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CASE STUDY

THE UTILITY OF NASAL SECRETION CYTOLOGY IN DIAGNOSIS OF ALLERGIC FUNGAL SINUSITIS- A CASE REPORT

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ABSTRACT: INTRODUCTION-Allergic fungal sinusitis (AFS) is a condition commonly occurring in immunocompromised individual. It is commonly characterized by increase eosinophils and increased IgE. **CASE DETAILS**- A 48-year-old female presented with foul smelling discharge from right nostril and right nasal blockage for one year. A clinical diagnosis of right maxillary sinus polyp was given. CT scan revealed mucosal thickening in right maxillary wall with central area of hyper density and calcification. Nasal swabs were taken and subsequently stained with Pap and MGG stain. Smears revealed fungal hyphae and a provisional diagnosis of allergic fungal sinusitis was given. The patient was operated and the diagnosis was confirmed on histology. **DISCUSSION**- AFS is a relatively incompletely understood entity with characteristic clinical, radiological and histopathological finding. Fungal elements can be detected from nasal discharge by means of cytology. **CONCLUSION**- Nasal secretion cytology can be used as a preoperative as well as an intraoperative tool for or early rapid diagnosis of AFS.

KEYWORD: Nasal secretion cytology, Allergic fungal sinusitis, fungal hyphae

INTRODUCTION:

Allergic fungal sinusitis (AFS) is a type of chronic rhinosinusitis associated with allergic reactions to fungal antigens. This disease was first described in 1983[1]. AFS has been observed in approximately 5% to 10% of chronic rhinosinusitis patients who require surgery in the United States [2]. Etiological agent responsible for AFS is Aspergillus or pigmented dematiaceous family members such as Bipolaris, Curvularia, etc[3].

Nasal cytology has acquired an important role in the diagnosis and management of allergic rhinitis, non-allergic rhinitis and mixed rhinitis and its current day-by-day use is recommended by some authors [4]. Different techniques for sampling are described such as nasal swab, nasal wash, blown secretions, nasal brushing, or scraping etc[5]. We present a case of a 48-year-old female coming to the hospital with complaints of foul-smelling discharge from right nostril and right nasal blockage for one year.

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CASE REPORT:

A 48-year-old female presented with foul smelling discharge from right nostril and right nasal blockage for one year. A clinical diagnosis of right maxillary sinus polyp/ soft tissue tumour was given. Routine investigations were performed which revealed eosinophilia and increased IgE levels. The rest of the hematological, biochemical and serological tests were within the normal limits. The patient was tested for HIV and was negative. Patient was told that her clinical and laboratory investigation details may be used for publication in a research journal and she gave consent for the same.

CT scan revealed mucosal thickening in right maxillary wall with central area of hyperdensity and calcification and no definite diagnosis was made (**Figure 1**). Nasal swabs were taken from both the nostrils and were immediately rolled on glass slides. Smears were air dried and stained with May Grunwald – Giemsa (MGG). The nasal discharge cytology showed clusters of acute inflammatory cell collections with few scattered fungal hyphae showing dichotomous branching and septation (**Figure 2**).

A provisional diagnosis of allergic fungal sinusitis was given. The patient was operated and as the tissue was put in 10% formalin, culture was not done so further typing of fungus was not possible. A grey white soft tissue mass measuring 2X1.5 cm was received which on cut was grey white (**Figure 3**). On histopathology sections, fungal hyphae showing dichotomous branching and septation were seen with few eosinophils and occasional charcot leyden crystals in the background (figure 4). A final diagnosis of allergic fungal sinusitis was given.

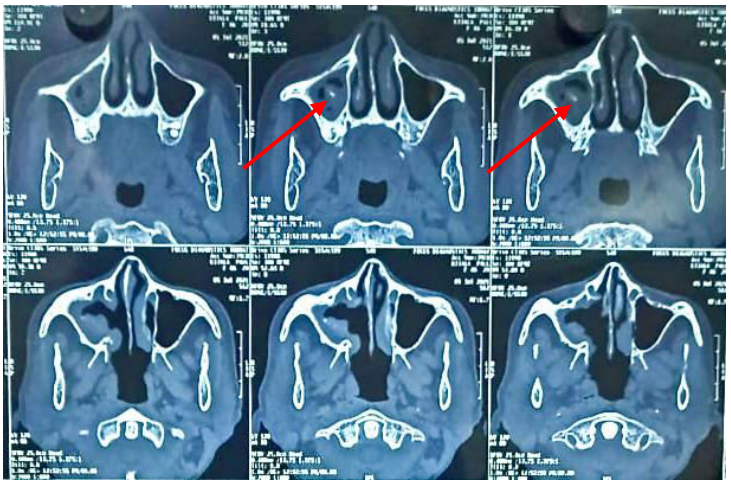

Figure 1- CT (PNS) scan: Mucosal mass in right maxillary wall (Red arrow)

