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Efficacy of Medical Therapy in the Management of Allergic Fungal Rhinosinusitis: A Case Report

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ABSTRACT

Background: Allergic fungal sinusitis (AFS) or allergic fungal rhinosinusitis (AFRS) is a relatively common, condition that is believed to represent an allergic reaction to antigens from fungi that have colonized the sinonasal tract. Management of Allergic fungal sinusitis (AFS) is divided into medical and surgical management. In medical management, topical steroids, systemic steroids, and immunotherapy may be adjuncts to surgical treatment. Surgery remains to be the mainstay of treatment for AFRS. Up to our knowledge, no previous studies have described the effects of medical treatment as a solo treatment for AFRS.

Case presentation: In this case report, we present a case of a patient with AFRS that resolved completely with medical therapy alone, and therefore her surgery was canceled. Our patient is a 40-year-old lady known asthmatic patient who presented to our clinic with a picture of right-sided allergic fungal sinusitis in 2015. The patient was started on medical therapy which included intranasal steroid and saline irrigation (0.5 mg of budesonide mixed with 250 ml normal saline, half of the mixture is given in the morning and a half at night) plus a short course of systemic steroids (prednisolone) and was booked for surgery. However, before her surgery date, the patient stated that a large piece of what appeared to be a polyp came out of her nose. A CT scan was repeated and showed near-total resolution of the disease.

Conclusion: Management of AFS divided into medical and surgical, medical therapy alone can be effective in the treatment of AFRS, however, the disease recurrence may occur and surgical treatment is needed.

Key words: Allergic fungal sinusitis, Chronic rhinosinusitis, Nasal polyposis, Intranasal corticosteroids, Functional endoscopic sinus surgery

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INTRODUCTION

As a type of noninvasive fungal sinus illness, AFRS is associated with the clinical entity of fungus ball (mycetoma), which is distinct from and unrelated to invasive fungal sinus pathology. The presence of allergic fungal mucin, a thick, persistent, eosinophilic secretion with distinctive histologic findings, is a key feature of AFRS [1]. Patients usually present with gradual nasal obstruction, purulent rhinorrhea, postnasal drainage, or headaches. Patients may complain of the production of semi-solid nasal crusts that, upon inquiry, match the gross description of allergic fungal mucin.

A comprehensive clinical history is required to make a diagnosis. Typically, the patient will have a history of sinus disease that has been resistant to medicinal and even surgical treatment directed primarily at bacterial rhinosinusitis. Several antibiotic courses and topical nasal treatments may have been used, but with little success. A young, immunocompetent patient with unilateral or asymmetric involvement of the paranasal sinuses, a history of atopy, nasal casts, and polyposis, and

a lack of substantial discomfort are all unique aspects of AFRS that can alert the physician to a possible diagnosis [2,3].

Now a day, the Bent and Kuhn criteria are widely considered the gold standard for diagnosis of AFRS. Patients must meet all of the major diagnostic criteria, while minor criteria are used to support the diagnosis but are not utilized to make a diagnosis. A positive fungal stain of sinus contents removed at the time of surgery, as determined by history, skin testing, or in vitro testing; nasal polyposis; characteristic computed tomography (CT) scan findings; the presence of eosinophilic mucin without invasion; and a positive fungal stain of sinus contents removed at the time of surgery are the major criteria. A history of asthma, the unilateral predominance of disease, radiographic evidence of bone erosion, fungal cultures, Charcot-Leyden crystals in surgical specimens, and serum eosinophilia are among the minor criteria [4].

CASE PRESENTATION

Our patient is a 40-year-old lady known asthmatic patient who presented to our clinic with a picture of right-sided allergic fungal sinusitis in 2015. Nasal endoscopy showed right Meltzer grade 4 nasal polyp completely obstructing the nasal cavity. Her serum eosinophil count was within the normal range, but the IGE level was 1580 Ul/ml. A skin allergy test and radioallergosorbent (RAST) test showed that the patient is allergic to Alternaria alternata, mugwort, Russian thistle, plantain, as well as many other common allergens. Her initial CT scan showed heterogeneous complete opacification of the right maxillary, anterior and posterior ethmoids, sphenoid, and frontal sinuses with central hyperdensity and expansion of the affected sinuses and lateral bowing of the lamina papyracea (Figure 1). The patient was started on medical therapy, which included intranasal steroid and saline irrigation (0.5 mg of budesonide mixed with 250 ml normal saline, half of the mixture is given in the morning and a half at night) plus a short course of systemic steroids (prednisolone) and was booked for surgery. However, before her surgery date, the patient stated that a large polyp had come out of her nose. A repeated CT scan showed near-complete sinusitis resolution, and the Lund Mackay score dropped from 12 to 2 (Figure 2). Therefore, her surgery was canceled, and the patient continued medical treatment and continued to follow-up in our clinic.

