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Case Report

Unraveling a rare medical anomaly: a case report on the incidental discovery of a mixed fungal ball with parasitic elements

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ABSTRACT

Fungal ball is a type of fungal rhinosinusitis (FRS) that is chronic, non-invasive, and extramucosal. A fungal ball is a non-invasive accumulation of dense conglomeration of fungal hyphae in one sinus cavity Sinonasal fungal ball is known to be the most common form of fungal sinusiti. It typically affects immunocompetent individuals and appears as a unilateral lesion between the fourth and sixth decades of life. The most commonly involved sinus is the maxillary sinus. Patients are often asymptomatic, but some patients develop chronic mucopurulent rhinorrhea. Treatment is surgical, with removal of the fungal contents of the involved sinus, and no subsequent treatment is indicated, given the process is noninvasive. Here in we report the case of a 64-year-old gentleman diagnosed with fungal ball of maxillary sinus. Patient was asymptomatic and the fungal ball was identified as an incidental finding on imaging for stroke. The histopathological examination necrotizing lesion showing entangled septate, aseptate and pigmented fungal structures and non-viable parasitic structures noted. No viable tissue was seen.

Keywords: Fungal ball, Maxillary sinus, Mixed fungal elements, Parasite maxilla

INTRODUCTION

Fungal sinusitis is classified as invasive (acute invasive fungal sinusitis, chronic invasive fungal sinusitis, and granulomatous invasive fungal sinusitis) and noninvasive (allergic fungal sinusitis and sinonasal fungal ball). A fungal ball is described as the noninvasive accumulation of a dense conglomeration of fungal hyphae in one sinus cavity, usually the maxillary sinus.[1,2]

Sinonasal fungal ball is known to be the most common form of fungal sinusitis, and it can be completely cured by proper surgical removal.[3] The diagnosis of sinonasal fungal ball is confirmed by histopathological findings of a high number of hyphae and mycotic colonization, and is further supported by culturing of specimens. A case of 64-year-old gentleman with maxillary sinus fungal ball with mixed septate and aseptate hyphae. In addition to the fungal elements non-viable parasitic elements were also identified. To our knowledge, this is the only case of its kind presented.

CASE REPORT

A 64-year-old gentleman presented to us with complains of recurrent nasal discharge since several years. Patient developed a stroke and during imagining was diagnosed with right sided maxillary sinusitis - fungal origin. Patient is a case of hypertension, type 2 diabetes mellitus, dyslipidemia. clinical examination was unremarkable. The patient underwent functional endoscopic sinus surgery. Intra-operatively, a fungal ball was identified and extracted from the right maxillary sinus. It was found to be non-invasive. The histopathological examination revealed

necrotizing lesion showing entangled septate, aseptate and pigmented fungal structures and non-viable parasitic structures noted. No viable tissue was seen. KOH mount showed aseptate and septate hyphae which were suggestive of mixed fungal infection. Fungal culture showed no growth. After consulting with the infectious disease team, the patient was found to be asymptomatic and required no further treatment. The patient is now in follow-up.

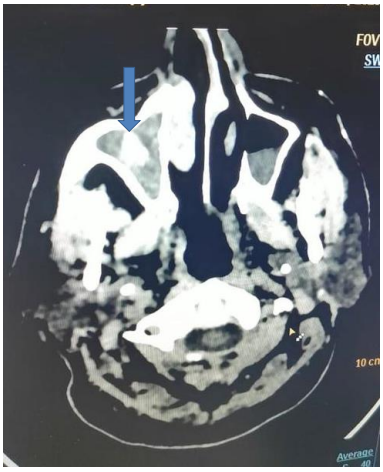

Figure 1: CT PNS showing right maxillary sinusitis with hyperdensity.

