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# Myoepithelial Carcinoma in the Nasopharynx: an Unusual Localization

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Myoepithelial carcinoma is an extremely rare, malignant epithelial tumor which is usually encountered in the parotid region. In this report, a myoepithelial carcinoma arising from a minor salivary gland in the nasopharynx is presented, along with a discussion of the clinical, histopathological and immunocytochemical characteristics of this rare disorder. Larger clinical series and longer follow-up periods are needed in order to establish the best therapy option for these patients.

**Key Words:** Nasopharynx, carcinoma, myoepithelioma

## INTRODUCTION

Myoepithelial carcinoma is an extremely rare, malignant epithelial tumor composed of atypical myoepithelial cells with increased mitotic activity and aggressive growth.[1] It usually occurs in the parotid region, but unusual localizations have been reported previously such as the palate, gum, larynx, lateral wall of the nasopharynx, tongue base and maxillary sinus.[2-7] The tumor usually presents with local invasion and destruction; however, distant metastasis is rare. The preferred treatment is surgery with or without radiotherapy.

In this article, we report a myoepithelial carcinoma arising from the posterior nasopharyngeal wall and extending into the left nasal cavity. Clinical, histopathological and immunocytochemical characteristics of this rare entity are also presented.

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## CASE REPORT

A 60-year-old female was admitted to the Department of Otolaryngology at Ankara Numune Hospital in May 2001 with a complaint of nasal obstruction and intermittent epistaxis for four years. Examination of the nasal cavity and nasopharynx revealed a tumor completely filling the nasopharynx and extending into the left posterior nasal cavity. The surface of the tumor was covered with a pale, red mucosa without any ulceration. Contrast computed tomography (CT) demonstrated an extensive lesion filling up the nasopharynx, and protruding into the left nasal cavity (Fig. 1). Bone destruction of the clivus was evident but there was no intracranial extension. The histopathologic biopsy revealed acinic cell carcinoma of the minor salivary gland. The tumor was excised by midfacial degloving and Le Fort I osteotomy. The postoperative histopathological diagnosis was myoepithelial carcinoma. Although the tumor was removed grossly, the patient received a total of 60 Gy of postoperative radiotherapy, in 2 Gy doses over a 6-week period for any microscopic residual tumor. The radiotherapy started 4 weeks after the surgical removal of the tumor.

The patient was followed up with nasal endoscopic examination and nasopharyngeal CT. The punch biopsy of the edematous nasopharyngeal mucosa was reported as "chronic inflammatory tissue" in the third month after the completion of the radiotherapy There was no sign of recurrence in the nasopharyngeal CT at that time.

The patient was admitted to our clinic with the complaint of diplopia in the 14th postoperative month. Physical examination revealed left lateral

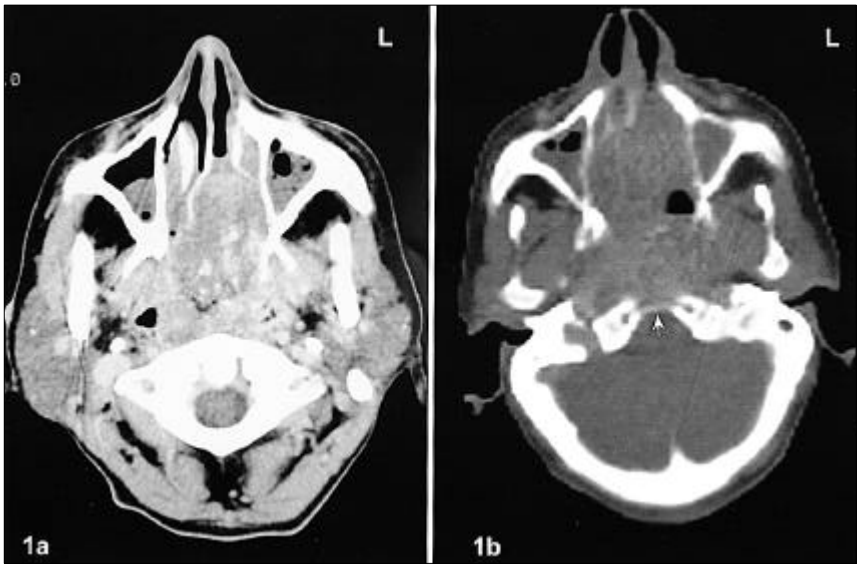


**Fig. 1.** Computed tomography with contrast showing an extensive lesion filling up the nasopharynx and protruding into the left nasal cavity. Bone destruction of the clivus is evident but there is no intracranial extension.

rectus paralysis. Cranial MRI showed a mass destructing the clivus completely, extending intracranially and invading cisternal segments of the 9,10 and 11th cranial nerves and cavernous sinuses bilaterally. Thorax CT revealed multiple subpleural metastatic nodules in both lungs. The result of a further biopsy of the tumor from the nasopharynx was reported as myoepithelial carcinoma. The chemotherapy protocol consisting of cisplatin and 5-FU was administered since the patient had already undergone a full course of radiotherapy. The tumor progressed during the chemotherapy and the patient died 4 weeks later.

