CASE REPORT
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Solitary Fibrous Tumor of the Sinonasal Cavity: Case Report and Literature Review

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ABSTRACT

Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms, most commonly arising in the pleura, but occasionally presenting in extrapleural sites such as the sinonasal tract. Sinonasal SFTs account for less than 6% of head and neck SFTs and often mimic more common nasal pathologies, making diagnosis challenging. The case of a 59-year-old woman with progressive left nasal obstruction, epistaxis, facial paresthesia, and anosmiais reported. Imaging revealed a hypervascular mass (44 × 18 × 43 mm) occupying the left nasal cavity and extending into the adjacent sinuses. Preoperative embolization of the feeding vessels was performed to reduce intraoperative bleeding risk. The tumor was completely resected via an endoscopic approach. Histopathological examination confirmed an SFT with clear margins. Immunohistochemistry showed cluster of differentiation 34(CD34) and signal transducer and activator of transcription 6(STAT6) positivity, along with a low Ki-67 index, indicating low metastatic potential. The postoperative course was uneventful, and the patient remains disease-free at follow-up. Due to their rarity and nonspecific clinical presentation, sinonasal SFTs require a high index of suspicion. Immunohistochemical analysis is essential for definitive diagnosis. Preoperative embolization can be a valuable adjunct in managing vascular lesions. Complete surgical excision is the treatment of choice, and long-term surveillance is recommended to detect potential recurrence.

Keywords: Solitary fibrous tumor, sinonasal tumor, endoscopic surgery, tumor embolization

Introduction

Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms that most commonly arise in the pleura but can be found in various extrapleural locations, including the sinonasal tract.[1-3] In the sinonasal region, these tumors are exceedingly rare, representing less than 6% of all head and neck SFTs.[4,5] These tumors typically present as slow-growing, painless masses and may manifest with symptoms such as rhinorrhea, facial pain, or anosmia.[4] Given their indolent growth and nonspecific clinical presentation, SFTs can be mistaken for more common sinonasal pathologies, such as polyps or inverted papillomas.[5] Several case reports and small series have described sinonasal SFTs, including a nasal cavity case managed endoscopically and reported in this journal by Vermeulen et al.[6] Histopathologically, SFTs are characterized by spindle cell proliferation within a collagenous stroma, often showing hemangiopericytoma-like vascularity. Immunohistochemical staining for markers such as CD34 and STAT6 is crucial for diagnosis.[4] This case report details the presentation, management, and follow-up of a patient with an SFT originating in the sinonasal cavity. A review of the current literature is also provided, discussing the diagnostic challenges and treatment options.

Case Report

A 59-year-old woman presented with a 3-month history of progressive left-sided nasal obstruction, intermittent epistaxis, facial paresthesia, and anosmia. On nasal endoscopy, a friable mass with a tendency to bleed was identified, occupying the left nasal cavity, prompting further imaging studies. A computed tomography (CT) scan revealed a hyperdense lesion measuring approximately 46 × 18 × 38 mm, occupying most of the left nasal cavity (Figure 1A). The lesion extended into the left ethmoid air cells and reached the meatus of the left frontal sinus, causing anterior occupation of the nasal cavity. The mass

