

Isolated Posterior Ethmoidal Aspergilloma: A Rare Presentation of Fungal Rhinosinusitis

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ABSTRACT

Fungal rhinosinusitis is broadly classified into invasive and noninvasive categories depending upon the vascular invasion. Aspergilloma or fungal ball is a noninvasive type of fungal sinusitis which is caused by the fungus *Aspergillus*, identified by nonseptate hyphae. It is mainly seen in immunocompetent individuals involving the maxillary sinus. We present here a rare case of isolated posterior ethmoidal aspergilloma. The patient underwent endoscopic sinus surgery, and at six months follow up, nasal endoscopy showed a healthy postoperative cavity without any residual or recurrent disease.

Isolated posterior ethmoidal aspergilloma is an uncommon presentation of fungal rhinosinusitis. It should be considered in the differential diagnosis of a persistent unilateral heterogeneous posterior ethmoidal opacity. Endoscopic surgical clearance provides effective treatment with a favourable outcome.

A 55 year old diabetic male presented to us with unilateral nasal obstruction and headache for two years. On examination, there was left sided Osteomeatal complex blockage. Computed tomography of the paranasal sinuses demonstrated an isolated heterogeneous opacity involving the left posterior ethmoid region. The pt was taken up for functional endoscopic sinus surgery under general anesthesia. Intraoperatively fungal debris was seen identified within the left posterior ethmoid sinus and was completely removed. Histopathology showed Aspergilloma confirming the diagnosis of an isolated posterior ethmoidal fungal ball. The postoperative course was uneventful. At six months follow up, nasal endoscopy showed a healthy postoperative cavity without any residual or recurrent disease.

Discussion: Fungal ball is a non invasive form of fungal rhinosinusitis characterized by accumulation of fungal elements within a sinus without tissue invasion. Isolated posterior ethmoidal involvement is uncommon and may present with nonspecific symptoms resulting in delayed diagnosis. Computed tomography plays an important role in identifying the involved sinus and the extent and helps to distinguish from invasive forms. Complete endoscopic clearance and restoration of sinus ventilation constitute the mainstay of treatment.

Conclusion: Isolated posterior ethmoidal aspergilloma is an uncommon presentation of fungal rhinosinusitis. It should be considered in the differential diagnosis of a persistent unilateral heterogeneous posterior ethmoidal opacity. Endoscopic surgical clearance provides effective treatment with a favorable outcome.

Keywords : Aspergilloma, posterior ethmoid, fungal rhinosinusitis

INTRODUCTION

Fungal rhinosinusitis represents a heterogeneous group of disorders characterized by the presence of fungus within the nasal cavity and paranasal sinuses. The clinical behaviour of the disease varies considerably according to the interaction between fungal organism and the host immune response. It depicts the spectrum of disease which is dependent on the host immune response.¹ The immunocompetent individuals exhibit the non invasive form of the disease wherein the fungi is well contained within one sinus leading to the formation of fungal

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ball due to heightened immune response. On the other hand the immunocompromised individual show the invasive form of the disease whereby tissue invasion forms the hall mark predisposing the individual to intracranial complications.²

The non-invasive forms include allergic fungal rhinosinusitis and fungal ball (mycetoma) A fungal ball consists of a conglomeration of fungal hyphae within a sinus without any invasion of the surrounding mucosa. Aspergillus is the most commonly found fungus. Isolated involvement of posterior ethmoid is highly unusual. Such a location may present a diagnostic challenge because of non specific symptoms which may mimic other pathologies radiologically.³

We report an unusual case of an isolated posterior ethmoidal aspergilloma in a 55 year old male successfully treated by FESS.

CASE REPORT

A 55-year-old male presented to the Department of ENT with complaints of left sided nasal obstruction and headache for two years. The symptoms were persistent and gradually progressive. The patient was a known case of diabetes mellitus. However, there was no history or clinical evidence of any other immunocompromising condition. DNE showed the left basal spur with OMC blocked left side. Computed tomography of the PNS revealed an isolated heterogenous opacity involving the left posterior ethmoidal region (Figure 1).

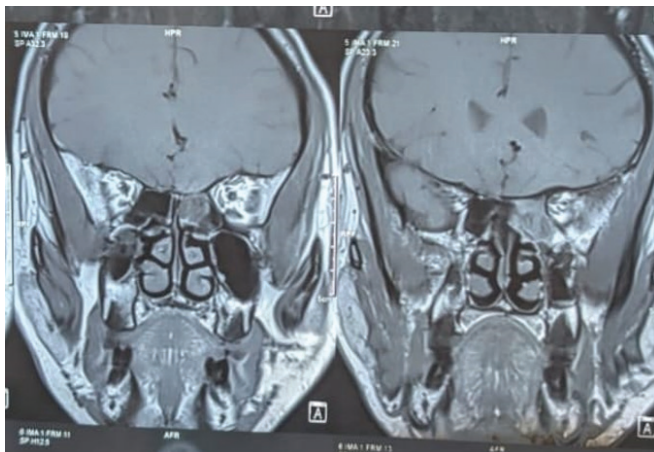


Figure 1: MRI showing the heterogenous opacity in the posterior ethmoid

Rest of the sinuses were not involved. Considering the persistent unilateral symptoms and radiological findings, it was decided to go ahead with surgical exploration and clearance. The patient underwent functional endoscopic sinus surgery under general anaesthesia. Intraoperatively, fungal debris was identified within the left posterior ethmoid sinus

