

# Study of Fungal Isolates in Nasal Polyposis



## Microbiology

**KEYWORDS :** Nasal polyps, Recurrent polyposis, Fungi, *Aspergillus flavus*, *Aspergillus fumigatus*.

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### ABSTRACT

**Objective :** To study the frequency and species of underlying fungus in polyps of patients operated for nasal polyposis.

**Methodology:** A total of 50 patients operated for nasal polyps were included in this study. Data regarding unilateral or bilateral polyposis and recurrence was collected from all the patients records. Post operatively the removed polyp material subjected to KOH wet mount direct examination and fungal culture. The findings are analysed.

**Results :** Out of 50 patients 36 (72%) were in the age group of 31-60 years. Underlying fungus was present in 30 (60%) samples, out of them *Aspergillus flavus* 8 and *Aspergillus fumigatus* in 12. In this 50 cases 30 were bilateral polyposis with 22 fungal isolations and 20 were unilateral polyposis with 8 fungal isolations. In the study, 40 were first time operated with 21 fungal isolations and 10 were second time operated with 9 fungal isolations.

**Conclusion :** Fungi could be considered as the causative factor in the development of nasal polyposis and *Aspergillus* was the commonest organism.

### INTRODUCTION:

Nasal polyposis is a common clinical entity. These are basically the prolapsed lining of the sinus mucosa. In the general population the overall prevalence rate of nasal polyposis ranges from 1-4%. It is more common in adults than in the children under 10 years of age<sup>1</sup>.

It is important to remember that there is no single etiological factor that is responsible for the development of Nasal polyposis. Allergy, viral infection, bacterial infection, fungal infection and environmental pollution have all been suggested as possible initial triggers that may upregulate inflammation of the lateral wall of the nose to develop Nasal polyposis<sup>2</sup>. Fungi are increasingly implicated in the etiopathology of rhino sinusitis over the last two decades. The mean age for fungal Nasal polyposis shows that adults who exposed to air pollutants and use more antibiotics through their life suffer from the disease. In present study an attempt has been made to isolate fungal agents from Nasal polyps resected in ENT Department, Government General Hospital, Kakinada, A.P.

### Methodology:

Resected polyps from 50 patients with Nasal Polyposis were studied for the presence of fungi in the Department of Microbiology, Rangaraya Medical College. The data about age, sex, unilateral or bilateral polyposis and recurrence noted in a proforma. After the surgery samples were kept in sterile normal saline and with sterile precautions each polyp material minced thoroughly. Direct microscopic examination done after preparing 10% KOH mount with minced Polyp material. A portion of each sample was inoculated on two Sabourad's dextrose agar with chloramphenicol slopes and one Sabourad's broth. One slope and broth incubated at 37°C and second slope incubated at 25°C. Cultures are incubated for a period of four weeks before declaring no growth. The identification of fungus done by noting macroscopic features of colony such as colour and texture of growth and by observing morphological details in L.C.B. mounts under microscope. Slide cultures done from fungal isolates to examine the fungal growth in its original form without disturbing the spore arrangement for identification of fungi<sup>3</sup>.

### Results:

In the total number of 50 nasal polyps cases 28 were males and 22 were females. In this study 36 cases (72%) belonged to 31-60 years age group, 14(28%) cases belonged to 11-30 years age

group and there is no cases in the age group of 0 to 10 years.

Analysis of Nasal polyps results by direct microscopic examination of KOH preparation of the specimens showed fungal elements in 25(50%) cases. Mycological culture of the samples yielded growth of fungi in 30(60%) cases. In this 30 cases 18 were *Aspergillus flavus* and 12 were *Aspergillus fumigatus* (Table-1).

**TABLE-1**  
**ANALYSIS OF 50 NASAL POLYP SAMPLES RESULTS**

Method	Number	Percentage
KOH preparation showing fungal elements	25	50%
Fungal cultures positive	30	60%
<i>Aspergillus flavus</i>	18	
<i>Aspergillus fumigatus</i>	12	

**TABLE-2**  
**ANALYSIS OF ASSOCIATION OF FUNGAL ISOLATIONS WITH NATURE OF POLYPOSIS**

Nature of Polyposis	Number	Fungal Cultures Positive
Unilateral Nasal Polyposis	20	8(40%)
Bilateral Nasal Polyposis	30	22(73.5%)
First time Polypectomy cases	40	21(52.5%)
Second time operated (recurrent polyposis) cases	10	9(90%)

Out of 50 cases, 20 were unilateral polyps and shown fungal growth 8(40%) samples. 30 samples were from bilateral polyposis shown fungal growth in 22(73.3%) cases (Table-2).

Further analysis revealed, 40 first time operated polypectomy cases shown fungal growth in 21(52.5%) samples. In 10 second time operated (recurrent polyposis) samples 9(90%) were fungal cultures positive (Table-2).

### Discussion:

Etiological factors responsible for nasal polyposis are multifactorial and most theories consider polyps to the ultimate manifestation of chronic inflammation. Therefore, conditions leading to chronic inflammation in the nasal cavity can lead to nasal polyposis<sup>4,5</sup>. The people who had fungi in their nasal polyps had a long time exposure to dust at work or in their house. According to results mechanism of nasal polyp formation can be explained; may be local antifungal immune reactivity in nose, local imbal-

ance of immunity at nasal mucosa and hypersensitivity to fungus causes polyps<sup>6,7</sup>.

The role of superficial and saprophyte fungus which cause imbalance in local immunity of nasal mucosa are more important than invasive fungus<sup>7</sup>. Hyper reactivity to fungal organisms could be one of the mechanisms underlying the development of nasal polyposis according to Richetti study<sup>6</sup>. Fungal colonisation, infection and invasion in nasal polyposis should be considered to suggest a suitable treatment in addition to the routine one.

In the present study the highest incidence seen in 31-60 years age group correlating with E. Razmpa et al 2007 study<sup>8</sup>. In our study 20(40%) cases were unilateral polyposis, 30(60%) cases were bilateral polyposis and 20% cases were recurrent polyposis correlating with the study of Atif Hafeez Siddiqui et al 2014<sup>9</sup>.

In our present study out of 30 fungal isolates, 18(60%) were *Aspergillus flavus* and 12(40%) were *aspergillus fumigatus*. Other authors like P.Kordbacheh et al 2006<sup>10</sup> and E Ranzmpa et al 2007<sup>8</sup> reported similar findings.

#### Conclusion:

The present study indicates that the frequency of underlying fungus was significantly high in cases of nasal polyposis and *Aspergillus* was the commonest organism identified. The fungus was found more frequently in bilateral polyposis cases and in recurrent polyposis cases.

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