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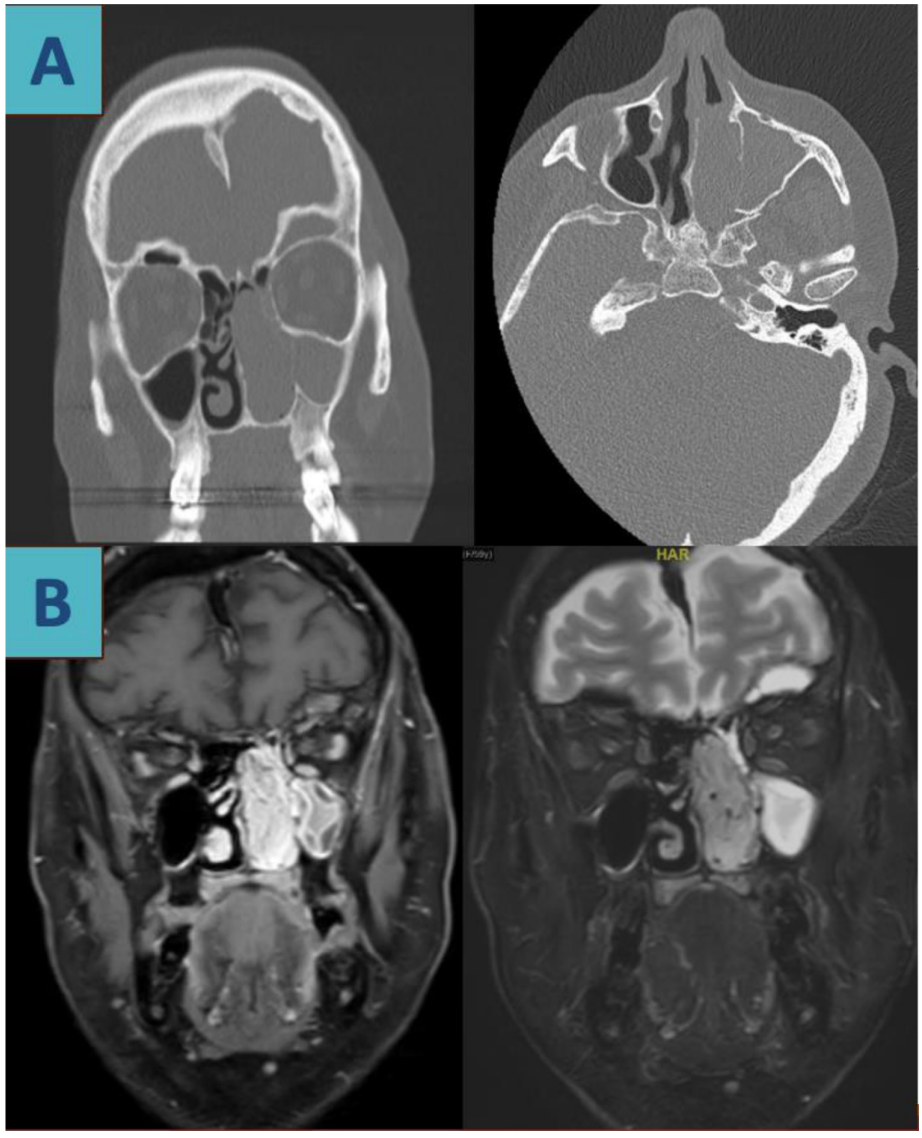

Figure 1. A: CT scan (coronal cut on the left, axial cut on the right) shows a hyperdense lesion occupying most of the left nasal cavity, extending into the ethmoid air cells, reaching the left frontal sinus meatus, and involving the maxillary and frontal sinuses with potential erosion of the maxillary sinus wall. B: MRI (T1 on the left, T2 on the right) reveals a hypervascular mass extending from the left nasal cavity into the left ethmoid air cells and toward the frontal sinus.

also involved the left maxillary and frontal sinuses, with thinning or possible erosion of the maxillary sinus wall. These findings were suggestive of a vascular polyp, with differential diagnoses including an angiomatoid polyp or squamous cell carcinoma.

Main Points

- Sinonasal solitary fibrous tumors (SFTs) are rare, benign mesenchymal neoplasms with nonspecific clinical presentation.
- Preoperative embolization is a useful strategy to reduce intraoperative bleeding in hypervascular sinonasal tumors.
- Endoscopic surgical resection is a safe and effective approach for the complete removal of sinonasal SFTs.
- Immunohistochemical positivity for CD34 and STAT6 confirms the diagnosis and helps distinguish SFTs from other nasal tumors.
- Long-term follow-up is essential due to the potential risk of late recurrence, even in tumors with a low proliferative index.