In 2016, the patient was noted to have a grade I polyp, and a CT scan was ordered; however, the patient did not do the CT scan and disappeared from our clinic because of pregnancy. Four years later, in February 2020, the patient

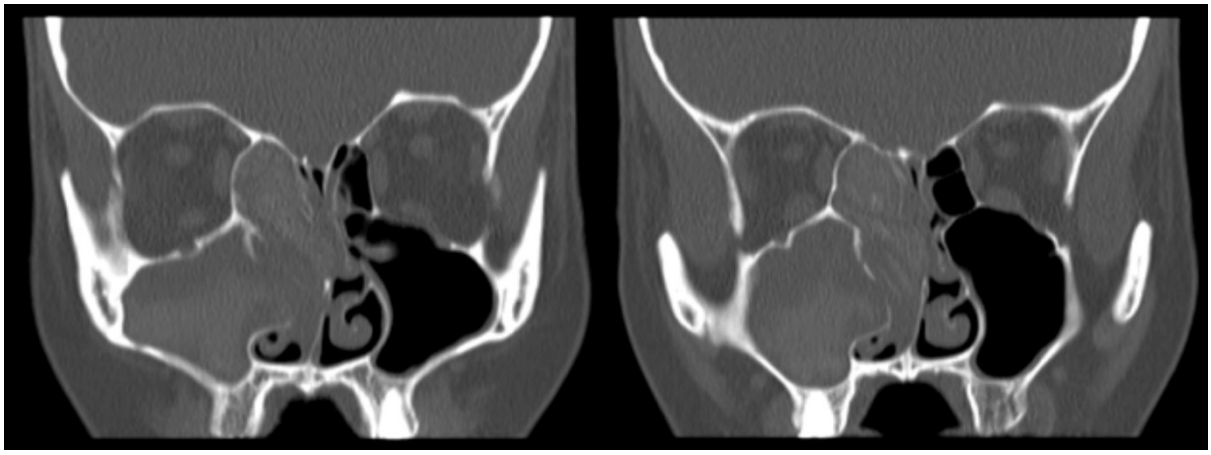

Figure 1: Initial CT scan showing complete, heterogenous opacification of the right maxillary and ethmoid sinuses with central hyper density with the expansion of the affected sinuses and lateral bowing of the lamina papyracea.

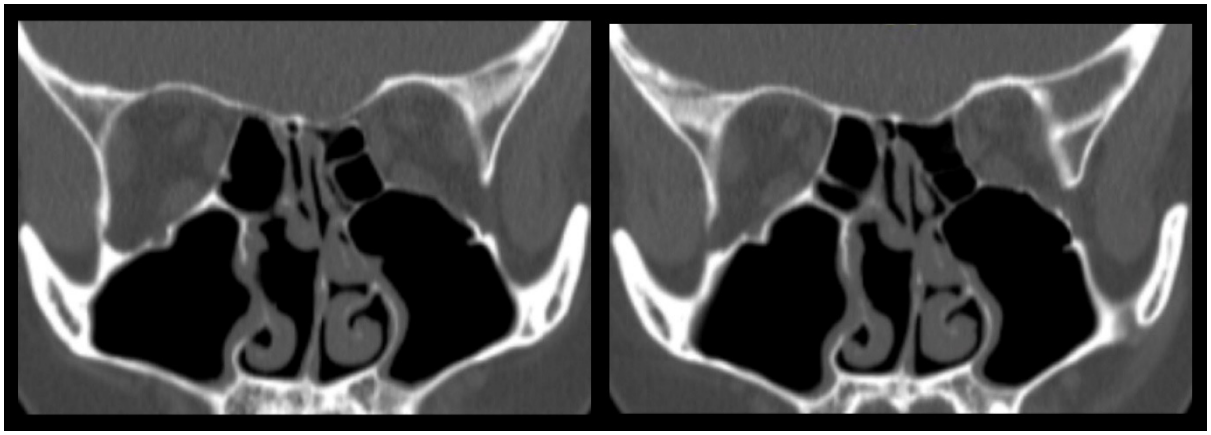

Figure 2: CT scan showing near-complete resolution of the sinusitis after starting the patient on medical treatment.

