CASE REPORT

Maxillary sinus hematoma: Current pathogenesis and management

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Abstract We report a case of an organized hematoma of the right maxillary sinus presenting 10 years post trauma with recurrent epistaxis, nasal obstruction, epiphora, facial pain and heaviness. A review of the literature highlights the presentation, diagnostic and therapeutic approaches to this uncommon lesion.

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1. Case report

A 26-year-old man with no significant past medical history presented with 8 months history of right sided nasal obstruction, recurrent epistaxis, blackish nasal discharge, headache, facial pain, heaviness and history of facial trauma 10 years back. He denied previous surgery, or weight loss.

Endoscopic examination revealed right fleshy, bluish mass, bleeds on touch, originating from the middle meatus and occupying the nasal cavity. The left nasal cavity was showing deviated nasal septum to the same side. General examination, biochemical and hematological tests were normal.

CT of the nose and paranasal sinuses revealed a heterogenous soft tissue lesion in the right maxillary sinus extending into the nasal cavity with remodeling and thinning of the medial wall of the maxillary sinus and widened osteomeatal complex (Fig. 1). MRI of the nose and paranasal sinuses showed lobulated mass lesion arising from the maxillary sinus into the nasal cavity causing expansion and remodeling of the sinus walls, heterogeneous signal intensity with dark rim on T2, low signal intensity on T1 post IV contrast (Fig. 2). Preoperative endonasal endoscopic biopsy was taken, the pathologic evaluation showed an inflammatory nasal polyp.

We performed endoscopic right middle meatal antrostomy, the mass was friable, grayish to brown in color and removed in pieces. After partial removal the maxillary sinus mucosa was edematous, friable and polypoidal that was kept intact. The procedure was bloody and therefore it was stopped. Histopathologic evaluation of the material taken was consistent with organizing hematoma.

One month later the patient presented with the same complaints, examination revealed a fleshy red mass extending from the maxillary sinus to the nasal cavity. CT scan of the nose and paranasal sinuses showed an expansile mass occupying the maxillary sinus extending into the nasal cavity with erosion and displacement of the nasal septum to the left. There was heterogeneous contrast enhancement with central hyper density. Right external carotid angiogram was done without

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embolization and showed small pseudo aneurism within the right maxillary sinus supplied by tiny branches of the right internal maxillary artery, which are beyond selective catheterization (Fig. 3).

Endonasal endoscopic right medial maxillectomy was done and the mass was removed completely (Fig. 4). Histopathologic evaluation was consistent with organized hematoma originating in a cavernous hemangioma (Fig. 5).

9 months later the patient is asymptomatic and endonasal examination showed no recurrence with nicely healed mucosa (Fig. 6).
2. Discussion

Organized hematoma is a benign hematoma-like pseudotumor, causing mucosal swelling and bone thinning, and can develop from the nose and paranasal sinuses preferably the maxillary sinus. The lesion, organized hematoma of the maxillary sinus (OHMS) was first described by Tadokoro in 1917 in the Japanese literature. The occurrence of this disease has also been sporadically documented in the English literature in the 1990s and 2000s. To our knowledge, fewer than 100 cases have been reported.

Many terms were used to describe OHMS, such as blood boil, hematoma, hematoma-like mass, and hematocele. But the term “organized hematoma” is most commonly accepted.

Patients range in age between 20 and 76 years; no sex predominance is observed. It occurs in patients with and without a bleeding diathesis. Song et al. state that “organization” means “replacement of hematoma by fibrous tissue”, and this explains the histological findings such as fibrous tissue, neovascularization, and extravasated red blood cells. The formation of a fibrous capsule around the hematoma prevents its absorption and allows for recurrent intracapsular bleeding, progressive expansion, and local bony erosion. This organizing process reflects the clinical feature of the expanding behavior.

As for the disease etiology, Ozaki et al. suggest the negative spiral theory during the repairing process as follows. At first, a blood clot accumulates in the closed space due to various causes of bleeding, including haemangioma formation, bleeding diathesis, postoperative complication, radiation therapy, aggressive fungal infection, facial injury, or inflammation. Next necrosis, fibrosis, and hyalinization occur in turn, and neovascularization develops as part of these biologically healing processes. But blood flow becomes sluggish at the lead of new vessels. As a result, the new vessels become dilated, and rebleeding occurs (Fig. 7).

The majority of the lesions arise in the nasal cavity and maxillary sinus – medial antral wall near the sinus ostium, however, it has been reported to originate in the ethmoid and frontal sinuses.

Clinically, symptoms do not usually occur while the lesion remains localized to maxillary sinus. Gradual enlargement causes erosion and displacement of the adjacent bony structures leading to the typical symptoms of progressive cheek swelling, nasal congestion, obstruction and epistaxis in conjunction with the physical exam findings of medial displacement of the lateral nasal wall, proptosis, and hypesthesia in the distribution of the second division of the trigeminal nerve. Tabaei et al. reported 3 months of the mean duration of symptoms before diagnosis (range 2–13 months).

A preoperative diagnosis is important for planning the therapeutic strategy. Differentiating an organized hematoma is challenging, because the differential of an expanding maxillary sinus mass includes, mucocele, cholesterol granuloma, antrochoanal polyp, haemangioma, fungal ball, inverted papilloma, minor salivary gland tumor, and malignancy.

Common CT findings include, expanded maxillary sinus with erosion of the medial wall including the uncinate process, heterogeneous high attenuation on pre-contrast images. While, it has a patchy heterogeneous enhancement post-contrast administration intermingled low/intermediate/high signal intensity was seen in both T1- and T2-weighted MRI images.

An operation is necessary to cure the organized hematoma and no other treatment is available to relieve the associated symptoms. Total removal is curative regardless to the approach. Various approaches have been used, if the lesion is small and an adequate endoscopic operative field can be achieved, endoscopic sinus surgery (ESS) should be used, via middle and inferior meatalantrostomies. On the other hand, if the lesion is big, with bone destruction, more invasive approaches can be used such as, lateral rhinotomy incision, Caldwell-Luc operation, Denker operation, and combined endoscopic approach and Caldwel-Luc incision. There is little difference in the intraoperative bleeding between the ESS, and the other approaches. To decrease the intraoperative bleeding volume, embolization can be performed if the bleeding artery is found with angiography.

Suzuki et al. stated several requirements for the application of ESS in order to achieve good treatment outcome of this disease. First, the preoperative diagnosis needs to be made as accurately as possible. Second, if there is underlying bleeding
diathesis, it must be thoroughly controlled. Even with patients without bleeding diathesis, organized hematoma will still be hemorrhagic. Third, intraoperative frozen-section analysis is advisable because the preoperative diagnosis is often in doubt. Fourth, the use of microdebrider is strongly recommended in combination with the endoscopic approach for the evacuation of the maxillary sinus, particularly, the anterior, and inferomedial portions of the sinus.

3. Conclusion

Organized hematoma of the maxillary sinus is a rare lesion of an uncertain pathophysiology that mimics a neoplasm in its expansion, and may be treated with improper and excessive approaches. Therefore, it is important to include it in the differential diagnosis of an expansile maxillary sinus mass. Accurate preoperative diagnosis and careful surgical planning play key roles in attaining the proper management.

Conflict of interest

None declared.

References