

CASE REPORT

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A Case of Fungus Ball in the Nasal Cavity Imitating a Rhinolith

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ABSTRACT Fungus balls are a chronic and non-invasive fungal infection. Despite being relatively common in the paranasal sinuses, they are rare in the nasal cavity. The etiology of fungus balls in the nasal cavity is unknown. Fungus balls generally develop slowly and asymptotically. When symptomatic, they can cause symptoms similar to those of chronic sinusitis or intranasal masses, such as nasal obstruction, nasal and post-nasal discharge, head and face pain, and smell perception disorders. The preferred treatment of fungus balls in the nasal cavity is functional endoscopic sinus surgery and debridement. This case report describes a 50-year-old woman operated with a preliminary diagnosis of rhinolith but finally diagnosed with fungus ball as a result of histopathological examination.

Keywords: Rhinolith; fungus ball; nasal cavity; foreign body; facial pain

Rhinoliths are rare calcified foreign bodies that form gradually in the nasal cavity through the mineralization of an organic or inorganic, exogenous or endogenous nidus.¹ Rhinoliths are asymptomatic and can be detected incidentally. When symptomatic they can lead to unilateral purulent discharge, nasal obstruction, facial pain, and epistaxis.² Fungus balls are a chronic and non-invasive fungal infection.³ Despite being relatively common in the paranasal sinuses, they are rare in the nasal cavity. Their calcified appearance and causing similar symptoms mean that they may not be easily differentiated from rhinolith.⁴ This case report describes a 50-year-old woman operated with a preliminary diagnosis of rhinolith but finally diagnosed with fungus ball as a result of histopathological examination.

CASE REPORT

A 50-year-old woman presented to our clinic with symptoms of unilateral purulent nasal discharge and nasal obstruction persisting for approximately 10

years. She had previously sought medical attention with similar symptoms on several occasions and had received antibiotherapy. However, there had been no improvement in her symptoms. The patient's own and family histories were unremarkable. Intensive purulent discharge was present in the right nasal cavity and endoscopic examination. The discharge was aspirated, and a hard, gray-black mass beginning from the anterior part of the lower concha and filling the entire nasal cavity was observed. The nasal mucosa and skin of the right nostril were edematous, fragile, and hypertrophic in appearance. Otherwise, general clinical examination was within normal limits. Blood parameters were also within normal limits. Paranasal computed tomography (CT) was performed with a preliminary diagnosis of rhinolith. CT revealed widespread foci of calcification filling the entire right nasal cavity and compatible in appearance with rhinolith. Decreased right maxillary sinus dimensions and loss of aeration were also observed (Figure 1). The giant calcified mass filling the right nasal cavity

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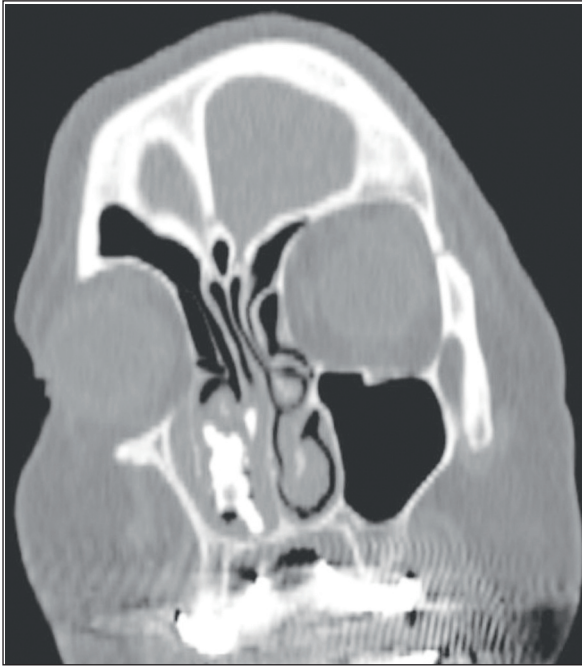


FIGURE 1: Coronal section computed tomography image of a mass containing widespread foci of calcification almost entirely filling the right nasal cavity.

was entirely removed with the assistance of an endoscope under general anesthesia (Figure 2, Figure 3). The nasal cavity was irrigated and cleansed.

The material's texture was bone hard on macroscopic examination. Tightly packed laminated hyphae structures fringed at the margins in cellular debris and blood; and fibrin were observed in sections following acid processing of the material. Staining compatible with fungus was observed at histopathological staining with PAS-Alcian blue and Grocott's methenamine silver (GMS) (Figure 4). Surprisingly, the histopathology result was fungus ball, rather than rhinolith. No postoperative complication was observed, and the patient was discharged in a healthy condition. Her symptoms had entirely resolved at subsequent check-ups. Written informed consent was obtained preoperatively from the patient.