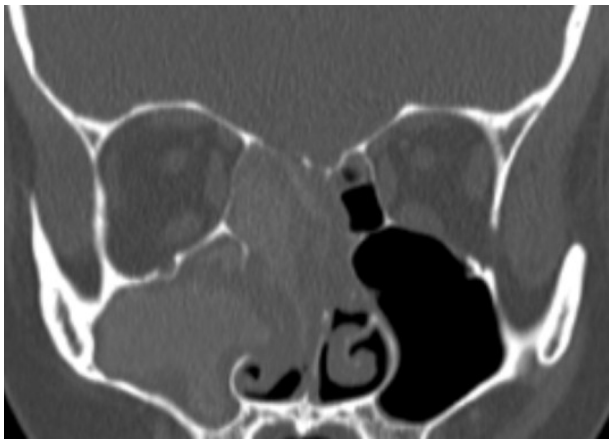

Figure 3: CT scan showing recurrence of AFRS on the right side.

presented again to our clinic with similar complaints. A repeated CT scan revealed a recurrence of the right-sided sinusitis associated with orbital symptoms (Figure 3). The patient was booked for functional endoscopic sinus surgery, and extensive fungal debris and allergic mucin were noted and debrided. The patient recovered well and was discharged home the following day on intranasal steroid and saline irrigation and was given a follow-up in the clinic. The patient presented two weeks later and was doing very well. Histopathological analysis and tissue cultures were consistent with the diagnosis of AFRS.

DISCUSSION

The most frequent form of fungal sinusitis is allergic fungal sinusitis, which is caused by an IgE-mediated hypersensitivity reaction to fungal components, with a prevalence of 6-9 % among all rhinosinusitis cases requiring surgery. The disease is usually bilateral and asymmetric, encompassing many sinuses and frequently involving the nose. Patients with proptosis, telecanthus, or gross facial dysmorphia usually have a healthy immune system and a history of atopies, such as allergic rhinitis or asthma Dematiaceous (Bipolaris, Curvularia, and Alternaria) and hyaline molds are among the causes agents (Aspergillus and Fusarium) [5,6].

Surgical treatment is the cornerstone of the management of AFRS, and medical treatment can be added for symptomatic relief. Medical management consists of topical and systemic steroids. There is no consensus in the literature on the optimal dosing of corticosteroids [1]. In our institution, we commonly prescribe topical steroids irrigation using the following formula: 0.5 mg of budesonide mixed with 250 ml normal saline. Half of the mixture is given in the morning and a half at night. We usually add oral prednisolone 20 mg daily for one to three weeks. The same regimen of topical and oral steroids is usually prescribed postoperatively. Immunotherapy is a controversial treatment of AFRS, and we are not currently prescribing it in our practice. Antifungal therapy used to be given because of high recurrence rates after surgery but has largely fallen out of favor with the advent of steroids and immunotherapy [1]. One study found that oral corticosteroids were effective in reducing disease activity and avoiding recurrent sinus surgery and that IgE levels in patients revealed the clinical status and predict future disease recurrence. Patients who undergo sinus surgery for recurrence are followed closely to ensure the best possible outcome together with aggressive medical management helps to reduce the likelihood of further recurrences [7]. One study showed no improvement in the radiographic appearance of the disease or symptoms in patients treated with oral terbinafine for six weeks [8]. Many other studies have evaluated the role of intranasal antifungals with varying results [9]. One case of refractory AFRS showed significant improvement after taking Dupilumab [10]. Medical management is used as an adjunct to surgery and has not been described as a solo treatment for AFRS in the literature up to our knowledge. In our practice, we have seen some patients that improve significantly with maximum medical treatment alone, such as the case presented in this paper. This can save some patients from undergoing surgical management and reserve the surgical option for those who need it.

CONCLUSION

Medical therapy alone can be effective in the management of AFRA, save the patients from undergoing extensive surgeries, and reserve the surgical option for those who need it. Recurrence of ARFS needs endoscopic surgery. More studies are needed to evaluate the effects of medications as a solo treatment and assess the role of immunotherapy in the management of AFRS.

STATEMENT OF ETHICS

The patient has given his informed consent to publish his case.

CONFLICT OF INTEREST

There was no conflict of interest.

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