypectomy, in that only 70 cases (0.046%) were found with Histopathological features of fungal sinusitis .*

CONCLUSION: *This clinico - mycologico - pathological correlation in fungal sinusitis was done after extensive screening of a sizeable population of 1,52,435, of the Deccan Plateau. The salient results in our study are*

1. with a histopathological diagnosis the incidence of Fungal Sinusitis is about 0.046 % in the general population. Even though statistically the incidence is minimal, all ENT practitioners need to be wary of the importance of the illness and the associated morbidity it might leave, which can be preventable.

2. Bimodal age distribution with a second peak in the 6th decade which is not seen in the literature

3. Females are more commonly affected with a ratio of 1:1.322 on comparison with Males.

4. Predominant symptoms were Nasal obstruction and Nasal discharge with an incidence of 21.42 and 11.42 % respectively

5. Polyps are seen in 50.14 % of the patients whereas mucopurulent discharge is seen in only 15.7 % of the patients in the study.

6. Allergic manifestations are seen in 52 % of the study population with 30 % having Allergic Rhinitis and 22.8 % having Asthma.

7. Aspergillus subspecies were the commonest organism isolated and seen in 62.85% of the mycological culture and Madurella species were in 5 % of the samples.

INTRODUCTION

Rhinosinusitis is a spectrum of illness due to inflammatory and infectious pathology involving the mucosa of the Nose and Para Nasal Sinuses. Infections are mostly due to Viruses, Bacteria and Fungi. (1)

Fungal rhino sinusitis has recently gained importance in last two decades probably due to an increased number of patients with immunosuppresson and also due to the technological advancement in investigative and diagnostic modality. (2,3)

The knowledge of incidence, prevalence, type of fungal disease will help the medical fraternity in advocating better care

We present a prospective analysis of prevalence of fungal sinusitis in patients utilizing services at a TEACHING GOVERNMENT ENT HOSPITAL, Hyderabad.

MATERIALS AND METHODS OF THE STUDY

Methodology

1. Type of study - Prospective Prevalence Study
2. Study setting - Teaching Government ENT Hospital, Koti, Hyderabad
3. Study period - 2 years from September 2010 to August 2012

Techniques

In our study, clinically suspected fungal sinusitis patients were admitted, a thorough clinical history of ENT illness along with any associated systemic affliction was noted. Diagnostic Nasal Endoscopy was done to confirm Rhinosinusitis. Necessary relevant investigations such as absolute eosinophil count, CT imaging was done.

All the patients underwent endoscopic sinus surgery, with samples of nasal polypi, secretions, debris, crust, necrotic material for laboratory evaluation. Confirmation of diagnosis was by KOH Mount Study, Histopathology and Fungal culture Analysis. Only those patients whose study sample was positive for Fungal species were included.

Post operatively patients treated with antibiotics, antifungals. Follow up for 6 months, with nasal endoscopy on monthly basis to look for recurrences.

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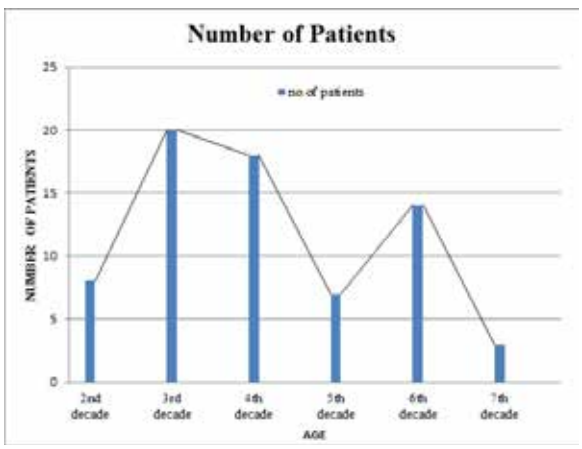
Results

Of 1,52,435 Out-Patients, 75416 (49.47%) patients had nasal symptoms and of these 485 (0.64%) patients had Nasal Polyposis and underwent Functional Endoscopic Sinus Surgery with Polypectomy, in that only 70 cases (0.046%) were found with Histopathological features of fungal sinusitis .

Of the 70 patients who were confirmed to have fungal sinusitis, confirmed by fungal smear examination, culture and histopathology. The break-up of results are as follows.

