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Clinical study of fungal sinusitis

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ABSTRACT

Background: Fungal sinusitis is a distinct clinical entity characterized by inflammation of the sinus mucosa caused by fungal infection like aspergillus (fumigatus, niger, flavus), mucormycosis, candida (albicans), scedosporium, pencillium. Mostly immunocompromised patients, farmers, garbage cleaners, and patients on prolonged nasal sprays are affected. There are different types of fungal sinusitis: fungal mycetoma, allergic fungal, chronic indolent and fulminant sinusitis having symptoms like chronic headache and facial swelling with visual impairment. Patients have thick purulent nasal discharge, nasal obstruction, epistaxis, cheek swelling and may be polyposis. Resident bacterial flora probably inhibits colonization by fungi through a number of mechanisms. Thus antimicrobial therapy predisposes to both the overgrowth of normal fungal flora, e.g., Candida species, and growth of opportunists like Aspergillus[1]. Allergic fungal rhinosinusitis is the most common entity. Aspergillosis is the most common fungal infection. Of these aspergillus fumigatus is the most common fungal pathogen. Maxillary sinuses are commonly involved.
Methods: This is a prospective study carried out at department of otorhinolaryngology at Kunal Institute of Medical Specialities Pvt Ltd. Evaluation by proper history taking and clinical examination after which the patient is selected for nasal swab, culture and sensitivity. Plain x-ray nose and paranasal sinuses. CT scans nose and paranasal sinuses. Diagnostic nasal endoscopy.
Results: Allergic fungal sinusitis was the most common entity found with aspergillosis being the most common organism.
Conclusions: Allergic fungal sinusitis was most commonly found in the age group of 20 to 29 years with maxillary sinus most commonly affected.

Keywords: Fungal, Aspergillus, Mucormycosis, Sinusitis

INTRODUCTION

Fungal sinusitis is a distinct clinical entity characterized by inflammation of the sinus mucosa caused by fungal infection like aspergillus (fumigatus, niger, flavus), mucormycosis, candida (albicans), scedosporium, pencillium. Mostly immunocompromised patients, farmers, garbage cleaners, and patients on prolonged nasal sprays are affected. There are different types of fungal sinusitis: fungal mycetoma, allergic fungal, chronic indolent and fulminant sinusitis having symptoms like chronic headache and facial swelling with visual impairment. Patients present with thick purulent nasal discharge, nasal obstruction, epistaxis, showing signs of cheek swelling and may be polyposis. Resident bacterial flora probably inhibits colonization by fungi through a number of mechanisms. Thus antimicrobial therapy predisposes to both the overgrowth of normal fungal flora, e.g., *Candida* species, and growth of opportunists like Aspergillus.[1] Allergic fungal rhinosinusitis is the most common entity. Aspergillosis is the most common fungal infection of the nose and paranasal sinuses. Of

these aspergillus fumigatus is the most common fungal pathogen followed by *Aspergillus niger* and *Aspergillus flavus*.[2] Mucormycosis and candidiasis may also occur. Maxillary sinuses are commonly involved. The aim of the study was to do a clinical study of signs, symptoms and complications of fungal sinusitis.

The objectives of the study was to assess the various types of fungal sinusitis and commonest modes of presentation, predisposing factors, causative agents, to study the anti- fungal susceptibility pattern of fungal isolates and analyze the data by appropriate statistical methods.

METHODS

Study design

This is a prospective study.

Place of study

In the department of otorhinolaryngology at Kunal Institute of Medical Specialities Pvt Ltd in a period of 2 years with a follow up period of 1 yr. (Dec 2015 - May 2018). The study was approved by the Eesha Institutional Ethics Committee.

Statistical tool

Statistical analysis was performed using statistical package for social sciences (SPSS Version 17). Numerical data was entered as such and categorical data was appropriately coded.

Inclusion criteria

Inclusion criteria were age- 10 to 60 years; males and females; patients presenting with chronic headache, purulent nasal discharge, nasal obstruction, facial swelling, symptoms of visual impairment, halitosis, epistaxis, culture positive.

Exclusion criteria

Exclusion criteria were age less than 10 years and more than 60 years; based on clinical examination.

Procedure

The data of this study is collected by patient evaluation taking into account the following steps proper history taking, Clinical evaluation, Microbiological assay:- KoH mount, Antifungal susceptibility pattern of fungal isolates.

Figure 1: CT scan showing left ethmoidal, left maxillary opacities.