DISCUSSION

Fungus balls are extramucosal accumulations of degenerated fungal hyphae in chronically inflamed paranasal sinuses.⁵ Despite being relatively common in the paranasal sinuses, they are rare in the nasal cavity.⁴ Fungus ball was first described by deShazo in

1998, and clinical criteria for diagnosis were also defined.⁶

The etiology of fungus balls in the nasal cavity is unknown. However, it has been suggested that they can develop in the long term in a poorly ventilated sinus, or iatrogenically via the oroantral route following endodontic therapy.⁷ Diabetes, long-term antibiotic and cortisone use, immunosuppressive

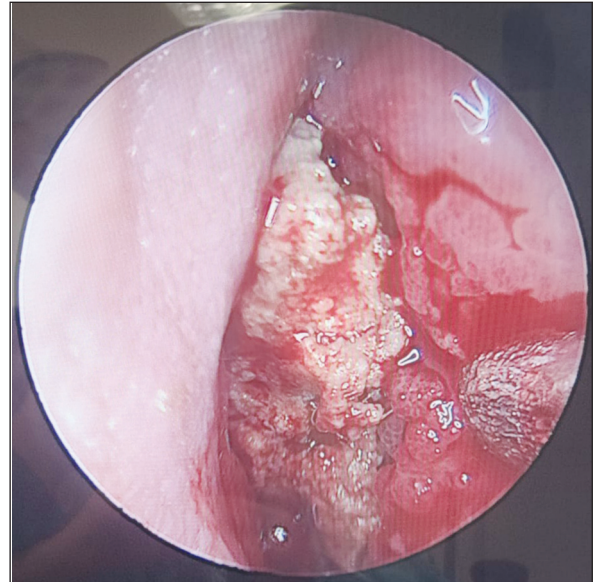


FIGURE 2: A fungus ball in the right nasal cavity mimicking rhinolith was observed in nasal endoscopy during the surgery.



FIGURE 3: Macroscopic appearance of the extracted mass.

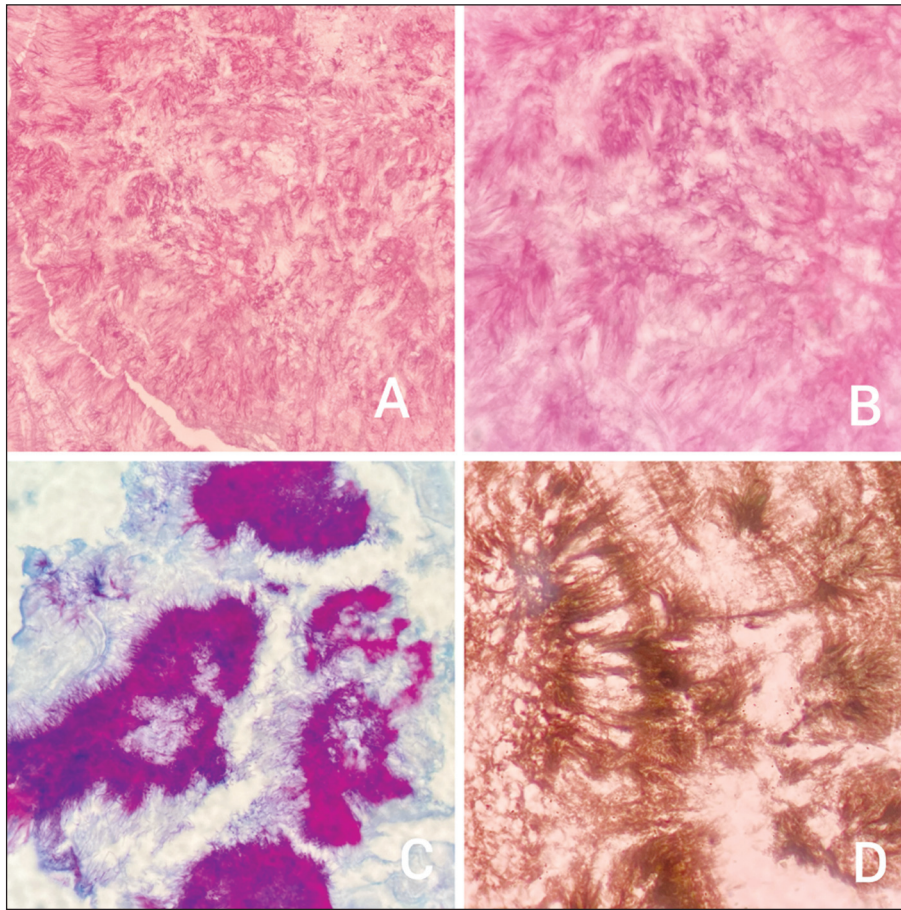


FIGURE 4: A) Tightly packed laminate hyphae structures fringed at the margins in cellular debris, blood, and fibrin, H&E, x40; B) H&E, x100; C) PAS-Alcian Blue, x100; D) GMS, x100.

