Malignant Pleomorphic Adenoma (Malignant Mixed Tumor) of the Minor Salivary Glands

Afsaneh Rajabiani¹, Fatemeh Kamrani Kanafi¹, Naser Kamalian¹, Saeed Shoar³,³,³, Alireza Abdollahi², Sara Sheikhbahaei²

1. Dept. of Pathology, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
2. Dept. of Pathology, Imam Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran
3. Development Association for Clinical Studies (DACS), School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

ABSTRACT

Salivary gland tumors accounts for less than 1% of all tumors. Minor salivary gland tumors (MSGTs) are uncommon and make up about 10% of all salivary gland neoplasms. The clinical and histopathological distribution of these tumors vary geographically. A case of a 38 yr old man with a minor salivary gland mass at chin region is reported here. The tumor invaded into the anterior surface of the mandible bone and the surrounding soft tissues. The tumor was resected completely with a safe surgical margin of soft tissue and adjacent bone. Histologically, the tumor is characterized by a biphasic pattern, composed of admixture of epithelial and stromal components, associated with cytological atypia and prominent mitoses. The stromal elements are myxoid, chondroid, and osteoid. The chondroid component is more abundant and shows more atypical changes. Overall, the findings were interpreted as malignant pleomorphic adenoma of minor salivary glands of buccal mucosa.

Keywords: Malignant Mixed Tumor, Minor Salivary Gland
A 38-years old man was referred to the clinic of pathology in Dr Shariati Hospital affiliated to Tehran University of Medical Sciences in Tehran with the tumor of chin region and no relevant past medical history.

He had no history of other medical conditions including diabetes mellitus (DM), heart disease, hypertension, cigarette smoking or other medical disorders. Paraclinical data were totally normal.

Physical examination showed a mass in chin region, measuring 5.5 cm in the largest dimension, with variegated cut surfaces and deep invasion into the anterior surface of the mandible bone and the surrounding soft tissue (Fig. 1). No associated constitutional symptoms were noted.

**Fig. 1 - Perineurial invasion of tumor (Panorex radiography)**

The surgical specimen consisted of an ill-defined tumor mass with irregular outer surface and attachment to a bony fragment that is the anterior portion of mandible bone.

Microscopic examination on Hematoxylin-eosin-stained slides showed a biphasic composition, including epithelial and stromal elements. The
epithelial element is predominantly composed of atypical cells, in the form of solid sheets and nests, including prominent mitotic figures. These findings could be representative of undifferentiated carcinoma. These epithelial cells are set against abundant stroma with myxoid, hyalinized, cartilaginous, and even osteoid features. The stroma is mainly composed of well-developed chondroid areas, showing hypercellularity and cellular atypia as well as many mitotic features.

The tumor cells had infiltrated into the surrounding soft tissue and bony trabeculae showing evidence of perineurial invasion (Fig. 2). According to these findings, the tumor is a true malignant pleomorphic adenoma (carcinosarcoma) of the minor salivary gland.

Fig. 2: Infiltrative tumor with invasion into the mandible bone (×400)

Various areas of tumor stroma show positive immunoreactions for the following markers: Vimentin, S-100 protein (either in chondrocytes or in stromal cells), smooth muscle actin and Glial Fibrillary Acidic Protein. The proliferative index is high in both epithelial and stromal elements (Ki67 positive in 80-90% of tumor cells)

Because the epithelial component is undifferentiated, the epithelial membrane antigen (EMA) and cytokeratin did not yield prominent and specific positive immunoreactions.

Discussion

Tumors of salivary gland represent less than 1% of all tumors; minor salivary gland tumors are infrequent, accounting for 10-15% of all salivary gland tumors. The frequency and distribution of these tumors varies geographically (5, 13).

Approximately about one half of the tumors that arise in these glands are malignant. A study conducted on Iranian patients with MSGTs showed the predominance of benign MSGTs (53.7% of cases) over the malignant ones (13). This finding corresponds well with other studies such as Eveson JW et al. (54%), Yih et al. (56%) Pires et al. (55.9%), Waldron et al. (57.5%), Toida et al. (67%) , and Buchner et al. (59%). (3, 4, 6, 13-16). However, Dan Wang et al. found that malignant MSGTs were slightly more frequent than benign ones (53.9%) in Chinese population (17). Similar figures are reported by Jansisyanont et al. (76.3%) (18).

Pleomorphic adenoma is the most frequent type of benign MSGTs with the prevalence rate of 33-78%. The second most frequent benign MSGT is Cystadenoma. Mucoepidermoid Carcinoma (MEC) is considered to be the most commonly encountered malignant variety of MSGTs (4, 6, 13, 14, 18).

According to many studies, the most common site for MSGTs was the palate. The buccal mucosa and the lip were other major sites (3-6, 13-17).

A study on 82 Iranian patients with intra-oral MSGTs reported the tongue and jaw as the next most frequent sites after the palate and buccal mucosa (13).

The usual clinical presentation of MSGTs is a single, smooth, and nodular mass, but malignant MSGTs grow faster and become ulcerated and over infected, showing adhesion and invasion.
into the surrounding tissues (5). Three entities of malignant pleomorphic adenoma are recognized: carcinoma ex pleomorphic adenoma, carcinosarcoma, and metastasizing pleomorphic adenoma. The metastasizing pleomorphic adenoma is histologically indistinguishable from benign PA but it metastasizes widely to distant sites and can cause mortality (19). Accurate diagnosis is confirmed mainly by histopathology in paraffin blocks, sometimes demanding additional immunohistochemical studies. Carcinosarcoma is a biphasic tumor. The epithelial component is usually an undifferentiated carcinoma or poorly differentiated adenocarcinoma. The sarcomatous component is usually a chondrosarcoma, or a combination of sarcoma and a malignant proliferation of myoepithelial cells. Histological criteria include cellular dysplasia, vascular, lymphatic, or perineurial invasion, as well as perineurial, lymphatic, or vascular invasion, associated with infiltrative tumoral growth, necrosis or calcification. The presence of one or two of these criteria is sufficient for the diagnosis of malignancy. If the carcinomatous component is undifferentiated, the immunoreaction for EMA and CK could be weak or non-specific, like other poorly differentiated tumors of the head and neck. The sarcomatous component shows positive reactivity for vimentin, chondrosarcoma for S-100 protein, muscular component for actin, and glial components for GFAP (10).

Carcinosarcoma of the salivary glands arise mainly from the parotid gland (65% of all the cases), but any of the minor salivary glands could be involved (10). Malignant pleomorphic adenomas have also been reported in the trachea and nasal cavity (20, 21). The prognosis is unfavorable (56% 5-year survival and 31% 10-year survival). There is a strong correlation between the local extension and stage of the tumor and patient prognosis. Tumor grading of malignancy and facial nerve palsy are important prognostic factors (10).

Carcinomas of the salivary glands arise mainly from the parotid gland, but any minor salivary gland could be involved and we should consider these kinds of tumors.

Acknowledgement

The authors declare that there is no conflict of interest.

References