Diagn Interv Radiol 2008; 14:186–188

CT and MRI of an unusual intranasal mass: pleomorphic adenoma

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ABSTRACT

A rare case of pleomorphic adenoma arising from the nasal septum is presented. Computed tomography (CT) and magnetic resonance imaging (MRI) of a 65-year-old woman who presented with right sided nasal obstruction, nasal discharge and epistaxis revealed a well-defined lobular mass occupying the right nasal cavity. Histopathologic examination revealed a pleomorphic adenoma. CT and MRI findings of this rare neoplasm are briefly discussed.

Key words: • *pleomorphic adenoma* • *nasal septum* • *computed tomography* • *magnetic resonance imaging*

Pleomorphic adenoma (PA) is a benign mixed tumor of the salivary glands. Although it arises mainly in the major salivary glands, minor salivary gland involvement can be seen in 8% of cases, with the palate being the most common site. PA arising within the nasal cavity has rarely been reported in the literature (1–4). We present computed tomography (CT) and magnetic resonance imaging (MRI) findings of a case with PA arising from the nasal septum.

Case report

A 65-year-old woman presented with progressive right-sided nasal obstruction, nasal discharge, and epistaxis for the previous six months. Physical examination revealed a firm, non-tender, mucosa-covered polypoid mass obstructing the right nasal cavity.

CT scan revealed a 40 × 25 × 70 mm, well-defined, lobular mass with soft tissue density occupying the whole right nasal cavity and displacing the nasal septum to the left. There was remodelling on inferior part of the septum (Fig. 1). Heterogenous enhancement was seen on contrast-enhanced CT images. MRI was performed to further characterize the mass. The mass was isointense with white matter on T1-weighted images and heterogeneously hyperintense with a hypointense capsule on T2-weighted images (Fig. 2a, b). Heterogeneous enhancement was seen on contrast-enhanced T1-weighted images (Fig. 2c). Endoscopic surgery revealed that the mass arose from the anterior area of the nasal septum. The tumor was totally removed.

Histologic examination of the tissues removed from the nasal mucosa revealed the tumor under the normal-appearing mucosal epithelium. The tumor was composed of solid islands and tubular structures of uniform epithelial-myoepithelial cells in chondromyxoid stroma in some areas (Fig. 3). On the basis of these findings, the tumor was diagnosed as PA. Eight-month follow-up revealed no signs of recurrence.

Discussion

PA occurs commonly in the major salivary glands, predominantly the parotid gland. The other sites of origin are the minor salivary glands of the hard and soft palate (4). More uncommon sites are the upper aerodigestive tract including the nasal cavity, pharynx, larynx, trachea, and lacrimal glands. Intranasal PA is more frequently seen in women and occurs between the third and sixth decades of life (4). Most patients present with epistaxis, intermittent nasal discharge, or nasal obstruction. Tumor can range in size from <5 mm to >7 cm.

Histologically, PA of the nasal septum usually contains small acini or ductlike structures filled with secretions (2). Although generally similar to mixed tumor of major salivary glands, they differ in cellularity (which is usually higher in nasal cavity tumors) and biologic aggressiveness.

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Received 26 April 2007; revision requested 4 August 2007; revision received 14 August 2007; accepted 16 August 2007.

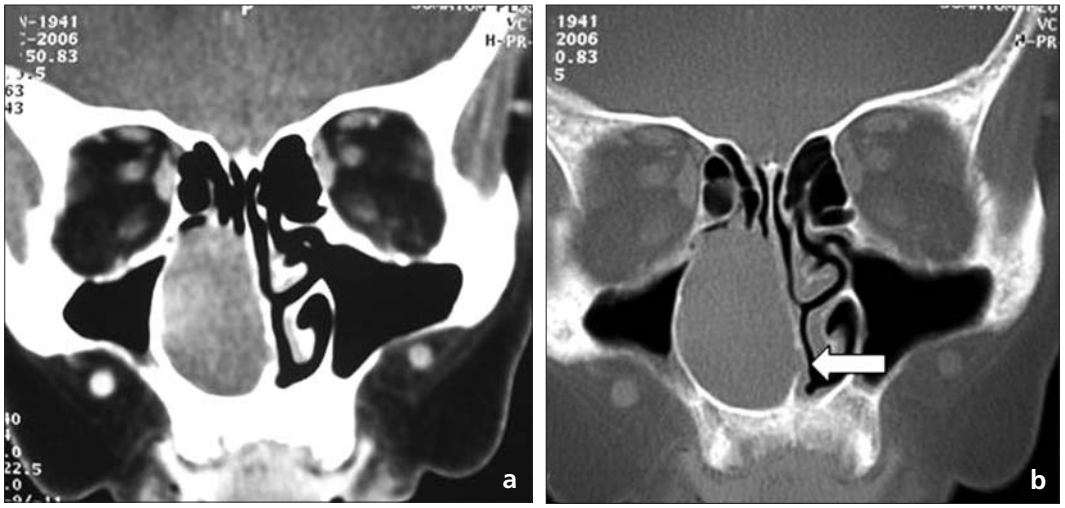

Figure 1. a, b. Contrast-enhanced coronal CT images with soft tissue **(a)** and bone **(b)** window settings. A well-defined, heterogeneously enhancing mass occupying the right nasal cavity can be seen. Note the remodelling of the nasal septum **(***arrow*, **b)**.

