

Early and Advanced Allergic Fungal Rhinosinusitis

Ali Maeed Al Shehri, MD*

Objective: To evaluate early and advanced cases of allergic fungal rhinosinusitis.

Design: A Prospective Study.

Setting: King Khalid University, Abha, Saudi Arabia.

Method: Twenty-eight cases were diagnosed as allergic fungal rhinosinusitis from March 2010 to March 2012. All cases were treated by surgery, local corticosteroid and local Amphotericin B.

Result: Clinical examination, CT scan and high IgE were diagnostic in most cases. IgE dropped after treatment. There was no intracranial extension, but there were 3 cases with erosion of the medial orbital wall.

Conclusion: Allergic fungal rhinosinusitis is common in certain geographic areas more than others. Therefore, all cases with sinonasal polyposis should be expected to be allergic fungal sinusitis in these areas.

* Associate Professor
Consultant ENT
Department of Surgery
College of Medicine
King Khalid University
Abha, Saudi Arabia
E-mail: alimaeedalshehri@gmail.com; Namas2@hotmail.com

Allergic fungal rhinosinusitis (AFS) remained a diagnostic and therapeutic challenge since its first description. The incidence of AFS varies from 5%-20% of all cases of rhinosinusitis¹. The diagnostic signs of AFS are as follows: the presence of nasal polyps, fungal hyphae in resected tissues, allergic mucin, CT scan findings, history of atopy and high serum IgE level². Some authors questioned the importance of atopy and IgE in patients with AFS^{3,4}.

The aim of this study is to evaluate early and advanced cases of allergic fungal rhinosinusitis (AFS).

METHOD

Twenty-eight patients were included in the study from 2010 to 2012. The patients underwent full ENT examination and nasal endoscopy. CT scan was performed for all patients; MRI was performed for those suspected to have skull base or medial orbital erosions. Lund-Mackay scoring system for CT scans was utilized. Patients with a score of 6 or less (in bilateral sinuses findings) or 4 or less (in unilateral cases) with no wall erosion were considered early

cases. Pre and postoperative IgE was measured. Preoperative medical treatments were given including local or systemic corticosteroids.

Functional Endoscopic Sinus Surgery (FESS) was performed with complete removal of all nasal or sinus polyps, and Amphotericin B was used for irrigation for involved sinus. Histopathology and fungal cultures were performed. Postoperative treatments included repeated visits to the OPD for irrigation and cleaning of the nose, at least one visit per week for 4 weeks, then once per month for 6 months and nasal corticosteroid spray for 3 months.

Early AFS was defined as patients with no more than 2 sinuses involved in unilateral, or 3 sinuses involved in bilateral cases without bony erosion or marked bone expansion. Early AFS had no previous sinus surgery and had recent sinus symptoms with a mean duration of 3 months.

RESULT

Twenty-eight patients were included in the study; age ranges from 19 to 50 years, 18 (64.3%) females and 10 (35.7%) males. All patients had no prior surgery. Diagnostic criteria were nasal polyps, allergic mucin, and CT finding. The main symptoms were nasal obstruction, black to green nasal discharge in 24 patients, hyposmia in 13 (46.4%) patients and headache in 12 (42.9%) patients.

On examination, the findings were erythematous mucosa with dark gray polyp and thick secretion in almost all patients. The CT scan findings were heterogeneous sinus opacities, sinus extension and bony erosion, see figure 1. Erosion of medial orbital wall was found in 2 cases; maxillary sinus was more frequently affected, see figure 2.



Figure 1: Heterogeneous Sinus Opacities, Sinus Extension, Bony Erosion

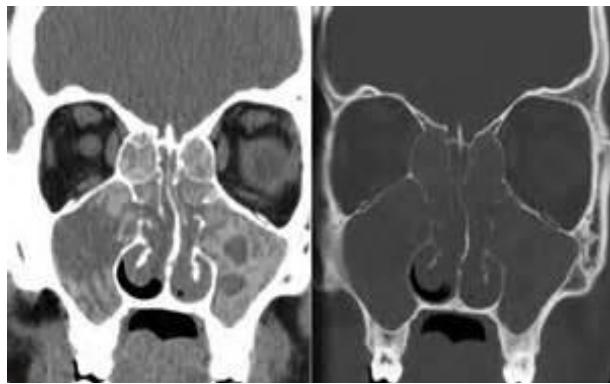


Figure 2: Erosion of Medial Orbital Wall

FESS was performed in all the cases, using 0 and 30-degree scope; all polyps were removed. Fungal culture was performed; positive findings was found in all cases.

Six (21.4%) patients were diagnosed with early AFS and 22 (78.6%) were diagnosed with advanced AFS.

DISCUSSION

Allergic fungal sinusitis is considered as a benign, non-invasive fungal sinusitis. It is the most common fungal sinusitis⁵.

AFS has clinical, radiological and surgical findings, which differ from other types of nasal polyposis or ordinary sinusitis. Bent et al proposed five criteria of AFS (nasal polyposis, mucin, CT scan findings, positive histology or culture, type 1 hypersensitivity)^{2,5}. A study from Mayo Clinic concluded that criteria of AFS are present in the majority of cases of rhinosinusitis with or without polyposis. It is important to have positive fungal culture or histopathology with high IgE and other criteria of AFS to be able to differentiate it from eosinophilic mucin rhinosinusitis^{6,7}.

There is a significant difference in the amount of allergic mucin between cases of eosinophilic mucin rhino-sinusitis and cases of allergic fungal sinusitis, which has a higher level of mucin⁷.

The effect of weather on the development of AFS is reported by some authors and this reflects why it is common in the southern area of Saudi Arabia (Jazan) because the weather is very hot, dusty and humid during the summer⁸. The importance of the geographical distribution of AFS has been documented^{9,10}. The immunologic mechanism of AFS has been thought to be a combination between type 1 and type 3 immune hypersensitivity response. Early cases showed that the disease usually starts in one of the dependent sinuses, usually maxillary sinus. The allergy is mediated by IgE resulting in inflammation of sinus mucosa and edema, which leads to the obstruction of sinus ostia; the obstruction is exaggerated in some cases by anatomical abnormalities such as septum deviation or hypertrophy of the turbinates. The obstruction causes stasis of sinus secretion, creates an ideal environment for fungal proliferation and accumulation of allergic mucin¹¹. A recent study emphasized that the elevation of serum IgE is adequate evidence of the role of identified fungus when diagnosing AFS in the absence of a positive fungal smear or culture¹². Decreased level of serum IgE after treatments of AFS supports the role of IgE-mediated response in this disease.

CONCLUSION

AFS is an endemic disease that has a high prevalence in certain geographic areas, known to be hot, dusty and humid. For this reason, further environmental studies are recommended to evaluate the pathogenesis of this disease.

Potential Conflicts of Interest: None.

Competing Interest: None. **Sponsorship:** None.

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