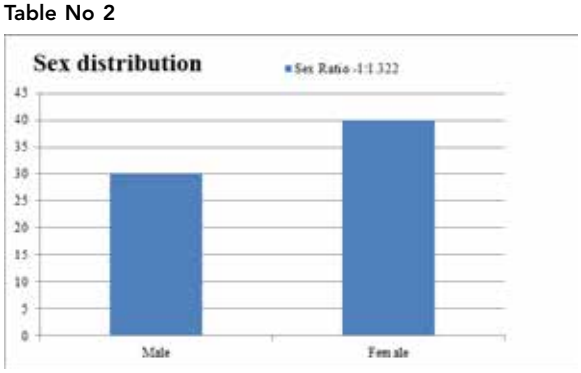
Age - Bimodal observation with first peak in the 2nd & 3rd decade with 38 patients, the second peak 6th decade with 21, the same can be seen in table 1 below.

Table 1



Sex – Female patients were more affected than males with 30 males and 40 females with a sex distribution ratio of 1:1.322 as seen in Table no 2 below.

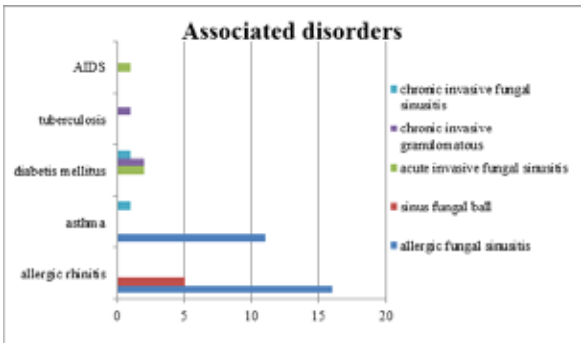
Table No 2



Symptom Distribution – with regard to symptomatological distribution, the predominant symptoms were Nasal obstruction in 30 %, Nasal Discharge in 21.42% and Sneezing in 11.42% of the patients. The less common symptoms were Headache, Post Nasal Drip, Facial Pain and Ocular Symptoms.

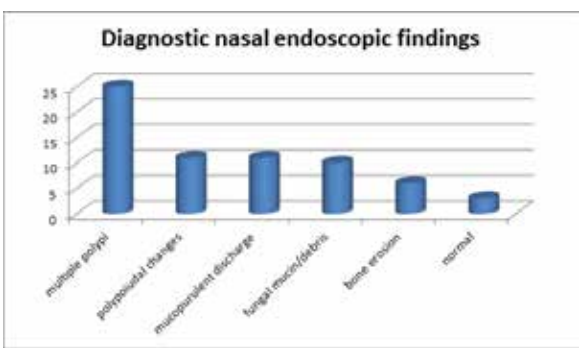
Associated Systemic Illnesses – 30 % of the patients had concomitant Allergic Rhintis of which 5 had Fungal Ball and 16 had Allergic Fungal Rhinosinusitis. 22.8 % had moderate to severe Asthma of which 1 had Allergic Fungal Rhinosinusitis and 1 had chronic invasive fungal sinusitis. Diabetes Mellitus was present in 7.1 % of the study population with 1 case of Chronic Invasive Fungal Sinusitis and 2 each of acute and Chronic Invasive Fungal Sinusitis, one HIV patient had Acute Invasive Fungal Sinusitis and one patient had Pulmonary Kochs. The pictorial representation of the same can be seen in table no 3.

Table no 3



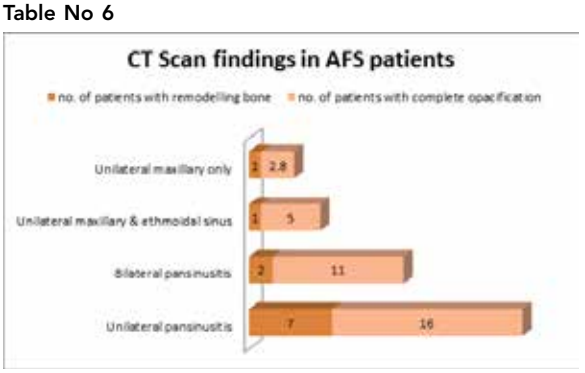
Nasal Endoscopic findings – of all the patients with confirmed fungal sinusitis, 35.71 % had multiple polyps, 15.71% had polypoidal mucosa, 15.71% had Mucopus coming from the Para nasal sinuses, 14.28% had Fungal Mucin, 8.57 % had obvious visible bone erosion whereas 4.28 % had a normal endoscopic study of the nasal cavity and the 2nd/ 3rd passes of Diagnostic Nasal Endoscopy. The pictorial statistics are given in table 4.