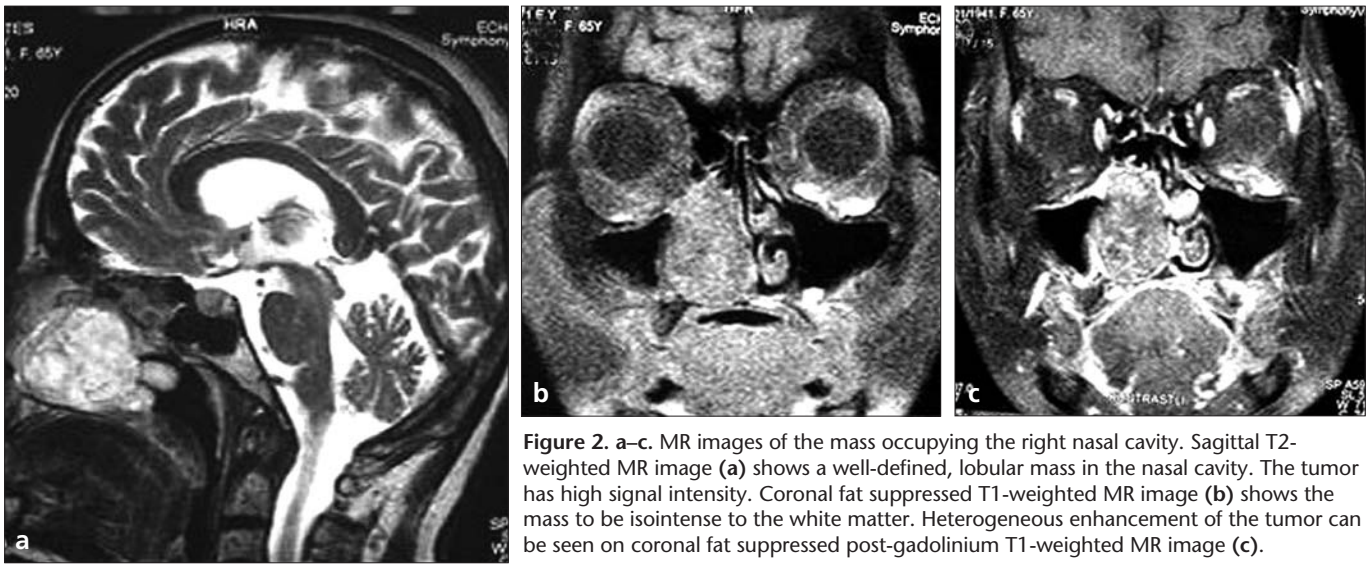

Figure 2. a–c. MR images of the mass occupying the right nasal cavity. Sagittal T2-weighted MR image **(a)** shows a well-defined, lobular mass in the nasal cavity. The tumor has high signal intensity. Coronal fat suppressed T1-weighted MR image **(b)** shows the mass to be isointense to the white matter. Heterogeneous enhancement of the tumor can be seen on coronal fat suppressed post-gadolinium T1-weighted MR image **(c)**.

