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A Study on Incidence of Fungal Etiology in Nasal Polyposis in GGH, Kakinada

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I. Introduction

Nasal polyps and chronic rhinosinusitis are often taken together as one disease entity, because it seems impossible to clearly differentiate between them[1,2]. Nasal Polyposis is therefore considered a subgroup of Chronic Rhinosinusitis. Approximately 20% of CRS patients have nasal polyps[3].

Nasal polyps have a strong tendency to recur after surgery even when aeration is improved[4]. Nasal polyps originating from within the ostiomeatal complex appear as grape-like structures in the upper nasal cavity. In the general population, the prevalence of nasal polyposis is considered to be around 4%[5]. In cadaveric studies, this prevalence has been shown to be as high as 42%[6] .They predominantly affect adults and usually present in patients older than 20 years. They are uncommon in children under 10 years age and may be the presenting feature of cystic fibrosis. There is at least a 2:1 male to female preponderance[7].Otorhinolaryngologists estimate polyposis on the grounds of rhinoscopy with 4 degree scale, proposed in 1993 by Johansen[8].

II. Methodology

In the present study a total of 100 patients with sinonasal polyps who were admitted and had undergone FESS in the Department of Otorhinolaryngology, GGH, Kakinada were evaluated, clinical, radiological and microbiological data collected and analyzed.

SOURCE OF DATA:

Study was done inpatients admitted inthe department of ENT,GGH Kakinada during the study period with clinical features of nasal polyposis.

INCLUSION CRITERIA:

Patients with nasal polyposis.Patients with age from 10-70 years.

EXCLUSION CRITERIA:

Patients with age less than 10 years.Patients with age more than 70 years.

METHOD OF COLLECTION OF DATA:

From all the study population, comprehensive clinicalhistory was taken, thorough clinical examination was done. All the subjects underwent endoscopic examination.CT PNS was done for all the patients,radiological evaluation done to know the extent of disease and to decide the extent of surgery needed.Intraoperative findings were noted. The specimens obtained were sent for histopathological evaluation and microbiological culture.

III. Observation And Results

Fungal etiology

During surgery intraoperative findings were noted and the polypoid masses excised were sent for histopathologic examination and microbiological culture. The reports from the department of pathology were suggestive of inflammatory polyps in all the cases. Microbiological culture was found to be positive in 16 out of 100 cases which is 16%.

Table number 1: Age distribution of fungal sinusitis cases

Sl No	age group	Number of polyposis cases	Number of pts with fungal sinusitis	%
1	11-20	18	1	5.5%
2	21-30	22	3	13.6%
3	31-40	27	6	22.2%
4	41-50	21	4	19%

5	51-60	07	1	14.2%
6	61-70	05	1	20%

Table number 2: Sex distribution of fungal sinusitis

Sl No	Sex	Number	Percentage
1	Males	7	43.75%
2	Females	9	56.25%

Table number 3: Fungal sinusitis depending on laterality of disease

Sl No	Number of cases	positive fungal cultures	Percentage
Cases with Bilateral polyposis	53	10	18.86%
Cases with unilateral disease	47	6	12.76%

2 patients were found to be diabetics among the 16 cases of fungal sinusitis.

Table no 4: CT PNS findings in fungal sinusitis cases

Findings	Number	Percentage
Heterogenous opacities	10	62.5%
Bone erosion	06	37.5%
Intraorbital extension	1	6.25%

Table no 5: intraoperative endoscopic findings among fungal sinusitis cases

Finding		Number	percentage
Polyps	Unilateral	06	37.5%
	Bilateral	10	62.5%
Inspissated mucin		6	37.5%
Fungal debris		16	100%