Figure 2: FESS (GA), right MMA, left anterior and posterior ethamoidectomy, left sphenoidotomy, left lamina papyracea eroded. Fungal ball cleared of all the sinuses.

Figure 3: Intra operative finding of the nasal mass.

Figure 4: Isolated Fungal ball.

RESULTS

This prospective observational study was conducted on 50 patients of fungal sinusitis in Kunal Institute of Medical Specialities Pvt, Ltd, Telangana. Statistical analysis was performed using statistical package for social sciences (SPSS Version 17). Numerical data was entered as such and categorical data was appropriately coded. Descriptive measures obtained included frequencies, proportions, mean and standard deviation. Fungal sinusitis is predominantly seen in the age group of 20-29 years (Figure 5). Fungal sinusitis is more common in males contributing to 70% (Figure 6). Among all the symptoms most common presentation is nasal obstruction and nasal discharge which is invariably present in all cases (Figure 7). Most common clinical signs include facial pain, post nasal drip, deviated nasal septum (Figure 8). Allergic rhinitis is the most common risk factor for the development of fungal sinusitis (Figure 9). Aspergillus is the most common organism isolated from the cultures of patients with fungal sinusitis (Figure 10). Chronic mucosal thickening and blocking of OMC is the common radiological presentation in fungal sinusitis (Figure 11). Maxillary sinus is the most common sinus involved in fungal sinusitis (Figure 12).

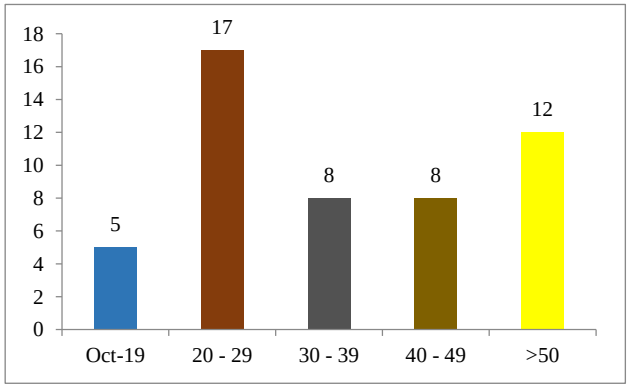

Figure 5: Simple bar diagram showing age wise distribution of fungal sinusitis.

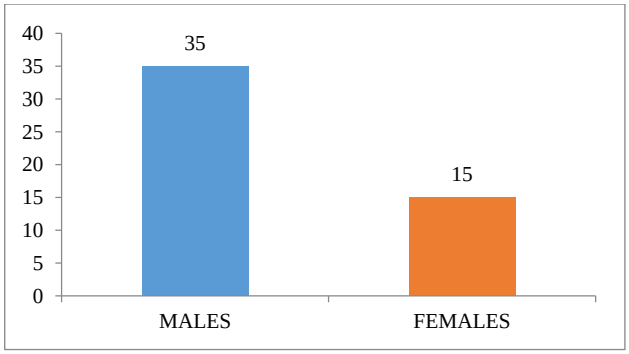

Figure 6: Simple bar diagram showing sex wise distribution of fungal sinusitis.

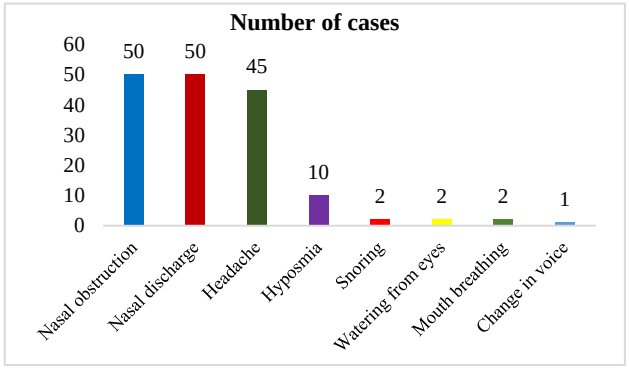

Figure 7: Simple bar diagram showing symptomatic distribution of fungal sinusitis.

