Angiomatous Antrochoanal Polyp Presenting as a Juvenile Nasopharyngeal Angiofibroma

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Abstract

Objectives:
Participants should be able to discuss the unusual clinical, pathologic, and radiologic features of the angiomatous antrochoanal polyp (AAP) that can mimic a juvenile nasopharyngeal angiofibroma (JNA); and how the management of these two unique entitites differ.

Results:
Epistaxis is a rare presentation of an an22trochoanal polyp (AP) with few such documented cases in the literature. We present a case of a 23-year-old male with severe epistaxis requiring transfusion and radiologic findings inconsistent with a JNA. Final pathology revealed an AP. The clinical, pathologic, and radiologic findings in this case will be discussed as well as comparisons between potential confounding similarities in the presentation of these two distinct entities, ultimately requiring different management.

Conclusion:
Epistaxis is a common presentation of a JNA. However, this clinical feature does not rule out the possibility of less likely etiologies of epistaxis such as AAPs which must be considered in the differential diagnosis to avoid unnecessary interventions reserved for an angiofibroma.

Introduction

The presentation of an antrochoanal nasal polyp (Killian[1] polyp) with significant epistaxis is an exceedingly rare occurrence. There are only fourteen documentedcases in the literature.[2-6] We discuss a case of a patient with an angiomatous antrochoanal polyp (AAP) requiring urgent surgical treatment for significant epistaxis as a first time symptom of this disease process. The clinical, pathologic, and radiographic features of AAPs will be discussed in parallel to those of juvenile nasopharyngeal angiofibromas (JNAs). Considering the unusual presentation of this benign disorder, and its similarity in clinical appearance to JNAs, radiographic imaging is crucial to establishing the correct diagnosis and treatment plan.

Case Report

A 23 year-old male with no significant past medical history presented to an outside institution with severe left sided epistaxis of one day duration. Associated rhinologic symptoms included nasal congestion on the affected side for 2 years, and a visible soft tissue lesion in the anterior vestibule of the left nostril for a year. Due to uncontrollable intractable epistaxis, the patient was transferred to our tertiary care medical center after receiving 2 units of packed red blood cells. He denied prior nasal trauma or digital nasal manipulation. His head and neck examination revealed a rightward deviated nasal septum, significant epistaxis, and a visible pink polypoid lesion encompassing the entire left nasal cavity anterior to the inferior turbinate.

Computed tomography (CT) scanning of the paranasal sinuses showed a large 6.8 cm x 4.4 cm x 3.3 cm polypoid mass arising from the right nasal cavity and extending into the left nasal cavity, with posterior extension through the right choana with bony remodeling along with leftward bowing of the posterior nasal septum; the mass also extended into the nasopharynx and upper oropharynx with inferior displacement of the soft palate (**Fig. 1**). The sphenopalatine foramen (SPF) and pterygopalatine fossa (PPF) were normal in size bilaterally without bowing or expansion. Magnetic resonance (MR) imaging showed a hypointense lesion on T1 with hyperintense T2 signal with heterogeneous enhancement after gadolinium administration alongside extensive sinonasal polyposis without evidence of flow voids (**Fig. 2**).

The patient underwent urgent nasal endoscopy for control of epistaxis. Intraoperative frozen section confirmed the pathologic diagnosis of angiomatous nasal polyp. The polyp extended from the right maxillary sinus, into the right nasal cavity, with extension to the left nasal cavity. Complete endonasal endoscopic resection as well as bilateral maxillary antrostomies, anterior ethmoidectomies, and sphenoid sinusotomies were performed to ensure adequate resection of the polyp and provide for aeration for these sinuses **(Fig. 3).**

The patient's postoperative course was uncomplicated. He was discharged on the first postoperative day and has done well as an outpatient without further epistaxis or nasal obstruction 18 months after surgery.

