



FUNGAL SINUSITIS – A CLINICAL APPROACH

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ABSTRACT The present study is the prospective one which explores about the prevalence of fungal infections in the chronic sinusitis patients in a tertiary care hospital from November 2016 – April 2017. The sample from sinusitis was subjected to direct microscopy using 10% KOH and the culturing was done on SDA with antibiotic and PDA plate. The plates were incubated at 2 different temperatures 37°C and 28°C respectively and were checked habitually upto 4 weeks. The colony morphology of the culture was noted and then subjected to LPCB mount and slide culture technique for further identification. Out of 56 clinical samples, 15 shows culture positive and 26 shows KOH positive. Among the culture positive, dominant fungi isolated was *Aspergillus* species followed by *Bipolaris* species. Comparing with other studies, *Aspergillus* species found to be more predominant in the chronic rhinosinusitis patients.

KEYWORDS : KOH; Sabouraud Dextrose Agar; Rhinosinusitis

Introduction

The fungal sinusitis considered to be a rare disorder during past two decades and also affects 20% of population.^[1] The fungi found to be the important pathogen causing sinusitis.^[2] Its classification, based on immune relation between fungi and their host and level of mucosa invasion, is important in the selection of an effective treatment and for the definition of the prognosis. The knowledge of this type of fungal flora, its prevalence, symptomatic presentation, aspects of the physical examination and supplementary tests in patients with chronic rhinosinusitis (CRS) will enable better understanding of the disease, raises awareness among physicians for appropriate diagnosis and treatment. Fungal infections of the sinuses have recently been blamed for causing most cases of chronic rhinosinusitis. So direct microscopy and the culturing of fungi was important to find out the etiology.^[3]

Materials and methods

Sample Size

A total number of 56 clinical samples were collected during November 2016 – April 2017 in a tertiary care hospital.

Isolation and Identification

The samples collected were initially subjected to KOH mount and then inoculated into culture plates respectively

KOH mount

The collected samples were subjected to direct microscopy using 10% potassium hydroxide and observed in low power and high power objective. The slides were examined for the presence of fungal hyphal filaments, budding yeast cells and spores.

Culturing

The samples were cultured in two sets of Sabouraud dextrose agar (SDA) plate with chloramphenicol and Potato dextrose agar (PDA) plate. The plates were incubated at 28°C and 37°C respectively and were checked at regular intervals upto 4 weeks. The growth of the fungi obtained was subjected to colony morphology identification.

Slide culture and LPCB Mount

The culture obtained is teased with LPCB to examine microscopic observation to identify its species. The slide culture method also done to look for undisturbed morphology of the fungi.

Results and discussion:

In the present study of fungal infections, total 56 samples were collected from the sinusitis patients and the prevalence of fungal infections found to be 26.78%. Among the study population, females were more prone to the fungal infections than the male. On subjecting the sample to direct microscopy by KOH mount, 29% of sample yields KOH positive but the fungal growth rate found to be 26.78%.

Table 1: Distribution of Fungi obtained in culture

No. of Samples	Isolated fungi (15)			
	<i>Aspergillus flavus</i>	<i>Aspergillus niger</i>	<i>Aspergillus fumigatus</i>	<i>Bipolaris species</i>
56	8	4	2	1

Figure 1: Gender wise distribution of fungal infection

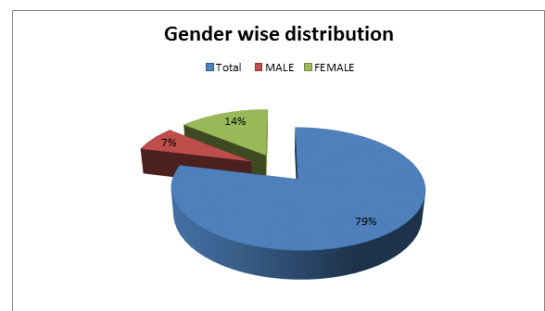
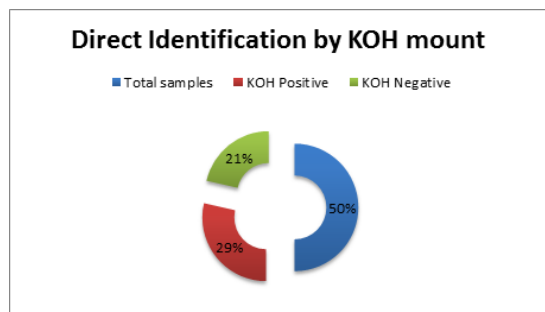


Figure 2: Microscopic identification of sample by KOH mount



Aspergillus flavus found to be more dominant organism isolated from the patient infected by the fungi. A study by Saravanan *et al.*, reported that in the allergic fungal rhinosinusitis group, the most common culture isolate was *Aspergillus flavus*, followed by *Aspergillus fumigatus* *Bipolaris* species.^[4] Michael *et al.* reported as *Aspergillus flavus* was the aetiological agent in 10 cases followed by *Aspergillus fumigatus*.^[5]

The Invasive fungal sinusitis is defined as the presence of fungal tissue invasion by examination. This definition may correspond to: acute invasive fungal rhino sinusitis, chronic invasive fungal sinusitis and granulomatous invasive fungal sinusitis.^[6]

McGill *et al* described the acute invasive fulminant fungal sinusitis. Fulminant aspergillosis in the paranasal sinuses represents an important cause of morbidity and mortality in patient in immune compromised conditions like leukemia and lymphoma, in particular in cases of chemotherapy with aplasia and bone marrow transplantation are at risk. In addition to the acute invasive fungal sinusitis, invasive fungal sinusitis classified into two forms: chronic invasive fungal sinusitis (CIFS) and granulomatous invasive fungal rhinosinusitis (GIFS).^[10]

Milroy discovered CIFS and considered as a slowly progressive invasive fungal disease.^[7] In the immune compromised patients like diabetes mellitus, burns, trauma, steroid usage etc the CIFS were remarkable by their long duration, slow progression to the antibiotic therapy.^[8,9] Cases have been reported in immunocompetent and diabetic patients alike;

Conclusion:

The fungi were more predominant cause for the nasal infections. People living in poor communities and slums are at high risk for developing nasal polyps secondary to fungal infections. Due to unhealthy environment and also lack of awareness is the main cause for nasal polyps. Further studies may help to determine the prevalence and also creating awareness among the people in both rural and urban areas about the healthy environment may act as one of the preventive measures.

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