after breaking the ground lamella of the middle turbinate (Figure 2, 3).

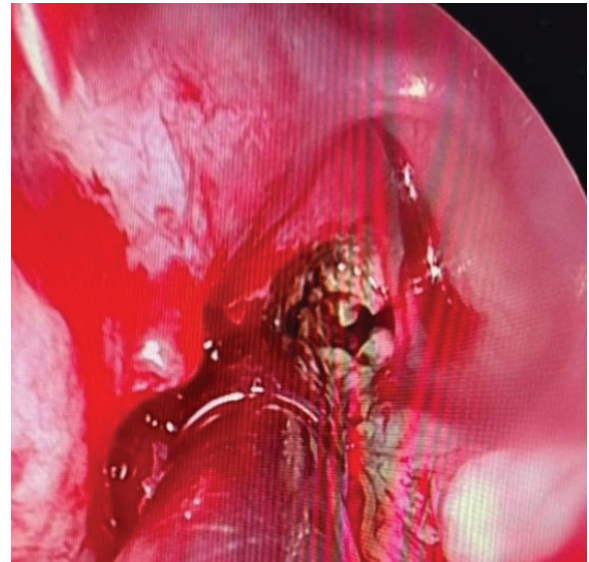


Figure 2: Intraoperative finding of fungal ball in the posterior ethmoid

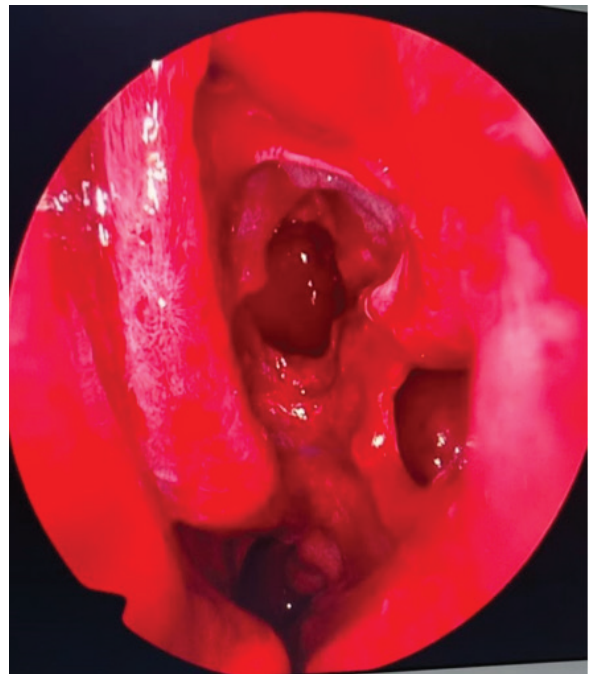


Figure 3: Intraoperative view of all the sinuses opened after clearing the posterior ethmoid of the disease.

The fungal debris was completely cleared endoscopically and the operative specimen was sent for histopathology. The report came as aspergilloma, establishing the diagnosis of an isolated posterior ethmoidal aspergilloma (fungal ball)

The post operative course was uneventful and the patient was kept under regular follow up. At 6 months post surgery, diagnostic endoscopy demonstrated a well epithelised healthy cavity with no residual fungal debris or evidence of recurrence. (Figure 4)

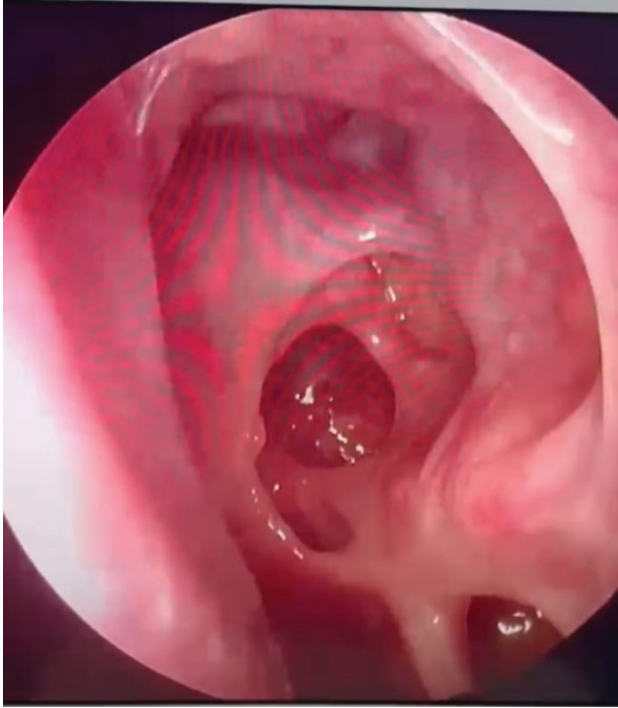


Figure 4: post operative view at 6 months of follow up showing clear sinuses and no residual disease or recurrence