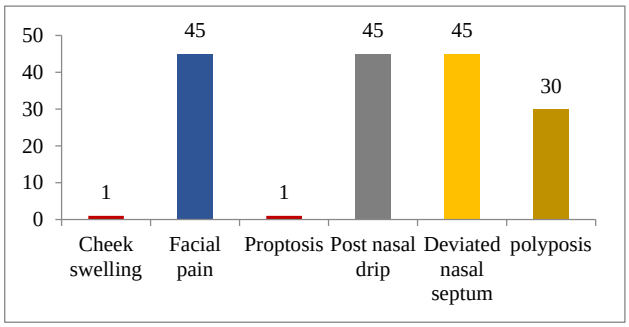

Figure 8: Simple bar diagram showing signs in fungal sinusitis.

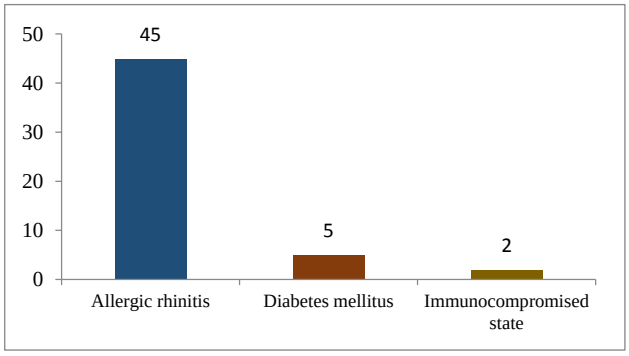

Figure 9: Simple bar diagram showing risk factor association with fungal sinusitis.

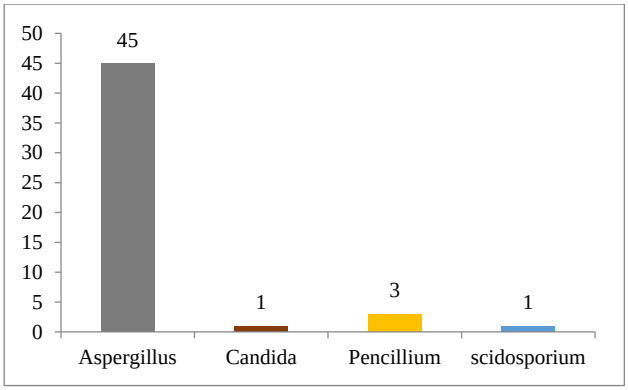

Figure 10: Simple bar diagram showing most common organism isolated in the cultures in cases of fungal sinusitis

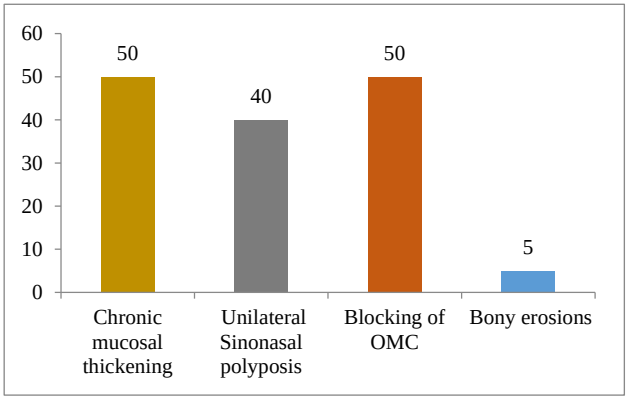

Figure 11: Simple bar diagram showing ct findings in fungal sinusitis.

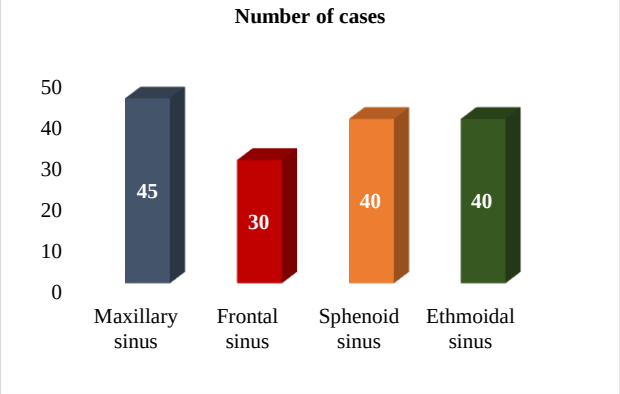

Figure 12: Simple bar diagram showing sinuses involvement in fungal sinusitis.