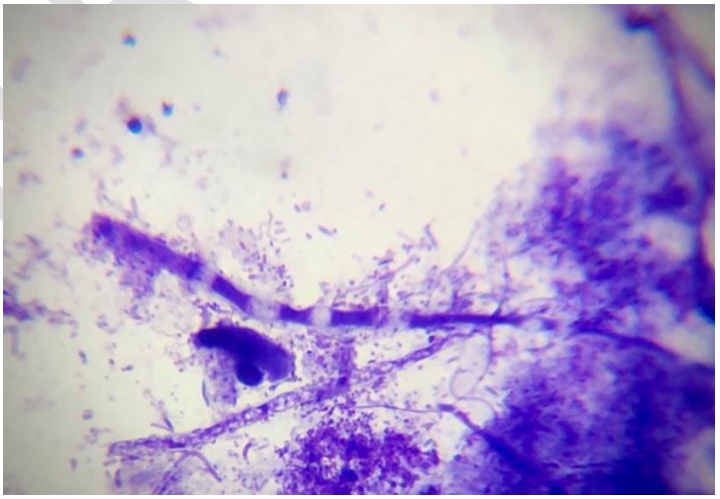

Figure 2- Fungal hyphae showing dichotomous branching and septation (MGG-40X)

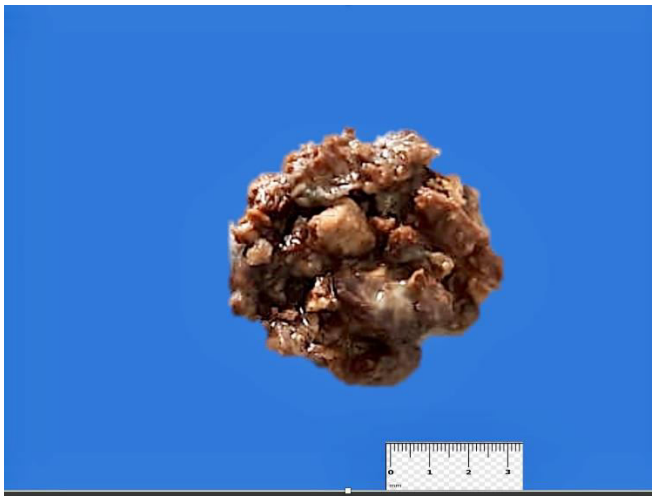

Figure 3- Gross: Polypoidal grey mass

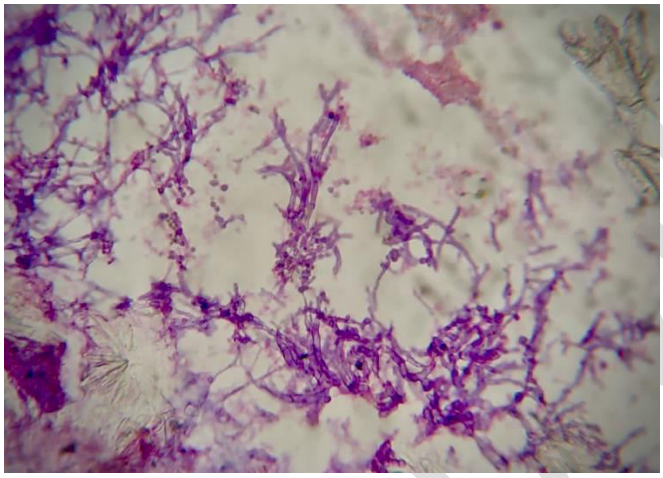

Figure 4- Fungal hyphae with charcot leyden crystals (H&E 40X)

DISCUSSION:

AFS is seen in immunocompetent individuals of lower socioeconomic status and is more common in African American and Asians [6]. The largest AFS case series reported from the southwestern United States stated that all patients with AFS had inhalant atopy, including type I immediate hypersensitivity to the AFS etiologic mold [7].

An elevated total serum IgE in AFS is common, and changes in total serum IgE over time reflects the clinical status of the patient [8]. The diagnosis of AFS is primarily histopathologic. The allergic mucin must be positive for fungal hyphae on fungal staining, and/or properly obtained surgical sinus fungal cultures must be positive in a clinically suspected patient [9]. In our case, we gave a pre-operative diagnosis of allergic fungal sinusitis based on cytological, hematological and clinical data of the patient which was confirmed on histopathology. Similar findings were reported in a case series done by Rane et al [10]. The first step in treatment for any patient with is paranasal sinus surgery to both remove all obstructing inspissated allergic mucin and resect all diseased hypertrophic sinus mucosa. It is followed by corticosteroid therapy [8,11].

Our patient too was given a combined surgical and medical treatment and after a follow-up of 8 months is now doing well. Her post- operative investigations including serum IgE levels were within normal limits.

In the present case, we tried to diagnose AFS on nasal secretion cytology. The clinical diagnosis in our case was polyp/ soft tissue tumour and CT scan was inconclusive. Nasal discharge cytology in this case helped the clinicians to plan their management. Thus, nasal discharge cytology in patients with high degree of clinical suspicion and in proper clinical settings can be used as a first diagnostic modality.

CONCLUSION:

Nasal discharge cytology plays an important role in diagnosis of allergic fungal sinusitis and can be used for pre-operative as well as intraoperative diagnosis of allergic fungal sinusitis and can be used as an additional diagnostic tool.

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