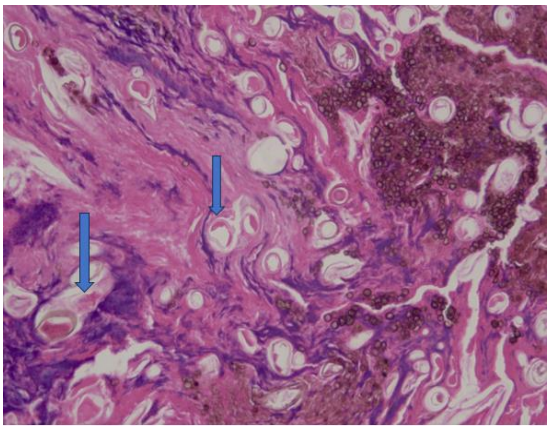

Figure 2: Parasitic structures with pigmented spores.

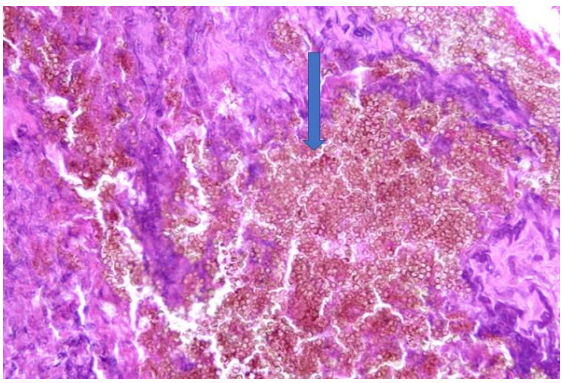

Figure 3: Pigmented spores.

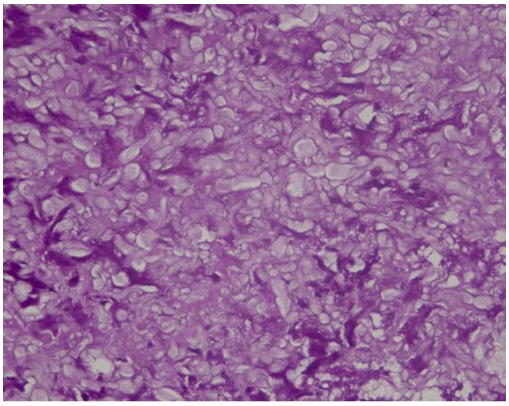

Figure 4: Broad non-septate hyphal structures on PAS stain.

DISCUSSION

Fungal ball is a type of FRS that is chronic, non-invasive, and extramucosal. It typically affects immunocompetent individuals and appears as a unilateral lesion between the fourth and sixth decades of life. The most commonly affected sinus is the maxillary sinus, accounting for approximately 75-98.2% of cases. The sphenoid sinuses are less commonly affected (4-25%), followed by the ethmoid sinuses (2.8-3.4%), frontal sinuses (1.1-2%), and, less frequently, both maxillary sinuses (1.3-7.6%) or any two sinuses (0.6-4.6%). In patients with FB, a variety of fungal species and overlapping bacterial infection (in 58.5-85.19% of cases) have been cultivated.[5] Aspergillus species represent 16.7-45% of positive cultures and about 94.2% on histological examination.[4,7] *Aspergillus fumigatus* is the most common etiological agent in FB, followed by *Aspergillus flavus* and *Aspergillus niger*. *Cephalosporium nidulans*, *Candida albicans*, *Scedosporium apiospermum*, Mucorales, Cladosporium are less common.

Fungal culture is useful for identifying fungal species, but the failure of fungal growth on culture media is common, the positivity rate ranging from 23% to 55.6%.[7,8] This is probably due to the poor viability of the fungal elements in FB.[7,8]

Our patient had a fungal infection in their maxillary sinus that was caused by both septate and aseptate fungal hyphae as well as non-viable parasitic structures. This is a rare case, as there are no reported infections that involve a mix of both fungi and parasites. It is worth noting that the patient did not have any relevant medical history or clinical symptoms.

CONCLUSION

Our case of maxillary fungal ball was diagnosed as an incidental finding on imaging. The patient did not have any nasal complaints prior to the imaging or in the past. The patient was planned for surgery and underwent procedure with the removal of the fungal ball. Histopathological

examination revealed mixed fungal elements namely septate and aseptate hyphae as expected. Along with the fungal elements non-viable parasitic structures were also identified. In our knowledge, the identification of both septate and aseptate hyphae, as well as non-viable parasitic structures in a fungal ball is a rather rare finding and merits documentation.

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