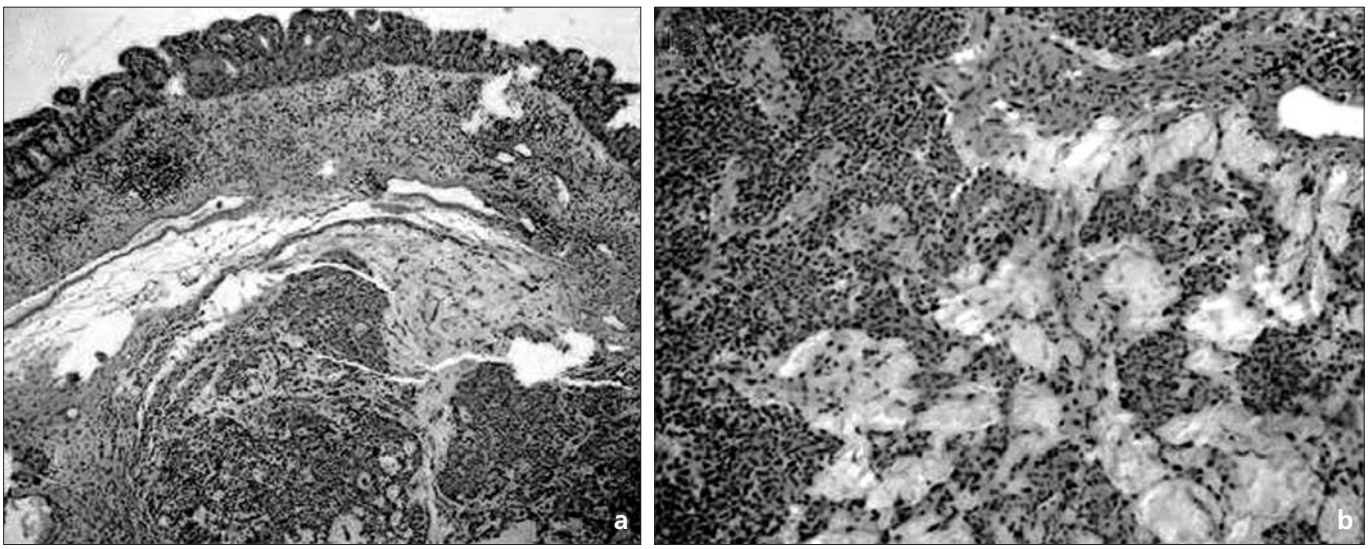

Figure 3. a, b. Histopathologic views **(a, b)** show that the tumor is located under the normal appearing nasal mucosa (HE, X100) **(a)**. The epithelial-myoepithelial islands of tumor in a chondromyxoid stroma is seen (HE, X200) **(b)**.

Immunohistochemical expression of cytokeratin and S-100 are used to confirm the diagnosis (1).

The most useful imaging studies for diagnosis of intranasal PA are CT and MRI. The role of these techniques is to detect the mass and to determine its origin. However, it is difficult to demonstrate the origin when the masses reach larger sizes. CT may reveal a well-defined, lobulated mass displacing the nasal septum on nonenhanced images. Several articles have mentioned the multilobulated appearance of parotid PAs as typical of these tumors (5, 6). Similarly, PAs arising from the nasal septum are usually multilobulated on CT and MRI, as noted by Motoori et al. (2). CT is useful to demonstrate the calcifications within the tumor and adjacent bony changes. Although scattered punctate calcification has been reported on nonenhanced images (2), calcification was not present in our case. Nasal septal destruction can also be demonstrated with bone window settings. MRI seems to be a more reliable diagnostic tool than CT for diagnosing intranasal PA, since it is possible to assess the relationship of the PA with adjacent structures in several anatomic planes. PAs usually have a heterogeneous low-to-intermediate signal intensity on T1-weighted images and intermediate-to-high signal intensity on T2-weighted images (2). A hypointense capsule can be seen on T2-weighted images as in our case. On contrast-enhanced images, the tumors may exhibit heterogeneous enhancement. Nonenhancing parts representing the cystic areas within the tumor can also be seen.

Various advanced imaging techniques may be used to diagnose PA and to distinguish it from other tumors. Rumboldt et al. (7) evaluated the feasibility and reproducibility of perfusion CT in head and neck tumors and concluded that perfusion CT had value in distinguishing between benign and malignant processes, primarily on the basis of the short mean transit time of malignant lesions. As the MR images of hypercellularity components in PA overlap with those of malignant parotid tumors, Motoori et al. (3) suggested diffusion-weighted and dynamic MR images to predict whether salivary gland tumors are PAs or not. They concluded that the combination of findings such as high intensity on short time inversion recovery (STIR) and T2-weighted MR images, high apparent diffusion coefficient (ADC) value on diffusion weighted images, and type D (gradual upward slope) signal intensity-time curves on dynamic MR images were useful for detection of myxoid tissue and prediction whether salivary gland tumors are benign or malignant. In another study, Alibek et al. (8) evaluated 112 parotid tumors with dynamic MRI and concluded that majority of PAs showed gradual increase in signal intensity. However, we did not encounter any article reporting the usage of such imaging techniques in PAs of minor salivary glands.

The differential diagnosis of PA of the nasal septum includes benign and malignant tumors, such as chondrosarcoma, squamous cell carcinoma, adenocarcinoma, sinonasal melanoma, inverted papilloma, juvenile angiofibroma, and benign minor salivary gland tumor (2). Inverted papillomas are dumbbell-shaped masses extending into the maxillary sinus (9). Juvenile angiofibromas are highly vascular tumors originating from margin of the sphenopalatine foramen (10). The most characteristic feature of melanomas is increased signal due to melanin pigment on T1-weighted MR images (11). Squamous cell carcinoma and other nasal malignancies destroy, rather than remodel, bones in most cases and typically originate within the maxillary antrum. In addition, they are poorly defined masses involving the ethmoid roof and skull base (11, 12).

Parotid gland mixed tumors have a high rate of recurrence (50%) compared with relatively low recurrence rates (10%) of intranasal mixed tumors (4). Needle biopsy and fine-needle aspiration cytology risks spillage and increases recurrence. Preoperative diagnosis without biopsy is advantageous for optimal results from surgery (13).

The development of new endoscopic techniques and instruments enables lesions to be safely removed from the sinonasal cavity if the tumor is small enough to expose; these techniques have advantages such as decreased blood loss, decreased pain, and absence of external scarring (2). Many authors describe surgical resection as the best and only treatment for nasal septal PA, but good results can be obtained with adjuvant radiotherapy in cases of incomplete resection (1).

Intranasal PA is a rare neoplasm that is difficult to diagnose. CT and MRI are available; however, MRI was more effective in our case. Although rare, the possibility of PA should be kept in mind in assessing the well-defined lobular intranasal lesions.

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