



Complete Resolution of Maxillary Fungal Ball with Only Topical Intranasal Corticosteroids: A Case Report

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Abstract

Fungal ball is non-invasive type of fungal sinusitis. It might present with facial pain or pressure, nasal obstruction, secretions or decreased sense of smell, depending on the size and location of the sinus that is involved. The diagnosis is usually suspected by the radiological appearance on CT scans and confirmed eventually by histopathological studies. The mechanism of incidence is not yet clearly understood. Endoscopic surgical debridement and aeration of the involved sinuses is the current therapeutic modality. This is a case report of a Saudi male who was diagnosed with fungal ball in the maxillary sinus, who refused surgery and treated with intranasal steroid spray that resulted in an exemplary resolution.

Keywords: Fungal ball; Nasal obstruction; CT scans; Endoscopic surgical debridement

Introduction

Fungus ball is a subtype of non-invasive fungal sinusitis, composes of matted fungal hyphae. Fungus ball was previously known as 'Aspergillomas' as *Aspergillus* was the most commonly involved fungus. However, this term was later changed, owing to the detection of other different fungal species [1,2]. The condition has been frequently reported among middle-aged females and immunocompetent patients [3]. Fungal ball commonly presents in one sinus only, with the maxillary sinus being the most frequently affected (94%), and sphenoid sinus the second most common [4]. There are no statistics on condition prevalence and incidence. In addition, the pathology is not yet clearly understood and no guidelines for management [5]. Diagnosis of a fungus ball is approached through histopathology, typical findings include matted fungal hyphae with no affected nearby structures as bone, mucosa, and blood vessels [2]. Being a non-invasive lesion, antifungals are not suitable, and endoscopic sinus surgery is the possible therapeutic option [6]. This report represents a case of middle-aged male diagnosed with fungus ball in the maxillary sinus and demonstrated a significant improvement after receiving intranasal steroid spray.

Case Presentation

A 45-year-old Saudi gentleman with a known history of dyslipidemia and type-2 diabetes mellitus presented to our rhinology clinic, complaining of progressive right nasal obstruction over the last six months. It was associated with nasal discharge, headache, facial pain, and allergic symptoms. There was no aggravating or relieving factor. No history of epistaxis and no reported orbital symptoms such as visual loss or diplopia. Also, no he denied any other remarkable otolaryngologic symptoms. On examination, nasal endoscopy revealed deviated nasal septum to the left side, hypertrophy of right inferior turbinate and right middle meatus discharge. There was no a nasal polyp or masses and the nasopharyngeal exam was normal. Complete ENT, Head and Neck examination was otherwise unremarkable, including cranial nerve examination. All laboratory investigations including a full blood panel, clotting profile, kidney function test, and hepatic enzymes were within normal values. Computed Tomography (CT) scan studies of the paranasal sinuses revealed a heterogenic lesion that is filling and mildly expanding the right maxillary sinus. Fortunately, there was no noted sign of bony erosion or adjacent tissue invasion. Deviated nasal septum to the left side, hypertrophy of the right inferior turbinate was also noted (Figure 1). The patient was offered sinus surgery to eradicate the disease and ventilate the sinus and also to confirm the pathology through histodiagnostic studies. However, patient refused any surgical intervention and also did not want to take oral steroids, as he was suffering from diabetes mellitus. We gave him a trial of intranasal corticosteroids (mometasone topical nasal spray, 2 sprays at night for 2 months) and a regular follow up clinic visit. Notably, his symptoms have dramatically improved upon his follow up visit and the middle meatus was

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Figure 1: Deviated nasal septum to the left side, hypertrophy of the right inferior turbinate was also noted.

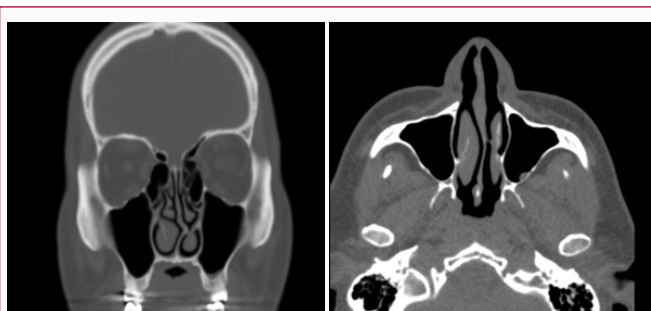


Figure 2: The post treatment CT scan.

clear of any discharge. Patient continued to be symptom-free upon his subsequent visit. We decided to repeat his CT scan to reassess his situation. Surprisingly, his post treatment CT images showed complete resolution of the previous right maxillary sinus pathology (Figure 2).

Discussion

Fungal ball is considered as a non-invasive class of fungal sinusitis that entails accumulation of fungal hyphae in the paranasal sinus, without invasion of underlying mucosa and other adjacent tissues [7]. Third condition most commonly affects the maxillary sinus and it has been increasing in the last decade [7]. Among subjects undergoing surgical intervention because of chronic inflammatory diseases of the paranasal sinuses, fungal balls were detected in 3.7% [8].

Although some published reports suggested that filling of dental cavities may be a risk factor for fungus ball formation through direct aerocontamination *via* sinus ostium, the exact pathophysiology remains unclear [9]. In a retrospective analysis of 173 cases, only 18 subjects had dental cavities overfilling. According to the authors, aerocontamination hypothesis is not plausible due to the fact that sphenoid sinus should have been more at risk given the location of its ostium rather than the maxillary sinus which is the most predominantly affected sinus. The authors also have not detected any environmental factors [10], which is consistent with a previous report [11].

The medical management of fungus ball has not yet clearly established. However, Endoscopic surgical intervention, with image guidance if needed, represents the mainstay effective and safe management option until now [7]. Surgeons need to eradicate fungal material, ventilate and clean out the involved sinuses through an endoscopic-guided approach. Tissues sampling from debris material and adjacent mucosa should be taken as well.

The histopathological exam is the principal diagnostic tool of the fungal ball. Previous research indicated that cultures are not effective in detecting fungal ball sinusitis and only 10-30% had positive results [12]. This low sensitivity of culture testing may be attributed to the fact that most fungi are present outside the mucosa. While culture is also more time consuming, the histopathological investigation is rapid and precise [12]. In addition, a sample from the nearby mucosa should be examined to exclude invasive fungal sinusitis [2].

The potential role of topical steroids as a sole therapy—as reported in the present case—is not established, although it is non-invasive option that lessens the socioeconomic burden of surgical interventions. This case report could raise the potential of such a trial in selected non-operable patients or those who has limited disease and electing for a non-invasive option, till further prospective well-designed studies are made to assess its efficacy and safety. The present report in fact is also limited by a lack of biopsy examination; thus, allergic fungal sinusitis might be considered in the differential diagnosis. Further and more importantly, fungal ball needs to be followed up especially in immunocompromised patients as the condition may progress to invasive fungal sinusitis [12].

Conclusion

There is mounting progress in the understanding of fungal balls; however, it might be challenging to manage with the absence of clear guidelines and statistics. This article reported a case of fungal ball that showed complete resolution with only topical steroids. Nonetheless, given the lack of sufficient controlled trials, it is still not reasonable to recommend steroids as a sole therapeutic choice. Thus, well-established prospective clinical trials are warranted to decide about its efficacy and safety.

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