Reticular Type Parotid Myoepithelial Carcinoma: An Intriguing Variant and Mimicker
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ABSTRACT
Myoepithelial carcinoma, the malignant counterpart of benign myoepithelioma, is one of the rarest salivary gland neoplasms. It is composed almost exclusively of tumour cells with myoepithelial differentiation, characterized by infiltrative growth and potential for metastasis. We herein, report a case of myoepithelial carcinoma in a 50 years old male with reticular morphology. Reticular variant of myoepithelial carcinoma may be mistaken for a variety of benign and malignant epithelial and mesenchymal tumours including mixed tumour (pleomorphic adenoma), adenoid cystic carcinoma, basal cell adenoma and epithelial myoepithelial carcinoma. Complete surgical excision is the mainstay of therapy. The role of radiation therapy and chemotherapy is not yet established. Awareness of this variant is emphasized to prevent misdiagnosis.

Key words: Myoepithelial carcinoma. Reticular myoepithelioma. Parotid gland. Salivary gland neoplasm.

INTRODUCTION
Myoepithelial carcinoma, the malignant counterpart of benign myoepithelioma, is a salivary gland neoplasm, composed almost exclusively of tumour cells with myoepithelial differentiation, characterized by infiltrative growth and potential for metastasis. Myoepithelial carcinomas comprise less than 2% of all salivary gland carcinomas\(^1\) and less than 1% of all salivary gland tumours.\(^2\) The rarity contrasts with the active role of myoepithelial cells in the histogenesis of several types of salivary gland tumours. It seems that myoepithelial carcinomas have been under-recognized in the past and are probably not as rare as was previously thought.\(^3\) A myoepithelial carcinoma may arise de novo or develop within a pre-existing pleomorphic adenoma or benign myoepithelioma.\(^4\)

In this report, a case of myoepithelial carcinoma arising in parotid gland of 50 years old man is presented with intriguing morphology.

CASE REPORT
A 50 years old man presented with a 3 – 4 years history of a painless swelling in the left pre-aicular region. The swelling was initially small but gradually increased in size especially in the last year. On physical examination, he was well oriented. A solid, mildly tender mobile palpable mass was noted in the left parotid gland. There were no associated lymph nodes. Magnetic resonance imaging (Figure 1) revealed a well-defined lobulated high intensity signal nodular mass confined within left parotid gland. Systemic investigations did not yield significant findings. The patient underwent fine needle aspiration which reported as neoplastic lesion with differential diagnosis of pleomorphic adenoma and adenoid cystic carcinoma. Then excision of left parotid nodule was performed.

A well circumscribed tan oval nodule measuring 7.5 x 5.5 x 2 cm was received in formalin. On sectioning tumour measured 7 x 3 x 1 cm and appeared encapsulated. It had a firm to hard, solid lobulated grayish white glistening cut surface. Areas of haemorrhage, necrosis or infarction were not apparent. Tumour was grossly 0.1 cm away from closest excision margin. At the periphery of tumour, non-neoplastic parotid gland was noted.

Microscopy revealed highly cellular neoplasm composed of polygonal, spindle, oval and epithelioid cells showing multinodular configuration separated by fibrous bands. At the periphery, a fibrous capsule was discerned and beyond this, parotid parenchyma was seen. The cytoarchitectural patterns varied from area to area (Figure 2). Dominant areas showed a somewhat microcystic, or reticulated pattern in which narrow interconnected cords, nests, columns and lace like collections of cells were separated by empty spaces containing pale blue or pale pink amorphous material. Focal ductal structures were noted in some areas. At places there were solid sheets of haphazardly arranged cells with intermediate sized plump nuclei. Occasional foci of squamous metaplasia, hyalinized stroma and oncocytic change were appreciated (Figure 2). There
was no evidence of overt anaplasia and mitotic activity was difficult to discerned, however tongues and strands of tumour cells were seen permeating full thickness capsule and focally infiltrating the non-neoplastic parotid gland. In two sections, there were small foci of morphologically compatible evidence of angio-lymphatic invasion. The surgical margin was 0.1 cm away from tumour. Multiple lymph nodes in the adjacent fibrofatty tissue were also sampled and all were tumour free.