## Pathological findings

The biopsy specimen consisted of multiple irregular fragments of tan-brown tissue measuring $5 \times 4 \times 1$ cm in aggregate. Sections of formalin fixed and paraffin embedded tissue were stained with haematoxylin, eosin, and alcian blue at pH 2,5 and periodic acid-schiff (PAS) with and without diastase. The immunocytochemical studies were performed using the labeled streptavidin-peroxidase method. The primary antibodies used were anti-S-100 protein, anti-glial fibrillary acidic protein (GFAP), anti-epithelial membrane antigen (EMA), anti-actin, anti-keratin and anti- vimentin.

Microscopically the tumor was located beneath the nasopharyngeal mucosa. It had a lobular structure with infiltrating margins and contained

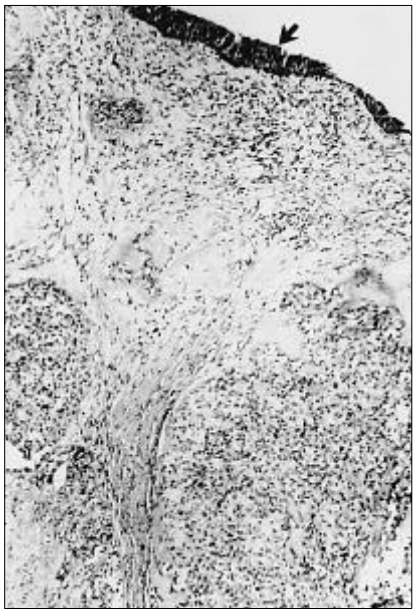

**Fig. 2.** The tumor is located beneath the nasopharyngeal mucosa and consists of compact nets of a single population of polygonal cells with abundant clear cytoplasm (Haematoxylin-eosin × 40).

wide necrotic foci. The tumor was composed of compact nets of round to polygonal cells with clear cytoplasms, and round vesicular nuclei with well defined borders (Fig. 2). Neoplastic cells displayed focal squamous metaplasia with pearl formations (Fig. 3). A few small tubular structures were identified. Strikingly, the tumor revealed PAS positive hyaline deposits of basement mem-

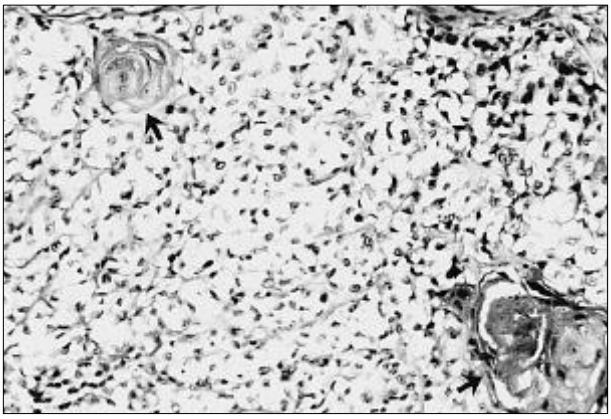

**Fig. 3.** Small foci of squamous metaplasia are seen within the tumor nets (Haematoxylin-eosin × 100).

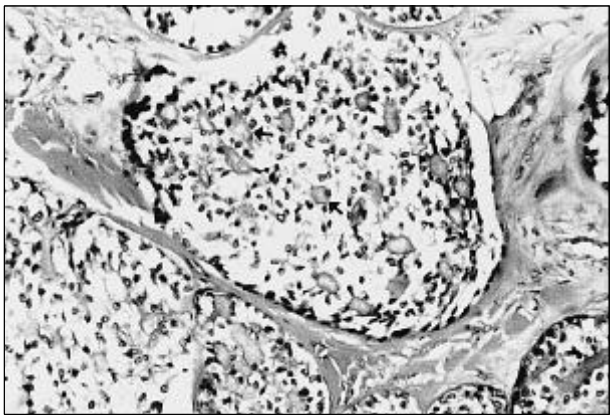

**Fig. 4.** Circular deposits of extracellular matrix material, forming typical collagenous spherules (Haematoxylin-eosin × 40).

brane-like, extracellular matrix material, forming typical collagenous spherules (Fig. 4). Mitotic figures varied from one to two per ten high power fields.

Histochemically, neither alcian blue nor PAS with or without diastase positivity were demonstrated in the neoplastic cells. In the tumor, most of the neoplastic cells were immunoreactive for myoepithelial markers, such as S-100 protein and actin, and occasional cells were weakly positive for keratin. Immunostaining for vimentin, GFAP and EMA were negative.

Based upon the features of histopathology and immunohistochemistry, the tumor was finally diagnosed as a primary nasopharyngeal, clear cell, myoepithelial carcinoma.