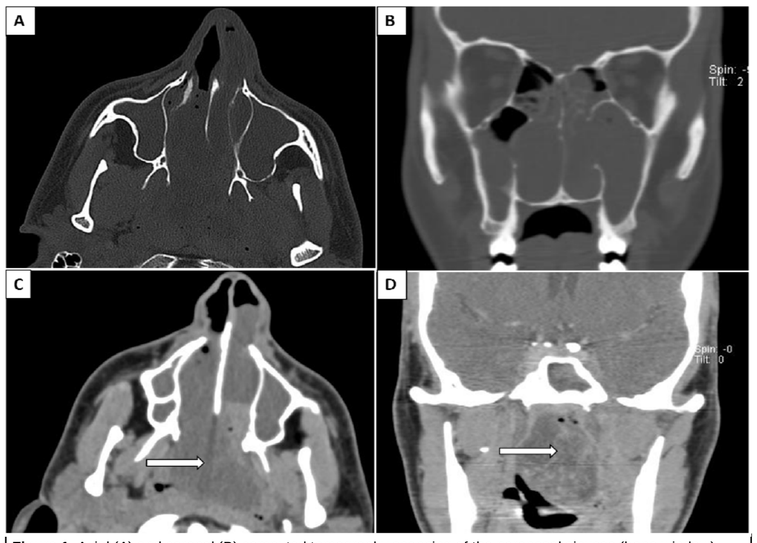

Figure 1. Axial (A) and coronal (B) computed tomography scanning of the paranasal sinuses (bone window) show complete opacification of the nasal cavity and nasopharynx, as well as bilateral maxillary and ethmoid sinus disease. There is no expansion of the sphenopalatine foramen or pterygopalatine fossa. Axial C) and coronal (D) soft-tissue windows show a heterogeneous nasopharyngeal mass with possible necrotic regions.

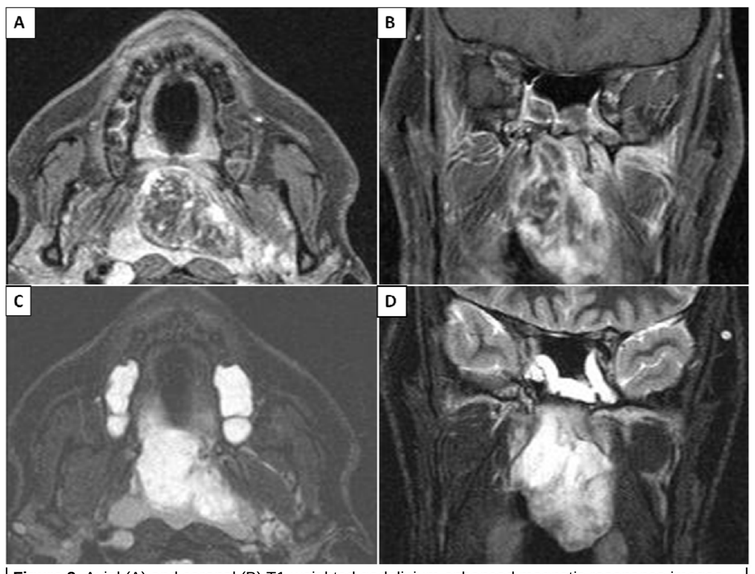

Figure 2. Axial (A) and coronal (B) T1-weighted gadolinium enhanced magnetic resonance images of the paranasal sinuses show an enhancing soft-tissue lesions (white arrows) obstructing the nasal cavity and nasopharynx. Axial (C) and coronal (D) T2-weighted magnetic resonance images show hyperintense lesion obstructing the nasal cavities and nasopharynx.

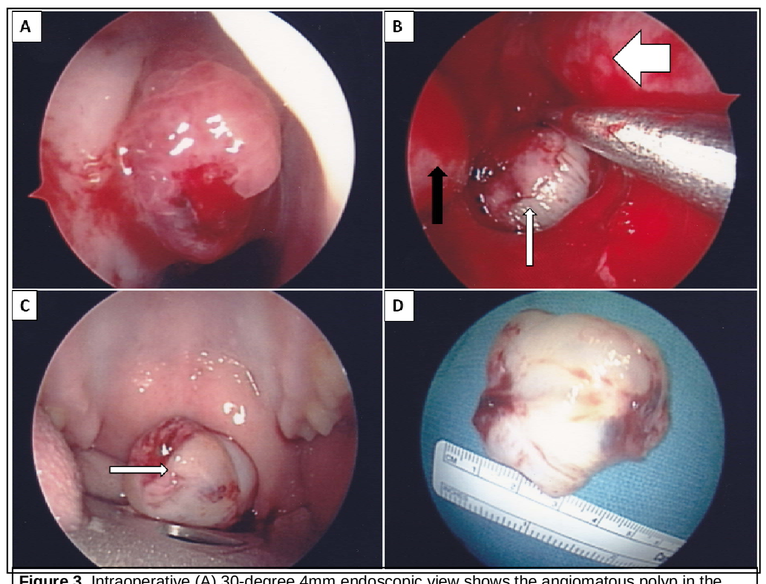

Figure 3. Intraoperative (A) 30-degree 4mm endoscopic view shows the angiomatous polyp in the right nasal cavity. (B) After resection of the bilateral intranasal component, the nasopharyngeal component was pushed inferiorly into the oropharynx for removal (thin white arrow = lesion; black arrow = right inferior turbinate tail; wide white arrow = posterior nasal septum). (C) Lesion being removed transorally. (D) Nasopharyngeal portion of the lesion after removal.