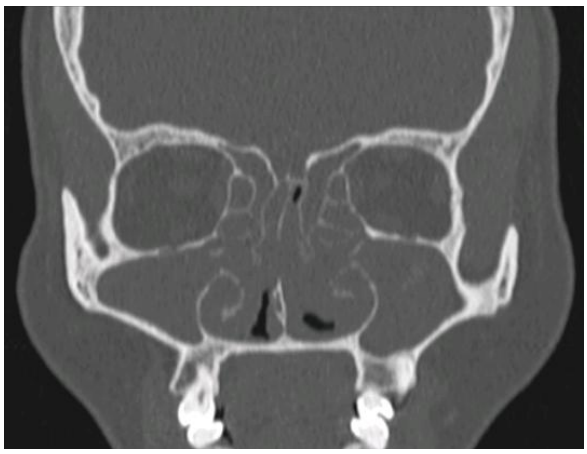
Table number 6: Fungal species cultured in fungal sinusitis cases

Sl No	Species	Number	Percentage
1	Aspergillusflavus	08	50%
2	Cladosporium	1	6.25%
3	Candida	1	6.25%
4	Zygomycetes	1	6.25%
5	Fausaceae	1	6.25%
6	Unidentified species	4	25%

IV. Case Reports

CASE 1:

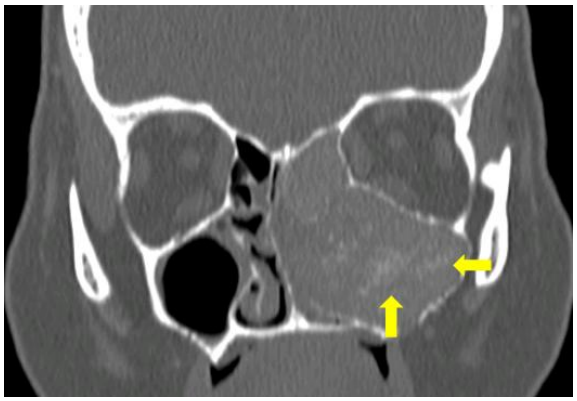
A 28-year-male presented with bilateral nasal obstruction,headache,rhinorrhea,post nasal drip.On examination greyish white polyps present in both nasal cavities.CT shows heterogeneous opacities in all sinuses.FESS under GA done, specimen sent for culture and HPE, reported as inflammatory polyp with fungal debris in culture. Postop follow-up was done for 2 years and patient has no recurrence



CASE 2:

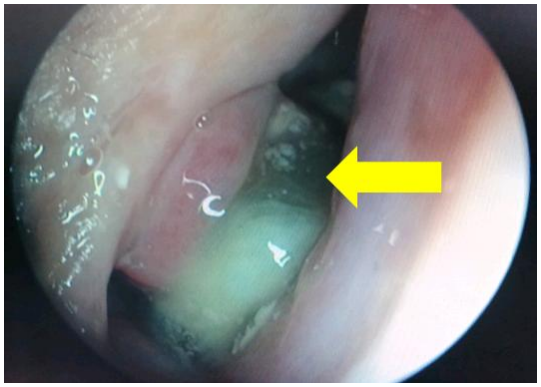
A 26-year-male presented with left nasal obstruction,rhinorrhea,post nasal drip.On examination DNS to right with greyish white polyp in left nasal cavity present.CT PNS shown heterogenous opacity in left maxillary

sinus with bony erosions. FESS under GA done.HPE show inflammatory polyp and in culture fungal hyphae seen.He is on followup for a period of 1 year with no recurrence.



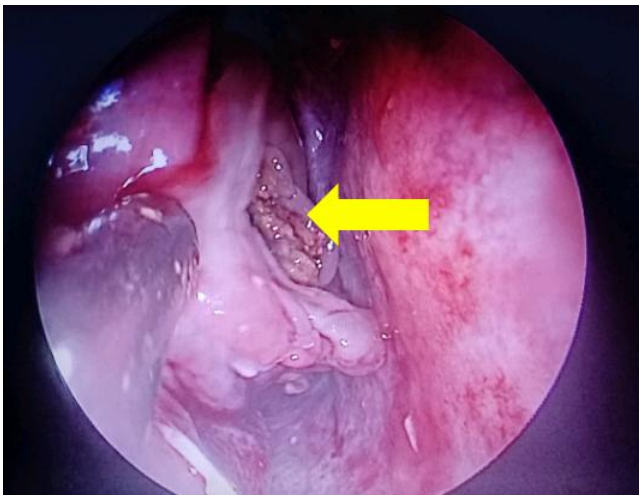
CASE 3:

A 34-year-female patient presented with bilateral nasal obstruction,rhinorrhea,postnasal drip. On examination greyish polyps present in both nasal cavities.CT scan show heterogenous opacity in bilateral ethmoidal sinuses with bony erosion. FESS under GA done. Culture of specimen reported presence of fungal debris.postop followup for 8 months with no recurrence.