DISCUSSION

Comparative study based on age distribution

A total of 50 patients presenting with symptoms of fungal sinusitis are taken in the present study. In a study conducted by Naghibzadeh et al, the majority of patients belong to 19- 43 years.[3] In a study conducted by Finret Hasapoglu, the average age is 43 years.[4] In a study conducted by Sathish et al, the average age being 43.81 years.[5] In a study conducted by Shah et al, the majority of the patients belong to 18-35 years.[6] In a study conducted by Joshi et al, the majority of patients belong to 15-24 years, which is 28.6%.[7] In a study conducted by Santhi et al, the majority of patients belong to 46-55 years, which is 32%.[8] In a study conducted by Taheem et al, the majority of the patients belong to 11-20 years, which is 60%.[9] In the present study, the majority of patients belong to 20-29 years, which is 34%, average age being 24.5 years.

Comparative study based on sex distribution

In a study conducted by Santhi et al, 55% are males and 45% are females.[8] In a study conducted by Taheem et al, 70% are males and 30% are females.[9] In a study conducted by Satish et al, 65.9% are males and 34.09% are females.[5] In the present study, 70% are males and 30% are females.

Comparative study based on signs and symptoms

In a study conducted by Santhi et al 33.3% patients came with symptoms of nasal polyposis.[8] In a study conducted by Satish et al, 88.64% patients came with symptoms of nasal obstruction.[5] In a study conducted by Ragini et al, 88.64% patients came symptoms of nasal obstruction.[10] In a study conducted by Hardik et al, 49% of patients came with symptoms of nasal polyps.[6] In a study conducted by Rupa et al, 96% patients came with symptoms of nasal obstruction.[11] In a study conducted by Kalimullah et al, 100% patients came with symptoms of nasal obstruction.[9] In the present study, 100% patients came with symptoms of nasal obstruction.

In a study conducted by Taheem et al, it is observed that 20% of patients have facial disfigurement.[9] In the present study, it is observed that 90% of the patients have post nasal drip, deviated nasal septum and facial pain.

Comparative study based on predisposing factors

In a study conducted by Taheem et al, it is stated that 100% of patients have allergic rhinitis as predisposing factors.[9]

Comparative study of causative organism

In a study conducted by Santhi et al, the most common organism isolated is aspergillus which corresponds to 58.3%.[8] In a study conducted by Lakshmanan et al, the most common organism isolated is aspergillus which corresponds to 58.3%.[12] In a study conducted by Challa et al, the most common organism isolated is aspergillus which corresponds to 58.3%.[13] In a study conducted by Deshmukh et al, the most common organism isolated is aspergillus which corresponds to 58.3%.[14] In a study

conducted by Saravanan et al, the most common organism isolated is *Aspergillus flavus*, which corresponds to 81%. In a study conducted by Taheem et al, the most common organism isolated is *Aspergillus*, which corresponds to 60%.[9] In a study conducted by Hardik shah, the most common organism isolated is aspergillus, which corresponds to 82.85%.[6] In the present study, the most common organism isolated is *Aspergillus*, which corresponds to 90%.

Comparative study based on CT findings

In a study conducted by Taheem et al, it is observed that the incidence of unilateral sinus involvement in CT- PNS is 60%.[9] In the present study, it is observed that the incidence of chronic mucosal thickening and osteomeatal complex block is 100%.

Comparative study based on sinus involvement

In a study conducted by Santhi et al, it is found that the most common sinus involved is maxillary sinus.[8] In the present study, the most common sinus involved is maxillary sinus, corresponding to 90%. In a study conducted by Mukherji et al, it is found that 51% of the patients have unilateral sinus involvement.[15] In a study conducted by Taheem et al, it is found that 60% of the patients have unilateral sinus involvement.[9] In the present study, most of the patients have bilateral sinus involvement.

Comparative study based on predisposing factors

In a study conducted by Satish et al, 49.45% patients have diabetes mellitus. In the present study, 10% patients have diabetes mellitus.[5]

Comparative study based on type of fungal sinusitis

In the study conducted by Shah et al, it is found that the most common type of fungal sinusitis is allergic fungal rhinosinusitis which corresponds to 35%.[6] In the present study, the most common type of fungal sinusitis is allergic fungal rhinosinusitis which corresponds to 90%.

CONCLUSION

Allergic fungal rhinosinusitis was the most common entity found. The most common predisposing factor was the patient having allergic history. Most common sinus involved is the maxillary sinus. Nasal obstruction is the most common presenting complaint. Males are most commonly affected. Most commonly affected age group is 20-29 years. The diagnosis was done by anterior rhinoscopy and CT-PNS. For all the case medical treatment was given followed by functional endoscopic sinus surgery. Postoperatively anti-fungal treatment is being given. No recurrence found in 1 year of follow up.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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