## DISCUSSION

Myoepithelial carcinomas constitute only 0.2% of all epithelial salivary gland neoplasms.[8] They are usually located in the parotid gland, but do rarely present themselves in the minor salivary glands.[7] The majority of the neoplasms arising from the minor salivary glands were located in the palate.[2,3,7,9,10] Cheek,[2] gum,[4] larynx,[5,7] lateral wall of nasopharynx,[6] tongue base and maxillary sinus[7] were the other sites reported. To our knowledge, this is the first case of myoepithelial carcinoma in the English literature arising purely from the nasopharynx, and presenting with intracranial extension and distant metastasis despite surgical treatment and radiotherapy.

According to Martinez-Madrigal and Micheau,[11] the morphologic and immunohistochemical features of myoepithelial cells can be subclassified into four main cell types: 1-chondromxoid, 2-spindle-shaped, 3-hyaline or plasmacytoid and 4-epithelial (clear cell). The first three cell types express vimentin, whereas the clear cell variant is positive for keratin, actin and S-100 protein, and fails to exhibit immunoreactivity to vimentin, a pattern identical to that observed in our tumor.[11]

Myoepitheliomas are divided into three major categories, according to histopathologic patterns: spindle cell (including chondromyxoid types), hyaline (plasmacytoid) and epithelial, of which the clear cell type is a variant.[12,13] The clear cell subtype of myoepithelioma is composed of clear cells with cytoplasmic glycogen and sparse to occasional ductal stuructures.[13] Clear cell myoepitheliomas should express S-100 protein, actin and keratin.[11] The presence of cytological atypia, increased mitotic rate, necrosis, and particularly the invasive growth pattern, are all used for the diagnosis of malignancy in tumors with myoepithelial cells. These were also the criteria that we applied for our case.[2,13,14]

The differential diagnosis of clear cell myoepithelial carcinoma encompasses all other tumors that may contain clear cells such as hyalinizing clear cell carcinoma, epithelial-myoepithelial carcinoma, acinic cell carcinoma, mucoepidermoid carcinoma, sebaceous carcinoma and metastatic renal cell carcinoma.[14] Hyalinizing clear cell carcinoma contains a single cell population of keratin

(+) and S-100(-).[13,14] The absence of a significant epithelial component differentiates our case from epithelial myoepithelial carcinoma.[12,13] Clear cells may also be present in variable amounts in acinic cell carcinomas; a careful search is said to reveal foci with the characteristic secretory granules seen in normal acinar cells.[12-14] Mucoepidermoid carcinomas contain clear cells, which stain positively for cytoplasmic mucin, but also contain remarkable epidermoid and intermediate components.[12-14] Sebaceous carcinomas may include clear cells, but the cytoplasm has a "foamy" appearance and tumor cells are negative for S-100 protein and actin.[12-14]

Myoepithelial carcinoma should be distinguished from a metastatic tumor, particularly from a renal cell carcinoma. These tumor cells show keratin and EMA positivity with vimentin positivity, but they are negative for S-100 protein, actin and GFAP.[12,13,15] In addition, clinical findings and radiological techniques might be of great help in differential diagnosis.

The clinical behavior of the myoepithelial carcinomas is variable. The number and length of follow up periods for the myoepithelial carcinomas that have been reported in the literature are far from constituting adequate clinical experience, with a consequent lack of sufficient knowledge on the biological behavior of the tumor. There are no discernible histologic features that correlate clearly with behavior.[7] Di Palma and Guzzo[2] advocated that this tumor should be regarded as a low grade tumor if it arises from the pleomorphic adenoma, while de novo tumors are reported to be more aggressive and have a higher risk for distant metastasis. Other authors have not reported any correlation between tumor origin and clinical outcome.[7]

The bony destruction seen in the nasopharyngeal CT of our patient suggests the aggressive behavior of the tumor. It is impossible to compare our tumor with others since there is no report in the literature of a myoepithelial carcinoma arising from a similar region. However, the mass arising from the lateral nasopharyngeal wall reported by Nilles, et al. did not present with a bony destruction.[6]

A Le Fort I osteotomy was performed for adequate surgical exposure of the lesion during the surgery. The mass was grossly removed with adequate surgical margins and was carefully dissected from the dura posteriorly, and the maxilla was reconstructed. No dural invasion was seen during the surgery; however, 60 Gy of radiotherapy was applied to the region postoperatively in an attempt to treat any microscopic residual tumor.

It is known that these tumors rarely cause metastases to lungs, liver, kidney, rib, scalp or cervical lymph nodes.[2,5,7,14] At first admission our patient presented with no metastases; however, intracranial tumor invasion and lung metastases were present 15 months later. The intracranial tumor progressed despite the application of chemotherapy.

Myoepithelial carcinoma, an extremely rare tumor, is even more uncommon in the nasopharynx. Therefore, there is insufficient data for an appropriate treatment protocol or an accurate prognosis prediction for the disease. Larger clinical series and longer follow-up periods are needed in order to establish the best therapy option for these patients.

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