therapies, and diseases leading to immune failure are known to lay the foundation for fungal infections.⁵ However, several authors have suggested that mitotic infections of the paranasal cavity are more common in healthy patients.⁵ Our patient had no history of diabetes, immune failure, allergy, or any systemic disease. In addition, since the patient's symptoms almost completely regressed, no etiological factor capable of causing fungus ball development could be identified.

Fungus balls generally develop slowly and asymptotically. When symptomatic, they can cause symptoms similar to those of chronic sinusitis or intranasal masses, such as nasal obstruction, nasal and postnasal discharge, head and face pain, and smell perception disorders. Delays may therefore occur in diagnosis.⁸ Since they produce similar symp-

toms they can be easily confused with rhinoliths.⁴ The most pronounced symptoms in our case were nasal obstruction and unilateral purulent nasal discharge, and our preliminary diagnosis was therefore rhinolith.

The preferred treatment of fungus balls in the nasal cavity is functional endoscopic sinus surgery and debridement.⁴ Perioperative and postoperative antifungal therapy is not required in non-invasive fungal infections.⁹ However, antifungal therapy is recommended in case of bone invasion.⁴ Our patient was also treated with endoscopic surgery, with no postoperative antifungal therapy being added. No recurrence was encountered at one-year follow-up.

In conclusion, fungus balls in the nasal cavity are very rare, and can be confused with such in-

transasal pathologies such as rhinoliths in particular. The possibility of fungal ball in the nasal cavity should be considered in cases of long-term refractory rhinosinusitis.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Fatma Atalay; **Design:** Fatma Atalay; **Control/Supervision:** Fatma Atalay; **Data Collection and/or Processing:** Ebru Erol Uzunoğlu; **Analysis and/or Interpretation:** Fatma Atalay; **Literature Review:** Ebru Erol Uzunoğlu; **Writing the Article:** Fatma Atalay; **Critical Review:** Ebru Erol Uzunoğlu; **References and Findings:** Fatma Atalay; **Materials:** Ebru Erol Uzunoğlu.

REFERENCES

1. Seyhun N, Toprak E, Kaya KS, Dizdar SK, Turgut S. Rhinolithiasis, a rare entity: analysis of 31 cases and literature review. *North Clin Istanbul*. 2020;8(2):172-7. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
2. Kose OD, Kose TE, Erdem MA, Cankaya AB. Large rhinolith causing nasal obstruction. *BMJ Case Rep*. 2015;2015:bcr2014208260. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
3. Popko M, Broglie MA, Holzmann D. Isolated fungus ball mimicking mucocele or frontal sinus tumour: a diagnostic pitfall. *J Laryngol Otol*. 2010;124(10):1111-5. [[Crossref](#)] [[PubMed](#)]
4. Bhandarkar AM, Kudva R, Damry K, Radhakrishnan B. Fungus ball in the nasal cavity mimicking a rhinolith. *BMJ Case Rep*. 2016;2016:bcr2016215490. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
5. Ozkiris M, Kapusuz Z, Seçkin S, Saydam L. Fungus ball in concha bullosa: a rare case with anosmia. *Case Rep Otolaryngol*. 2013;2013:920406. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
6. deShazo RD. Fungal sinusitis. *Am J Med Sci*. 1998;316(1):39-45. [[Crossref](#)] [[PubMed](#)]
7. Lee GH, Yang HS, Kim KS. A case of the inferior meatus fungus ball. *Br J Oral Maxillofac Surg*. 2008;46(8):681-2. [[Crossref](#)] [[PubMed](#)]
8. Şahan M, Sözen H, Derin S, Deveer M, Çelik Ö. Konka bülloza kaynaklı fungus topu (miçetoma) [Fungal ball (mycetoma) arise from concha bullosa: a rare case]. *Med J SDU*. 2015;22(4):140-3. [[Link](#)]
9. Thompson GR 3rd, Patterson TF. Fungal disease of the nose and paranasal sinuses. *J Allergy Clin Immunol*. 2012;129(2):321-6. [[Crossref](#)] [[PubMed](#)]