Magnetic resonance imaging (MRI) confirmed the presence of a hypervascular mass measuring 44 × 18 × 43 mm, extending from the left nasal cavity into the left ethmoid air cells and toward the frontal sinus (Figure 1B). The anterior portion of the nasal cavity was also occupied, with significant involvement of the left maxillary and frontal sinuses, correlating with the CT findings. Given the vascular nature of the mass, preoperative embolization was deemed necessary. Arteriography demonstrated that the most caudal and dorsal aspects of the tumor were being fed by the sphenopalatine branch of the left internal maxillary artery. Successful embolization of this vessel was achieved, significantly reducing intraoperative bleeding risks (Figure 2).

Subsequent endoscopic surgical resection was performed, during which the tumor was found to be attached exclusively to a pedicle located on the medial aspect of the left middle turbinate. The postoperative course was uneventful, and the patient was discharged 24 hours after surgery.

Figure 2. Arteriography revealed that the tumor's most caudal and dorsal portions were vascularized by the sphenopalatine branch of the left internal maxillary artery, highlighting its significant vascular supply.

Histopathological examination confirmed the diagnosis of an SFT with clear resection margins. Immunohistochemistry was positive for CD34, STAT6, and smooth muscle actin, with a Ki-67 proliferation index of 10%, indicative of low metastatic potential. The patient remains in regular follow-up and, to date, has shown no evidence of recurrence.

Discussion

Solitary fibrous tumors of the sinonasal region are rare, accounting for a small percentage of all head and neck SFTs. Their diagnosis is often delayed due to the nonspecific nature of their symptoms and their resemblance to other sinonasal conditions such as polyps, inverted papillomas, or sinonasal carcinomas.[4] In the present case, the patient exhibited typical symptoms of nasal obstruction, epistaxis, and facial paresthesia, all of which can be seen in a wide variety of sinonasal pathologies.[5] The hypervascular nature of the tumor, as demonstrated on MRI, necessitated preoperative embolization to minimize intraoperative bleeding, a strategy supported by similar cases in the literature.[4]

Histopathologically, SFTs are characterized by spindle cell proliferation in a collagenous stroma with prominent vascularity, often resembling hemangiopericytomas. Immunohistochemical analysis is crucial for diagnosis, with CD34, STAT6, and vimentin being the most reliable markers.[4] In this case, positivity for CD34 and STAT6, along with the low Ki-67 proliferation index, confirmed the diagnosis of a benign SFT. Interestingly, while most sinonasal SFTs are benign, approximately 10%-20% of cases in other locations may exhibit malignant behavior.[5]

The primary treatment for SFTs is complete surgical excision. The prognosis is generally favorable if the tumor is fully resected, with recurrence rates being low. However, due to the anatomical complexity of the sinonasal region, achieving clear margins can be challenging, especially in larger tumors.[4] In this case, endoscopic resection with clear margins was achieved, and the patient's postoperative course was uneventful. Long-term follow-up is recommended, as recurrence, although rare, has been reported even in benign cases.[5]

The role of adjuvant therapy, such as radiotherapy or chemotherapy, remains controversial and is typically reserved for malignant or recurrent cases. In this case, given the tumor's low-risk histopathological features and complete resection, no adjuvant therapy was necessary.[4]

Conclusion

Solitary fibrous tumors of the sinonasal cavity are rare, and their diagnosis can be challenging due to the overlap of symptoms with other more common sinonasal conditions. Immunohistochemical staining, particularly for CD34 and STAT6, is essential for accurate diagnosis. Complete surgical excision remains the treatment of choice, with a generally favorable prognosis. Although the risk of metastasis is low, long-term follow-up is essential to monitor for potential recurrences. This case highlights the importance of multidisciplinary management in the treatment of vascularized tumors

of the sinonasal cavity, particularly in the context of rare entities like SFTs.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

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