CASE 4:

A 45 -year-female presented with nasal obstruction,rhinorrhea,headache.postnasal drip,sneezes. On examination bilateral greyish white polys present. CT scan show heterogenous opacity in all sinuses. FESS under GA done.fungal hyphae seen in culture and HPE shown inflammatory polyp.she is on followup for 18 months with no recurrence



V. Discussion

Fungal sinusitis as an entity was described in the late 1700s.[9]By mid-1800 to late 1800s; it was described in both invasive and non-invasive forms. Non-invasive Aspergillosis of the nose and paranasal sinuses was first described by Schubert in 1855 and invasive fungal rhinosinusitis was first reported by Oppe in 1897. It was in1965 when Hora actually put the whole picture together and described Fungal rhinosinusitis as a spectrum of disease ranging from non-invasive to invasive

Later in 1997, deShazo proposed a classification of fungal sinusitis into invasive and noninvasive fungal sinusitis of which the former includes fungal ball and allergic fungal rhinosinusitis and the later includes acute fulminant fungal rhino-sinusitis,chronic invasive and granulomatous invasive fungal rhinosinusitis.

NONINVASIVE FUNGAL RHINOSINUSITIS:

1.Fungus ball*:*

Presence of tangled mats of fungal hyphae in sinus cavity is fungal ball. Occurs in immunocompetent patients without invasion of the mucous membrane on histopathology[10,11,12]. Aspergillus fumigatus is the most common organism involved andAspergillusflavus and Scedosporium follows[13].

2.Allergic fungal rhinosinusitis:

It is seen in immunocompetent patient with allergy to fungus.Approximately 7 percent of all chronic rhinosinusitis cases requiring surgery have been diagnosed as AFRS[14,15]. In AFRS, most common fungi reported belong to dematiaceous species (Bipolaris, Curvularia,Alternaria)[14].

Inhalation of ubiquitous fungi in atopic individuals provokes an inflammatory reaction leading to mucosal oedema and production of allergic mucin,which is thick green to grey lamellate of dense inflammatory cells,mostly eosinophils in various stages of degranulation,charcot-laydencyrstals with or without fungal hyphae[16].

INVASIVE FUNGAL RHINOSINUSITIS:

Chronic or indolent invasive fungal rhinosinusitis:

It's a less frequent form.Two forms are usually described: granulomatous and nongranulomatous, based on the presence or absence of granulomas within tissue[10]. Pain is the main symptom. Headache and visual deficit occur with intracranial and orbital extension[13].

CT SCAN will give the information of bone erosion whereas MRI gives the extent of soft tissue involvement[13].

Acute fulminant fungal rhinosinusitis:

Characterized by a mycotic infiltration of the mucous membrane of the nasal cavity and/or paranasalsinuses.It occurs in immunocompromised patients (AIDS, haematologic diseases, type 1 diabetes mellitus) with a fatal outcome in the absence of treatment[17].

VI. Conclusion

From the above study, the below conclusions were drawn.

1. The incidence of fungal sinusitis is 16% in cases of sinonasal polyposis. And it is more in bilateral polyposis cases than unilateral disease. More in females than in males.
2. The most common age affected is 31-40 years.
3. Incidence of fungal sinusitis is more in females than males and in immunocompetent individuals.
4. Intra operative and endoscopic findings are more precise in diagnosing fungal sinusitis than CT scan.
5. Most common organismculturedisAspergillusflavus.
6. Diabetics have more chances of having a spread intra orbitally leading to loss of vision.

Future studies are advocated to determine the precise role of fungal agents in development of sinonasal polyps.

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