Table No 4



Imaging Analysis – CT Scan analysis of the 70 patients revealed 5% of all the patients had Unilateral Maxillary Sinusitis, 8.57% Had Bilateral Maxillary And Ethmoidal Sinusitis, 18.57% Had Bilateral Pansinusitis And The Rest Had Unilateral Pan Sinusitis, The Statistical Pictogram can be seen in the table no 6.

Table No 6



Mycological Analysis – 68.57 % specimens were culture positive with 62.85 % growing Aspergillus sub - species and 5 % growing Madurella species and in the rest of 31.43 % KOH mount were positive but were fungal culture negative.

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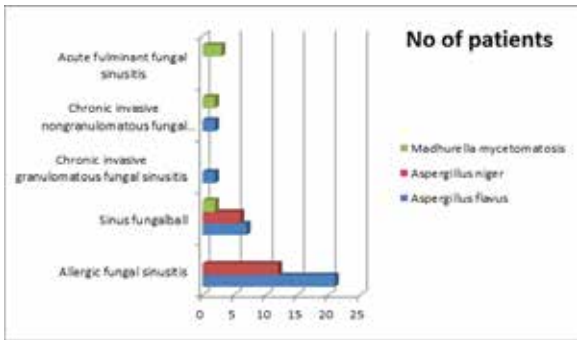

DISCUSSION

Prevalence of invasive fungal rhinosinusitis in our study was 0.046 % of the study population of 1,52,435 patients seen over a two year period at a Government Teaching Hospital offering only ENT services at Hyderabad. This hospital has an Extensive geographic drainage and coverage for ENT services from across the Deccan plateau in the Indian Subcontinent in the Temperate Climatic Zone. This is almost similar with a prevalence of 0.04 as quoted in Dr A Chakrabarti et al (5)

In our study we found a bimodal peak in the 2nd-3rd Decade and the second peak in the 6th decade whereas according to Manning and Holman [6], AFS is found in a slightly younger age group with an average of 23.3 years and corey (7) had a peak of 26 years, their data syncs with first peak of our study whereas the second peak is a new find.

We had slight Female gender preponderance by a ratio of 1:1.322, whereas Manning and Holman [6] found a male predominance.

Clinically, noninvasive form presents with Nasal obstruction followed by nasal discharge were the common chief complaints in 56%.

In a review of the cases in the literature, according to Manning and Holman [6], only 63% of patients with AFS give a history of allergic rhinitis. In our study, had 16 out of 46 patients (34.78%) of AFS.

According to Kupferberg [8], fungal cultures were positive in approximately 70-80% of patients diagnosed with AFS. Unlike others, the Mayo Clinic reports virtually 100% positive fungal cultures on all patients, irrespective of pathology given by Ponikau et al [5]. In our series, 65 patients (92.86%) had fungal culture positive, which included 44 out of 46 patients (95.65%) of AFS. Culture was sterile after 14 days of incubation in 5 patients.

In our series, in 32 patients (45.71%) the organism isolated on culture was Aspergillus flavus. Manning and Holman [6] series puts the species at 13%. According to Chakrabarti [5], in the Indian scenario, Aspergillus flavus is in more than 80% of the cases of AFRS.

Unilateral pansinusitis involvement seen in 23 patients (50%), bilateral pansinusitis in 13 patients, unilateral maxillary and ethmoidal sinus involvement in 6 patients and only unilateral maxillary sinus involvement in 4 patients. According to Fergusson [10], in AFS, unilateral sinus disease is present approximately 50% of the time. Patients with AFS may show unilateral disease, because the fungal stimulus is only present unilaterally, thus sparing the remaining sinuses.

Merits and Demerits of the study

Merits

1. Extensive and exhaustive screening of the patient population

- Thorough work up of each patient
- A sizeable population has been screened
- Profiling of the diseased study population is attempted
- Symptomatic indexing of the population
- Linking of associated systemic illness
- Mycological species identification

1. Demerits

- Single Centre study
- Study period is of only 2 years
- Varied follow up (longest was only 18 months)

CONCLUSION

This clinico - mycologico - pathological correlation in fungal sinusitis was done after extensive screening of a sizeable population of 1,52,435, of the Deccan Plateau. The salient results in our study are

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