

# Determine the Frequency of Fungal Infection in Patients with Nasal Polyps

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## ABSTRACT

**Objective:** To determine the frequency of fungal infection in patients presented with nasal polyps.

**Study Design:** Cross-sectional/Observational

**Place and Duration:** Study was conducted at ENT department of Medical Teaching Institution (MTI) Khyber Teaching Hospital (KTH), Peshawar for duration of ten months from December, 2019 to September, 2020.

**Methodology:** One hundred and thirty patients of both genders with ages 15 to 65 years presented with nasal polyposis were enrolled. After taking informed written consent, detailed demographics including age, sex, site, disease duration were recorded. Biopsy specimens were collected and sent to laboratory for examining fungal involvement. Data was analyzed by SPSS 24.0.

**Results:** There were 78 (60%) male while 40% were females with mean age 36.48±12.54 years. Mean disease duration was 2.42±1.16 years. 100 (76.92%) patients had unilateral while 23.08% had bilateral nasal polyps. Fungal infection was found in 60 (46.15%) patients while 70 (53.85%) had no fungal infection. Aspergillus fungal infection was found in 40 (66.67%) patient and 20 (33.33%) had mucormycosis.

**Conclusion:** It is concluded that the frequency of fungal infection was high in patients with nasal polyps. Aspergillus was the commonest fungal species.

**Keywords:** Nasal Polyps, Fungal Infection, Aspergillus

## INTRODUCTION

Nasal polyps are a common health concern that otolaryngologists face every day. The incidence of chronic rhinosinusitis is 1-4 percent.<sup>1</sup> Chronic nasal polyp rhinosinusitis can be split into eosinophilic chronic rhinosinusitis and neutrophilic polyps associated with inflammation, as in cystic fibrosis. It involves allergic rhinosinusitis, eosinophilic rhinosinusitis and aspirin aggravated respiratory disease.<sup>2</sup> Nose and parasite infection, especially with nasal polyps, has proven to be uncommon but not. And immunocompetent people may be diagnosed.<sup>3</sup>

The causing agent of chronic nasal rhinosinusitis was suspected of fungal elements and the root cause for the development of serious nasal polyps was identified in fungal etiology.<sup>4</sup> The infection with the fungus in the nose and sinuses was once an unusual disease.<sup>5</sup>

Anatomic paranasal sinus anomalies that affect drainage, such as nasal polyps or persistent inflammatory disorders of fungal colonisation are vulnerable to. Area of mucosal injury can cause mucus pooling and subsequent colonisation by mushrooms.<sup>6</sup> There have been recent studies showing that these polyps can also be triggered by sinonasal mucosa infection.<sup>7,8</sup> Thus nasal polyp development and growth both by fungal infections and non-infectious inflammation can be initiated.<sup>9,10</sup>

Nose and paranasal infections represent a variety of conditions from colonisation to invasive rhinosinusitis. Non-invasive disorders include asymptomatic fungal invasion, fungal ball and rhinosinusitis allergic to fungi. Invasive diseased diseases include: indolent, chronic rhinosinusitis, fungal granulomatous sinusitis, and acute, fungal rhinosinusitis.<sup>11,12</sup> In patients presenting surgical polyps, we have performed this analysis in order to assess the prevalence of fungal infection.

## MATERIALS AND METHODS

This cross-sectional/observational study was conducted at ENT department of Medical Teaching Institution (MTI) Khyber Teaching Hospital (KTH), Peshawar for duration of ten months from December, 2019 to September, 2020. Our study comprised of 130 patients. After taking informed written consent, detailed demographics including age, sex, site, disease duration were recorded. Patients who had proptosis due to orbital lesions, nasal carcinoma, inverted papilloma and those were not agreed excluded from this study.

The intra-orbitally comprehensive disease and the fungal tissue culture was sent after surgery in order to detect the presence of aspergillus infection in all patients with computed tomographic examination. Biopsy specimens were collected and sent to laboratory for examining fungal involvement. The average estimate and standard deviation presented quantitative variables. Frequencies and percentage qualitative variables were presented. Data was analyzed by SPSS 24.0.

## RESULTS

There were 78 (60%) male while 40% were females with mean age 36.48±12.54 years. Mean disease duration was 2.42±1.16 years. 100 (76.92%) patients had unilateral while 23.08% had bilateral nasal polyps. (table 1)

Table 1: Baseline detailed demographics of enrolled cases

Variables	Frequency	%age
Gender		
Male	78	60
Female	52	40
Mean age	36.48±12.54	
Mean Disease duration	2.42±1.16	
Type of Polyps		
Unilateral	100	76.92
Bilateral nasal polyps	30	23.08

Table 2: Frequency of fungal infection

Variables	Yes	No
Fungal infection	60 (46.15%)	70 (53.85%)

Table 3: Distribution of species after infection among patients

Species	Frequency	%age
Aspergillus fungal	40	66.67
Mucormycosis	20	33.33

Fungal infection was found in 60 (46.15%) patients while 70 (53.85%) had no fungal infection. (table 2)

Aspergillus fungal infection was found in 40 (66.67%) patient and 20 (33.33%) had mucormycosis. (table 3)

## DISCUSSION

One hundred and thirty patients of both genders with ages 15 to 65 years presented with nasal polyposis were enrolled. There were 78 (60%) male while 40% were females with mean age 36.48±12.54 years. These were comparable to the previous study conducted by Qaiser et al.<sup>13</sup> In recent years, the incidence of fungal infections has risen significantly, with recurrence.<sup>14,15</sup>

In our study rate of fungal infection was higher 60 (46.15%) among patients and 70 (53.85%) did not show any fungal infection, most of the patients belonged to a lower socioeconomic class. Predisposing factors for fungal nasal polyp patients include overcrowding, unhealthy living and a lack of knowledge of the disease. A significant proportion of patients have long history of symptoms in the department and during the initial process they had not received adequate medical care. Unwarranted delays were observed as a result of appointments with hakims, quacks, homoeopaths and general practitioners for primary disorder care. In the current analysis, Nirmal Coumare also reveals a marginal masculine preponderance in 2010. In 2006, 65% of male and 35% of women with a pronounced male preponderance, unparalleled to current findings, were observed by Kordbacheh and others.<sup>16,17</sup>

This research also showed that long-term exposure to dust as part of their jobs or part of their living environment constitutes a significant risk factor for the fungal infection of their nasal polyps, which was further studied. Different ethnic groups have shown that the prevalence of the disease is not affected which was discovered otherwise in another trial.<sup>15,18</sup>

In our study aspergillus fungal infection was found in 40 (66.67%) patient and 20 (33.33%) had mucormycosis. These showed resemblance to the previous studies presented by Taimoor et al.<sup>19</sup> Low socioeconomic people have suffered the most, and bilateral participation is a traditional presentation. This is in line with Laila M. Telmesani's research.<sup>20</sup> Disease occurrence refers both to the environment and to the circumstances of the human hosts. People living in overcrowded and humid conditions of the low socio-economic community are hardest hit. It affects all genders and all classes of age, but is seen most frequently in men between the ages of 15 and 65. The most common species in the north of India that caused fungal rhinosinusitis, Chakrabarti et al. found, were

Aspergillus.<sup>21</sup> Aslam U et al submitted that fungal inflammation is poor in nasal polyps, as Aspergillus being the most common pathogen in men.<sup>22</sup>

## CONCLUSION

It is concluded that the frequency of fungal infection was high in patients with nasal polyps. Aspergillus was the commonest fungal species.

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