Discussion

•The presentation of an antrochoanal nasal polyp (Killian[1] polyp) with significant epistaxis is an exceedingly rare occurrence. There are only fourteen documented cases in the literature.[2-6]

•The most common benign tumor of the nasopharynx is the angiofibroma which represents approximately 0.5% of all head and neck neoplasms. Presenting symptoms include unilateral nasal obstruction(91%) and epistaxis(59%) and are almost strictly limited to males between the ages of 7 to 21, though outliers have been identified.[7,8] Of the fourteen cases of antrochoanal polyps presenting with unilateral epistaxis, all had concurrent nasal obstruction.[6,9,10]

•The pathologic basis for the development of these two lesions is not clearly understood. One theory is that the JNA derives from paraganglionic cells near the terminal portion of the maxillary artery; it may also arise as a desmoplastic response within an ectopic focus of vascular tissue.[11] The original theory behind vascular antrochoanal polyps was proposed by Batsakis and argued that polyp passing through a confined ostia is subject to dilation, infarction, and neovascularization resulting in an angiomatous polyp.[9 4] The largest series published to date by Syed et al indicates that a highly vascular stroma with marked plasma cell infiltrate is unique to these polyps, and differs from non-angiomatous antrochoanal polyps.

•The point of origin is the nasopharynx, specifically the roof of the SPF. PPF extension has been noted in up to 89% of cases which can cause anterior displacement of the posterior maxillary sinus wall, i.e. the Holman-Miller sign. Also commonly seen is sphenoid sinus extension via the nasopharynx reported in up to 61% of cases.[8] MR imaging can show infratemporal and orbital extension due to superior soft tissue definition, as well as flow voids indicating rapid vascular transport. Diffuse high T1 signal and heterogeneous intermediate to high T2 signal is commonly encountered.[5] If a juvenile nasopharyngeal angiofibroma is radiographically suspected, angiographic imaging is critical for pre-operative angioembolization. Complications associated with angioembolization of JNAs include inadvertent cerebral and ophthalmic embolization causing strokes or blindness, facial nerve palsy, and skin and soft tissue necrosis.

•CT represents the gold standard for diagnosing angiomatous AAPs, which radiographically, are very similar to non-angiomatous antrochoanal polyps. By definition these polyps originate in the maxillary sinus, extend through the maxillary ostium, and continue posteriorly toward the choanae. The hallmark feature differentiating this lesion from a JNA is lack of PPF involvement despite nasopharyngeal extension. Case reports of AAPs show low T1 signal, high T2 signal, and lack of flow voids. Interestingly, administration of IV gadolinium also shows peripheral vascularity of the antral component, with diffuse vascularity of the choanal segment perhaps indicating vascular compromise and reduced flow through dilated vessels; a finding supporting Batsakis' theory of AAP development.[5]

•A wide array of surgical approaches exist for JNA resection. Tumors limited to the nose, nasopharynx, sphenoid sinus, and pterygopalatine fossa are amenable to endoscopic resection with pre-operative angioembolization. For advanced lesions(stage III) a transpalatal, midfacial degloving with osteotomies, Denker approach, open medial maxillectomy, lateral rhinotomy with Weber-Ferguson approach, or Fisch's infratemporal fossa approach with or without craniotomy may be employed. The surgical trend is towards endoscopic management with reported rates of residual disease at 2.98% and recurrences of 9.32%.[12]

•Radiation therapy is also available for unresectable JNAs or for patients weary of surgical management. Primary treatment involves external beam radiation doses from 3000-5500 cGy with reported recurrence rates of approximately 15%.[13]

Conclusion

The clinical presentation of an angiomatous antrochoanal polyp and a juvenile nasopharyngeal angiofibroma is very similar. The exact etiology of these lesions is still not well understood, but existing data shows their pathogenesis to be quite different. In order to differentiate these entities the CT and MRI are both essential diagnostic adjuncts to nasal endoscopy. Angioembolization for juvenile nasopharyngeal angiofibromas carries serious risks which further underscore the importance of initial radiographic diagnostic accuracy. The treatment modalities vary widely for juvenile nasopharyngeal angiofibromas depending on staging criteria. In contrast, angiomatous antrochoanal polyps can be endoscopically resected without concern for significant blood loss. While these two distinct pathologies can present in a strikingly similar manner, their management is vastly different thereby augmenting the importance of making the correct diagnosis.

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