DISCUSSION

Fungal rhinosinusitis represents a heterogeneous group of disorders and is divided into invasive and non invasive forms according to the presence or absence of fungal invasion of sinonasal mucosa, blood vessels, bone or adjacent tissues. Fungal ball, termed as mycetoma or aspergilloma is characterised by accumulation of dense fungal concretions within a sinus cavity without tissue incision.¹⁻³

They are usually encountered in immunocompetent individuals and is limited to only single sinuses, the maxillary sinus is by far the most frequent site followed by the sphenoid, whereas the ethmoidal involvement is distinctly uncommon. In a large series of 175 surgically treated fungal balls. Dufour et al, reported 150 maxillary, 20 sphenoidal and only 4 ethmoidal lesions, illustrating the rarity of ethmoidal localization.⁴

The present case is particularly unusual because the fungal ball was confined to posterior ethmoid of one side only, very few comparable cases have been documented, Lee described a fungal ball within the most posterior ethmoid cell, emphasizing that isolated posterior ethmoid involvement is extremely rare and may be difficult to diagnose preoperatively.⁶ These reports closely resemble the anatomical distribution observed in our patient and support the rarity of the presentation.

The patients present with very nonspecific clinical manifestations such as nasal obstruction, nasal discharge, facial discomfort, headache or remain asymptomatic. The indolent course can hence delay the diagnosis. Our case has similar presentation of nonspecific headache and nasal obstruction for two years.¹⁻⁴

Posterior ethmoidal disease warrants particular attention because of its proximity to the skull base, orbit, optic nerve and sphenoid sinuses. Routine anterior rhinoscopy can miss the posterior ethmoidal lesions. Hence persistent unilateral symptoms warrant prompt endoscopic and radiological evaluation.⁵

Computed tomography of the paranasal sinuses plays a central role in the assessment of fungal ball. The pathognomonic finding is unilateral heterogeneous opacification with hyperattenuating calcific or metallic density foci. Absence of calcification with simple opacification was reported by Zhou et al. Hence surgical exploration and histopathology is confirmatory. In the present case there was isolated heterogeneous opacity which corresponded to the intraoperative finding of fungal debris. This concordance between radiological localization and operative findings emphasize the value of careful assessment of isolated unilateral ethmoidal opacification.

The fungal species most commonly found is aspergillus which is characterised by aseptate branched hyphae. Our patient was a known diabetic but had no other immunocompromised condition. Diabetes is associated with invasive form. Hence histopathological demonstration of non invasive nature of the disease is important in diabetic patient.¹⁻⁴

Functional endoscopic sinus surgery is the treatment of choice for localized fungal ball. The principal aims are complete removal of fungal concretions, adequate opening and ventilation of the involved sinuses and preservation of the healthy mucosa. In a study by Dufour et al, 175 patients all fungal balls were treated endoscopically, with a very low rate of recurrence.³ Systemic antifungal therapy is not generally required after surgery. This fundamental distinction from invasive fungal rhinosinusitis is therefore therapeutically important because invasive disease requires substantially more aggressive management. Successful FESS is the treatment of choice as reiterated by studies conducted by Lee et al.⁴

The novelty of this case is the unusual occurrence of this case in posterior ethmoid. Recognition of this entity is important as it can be interpreted as chronic inflammatory disease, mucocele, polypoidal lesion. Fungal ball should therefore be included in the differential diagnosis of persistent unilateral heterogeneous opacity even in the absence of classic intralacinal calcification.

CONCLUSION

Isolated posterior ethmoidal aspergilloma is a rare form of non invasive fungal rhinosinusitis. Its clinical presentation may be nonspecific and diagnosis requires a high index of suspicion when persistent unilateral symptoms are associated with isolated heterogeneous posterior ethmoidal opacification on CT.

Endoscopic surgical exploration permits both diagnosis and definitive treatment. Complete removal of fungal debris with restoration of sinus drainage provides excellent disease control.

Histopathological examination is mandatory to confirm the fungal etiology and to exclude tissue invasion. The favourable 6 month outcome in the present patient further supports FESS as an effective treatment for localized posterior ethmoidal fungal ball.

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