The antibodies that were diffuse positive in tumour cells include vimentin, cytokeratin LMW (8, 18), cytokeratin HMW (34βE12), cytokeratin 5, S-100, Sox 10 and p63; focal positive include GCDFP, mammaglobin, smooth muscle myosin, smooth muscle actin, muscle specific actin and CD57. Ki-67 shows low proliferative index (Figure 3).

DISCUSSION

Myoepithelial carcinoma was included in the updated histological classification of salivary gland tumours by the World Health Organization in 1991. It is one of the rarest salivary gland neoplasms. It was first described by Stromeyer et al. in 1975, and more than 50% cases have subsequently been reported.

By taking into account the varied cytoarchitectural patterns displayed by the myoepitheliomatous regions of pleomorphic adenomas, Dardick et al. have proposed broader histopathologic guidelines for myoepitheliomas and have included a few previously un-recognized variants. The designation of reticular type of myoepithelioma was first described by Dardick et al. They presented explicit descriptions of all the varied morphologic patterns of benign myoepitheliomas.

Patients with myoepithelial carcinoma are generally aged over 50 years and a majority presents with a painless mass. The parotid gland is the most common primary site, followed by the sub-mandibular gland and minor salivary glands. Unusual locations reported previously include palate, gum, larynx, lateral wall of the nasopharynx, base of tongue and maxillary sinus.

Grossly the tumours are generally soft to slightly firm and un-encapsulated. They have infiltrative tumour borders with destructive tumour extensions into the adjacent salivary gland or surrounding tissues.

To establish the diagnosis of myoepithelial carcinoma, two histologic criteria must be satisfied. The neoplastic cells must show exclusive myoepithelial differentiation and the tumour must exhibit un-equivocal evidence of malignancy. Savera et al. considered tumour infiltration as the minimum requirement for myoepithelial carcinoma. In this case, the immunoreactivity spectrum of the tumour cells for S-100 proteins, cytokeratins, smooth muscle actin, p63 and Sox10 were in agreement with a myoepithelial phenotype. An infiltrative growth...
pattern with foci of angio-lymphatic invasion favoured the diagnosis of malignancy.

Reticular variant of myoepithelial carcinoma may be mistaken for a variety of benign and malignant epithelial and mesenchymal tumours. Foci of hyalinized stroma, scattered tubular structures, foci of squamous metaplasia and oncocytic changes are likely to be interpreted as mixed tumour (pleomorphic adenoma). Furthermore, nodular growth and extension through fibrous capsule are acceptable features in benign mixed tumour. The lack of significant ductal differentiation and absence of chondromyxoid or chondroid foci in this case support interpretation as myoepithelial differentiation. Cytomorphologically, the cribriform pattern that is common in adenoid cystic carcinoma may be a close mimicker of reticular variant of myoepithelial carcinoma but irregular angulated nuclei, pale to clear cytoplasm and perineural invasion are characteristic features of adenoid cystic carcinoma differentiating it from reticular variant of myoepithelial carcinoma.

Furthermore, tubulo-reticular pattern and membranous type of basal cell adenoma may be confused with reticular variant of myoepithelial carcinoma in which there is multi-nodular growth pattern but lack infiltration and angio-lymphatic invasion. Another differential is epithelial myoepithelial carcinoma from which this case can be differentiated by absence of a significant epithelial component.

The clinical behaviour and outcome of the current and previously reported myoepithelial carcinomas are variable and intriguing. There are no discernible histologic features that correlate clearly with behaviour. As far as the treatment of myoepithelial carcinoma is concerned, there is limited experience, but complete surgical excision is the mainstay of therapy. The role of radiation therapy and chemotherapy is not yet established. A recent clinical analysis on 13 patients concluded radical surgery as the treatment of choice and that the effect of chemotherapy and radiotherapy still needs to be investigated. 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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REFERENCES