CASE REPORT

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Abstract: Background. Extraglandular myoepitheliomas are neoplasms that seldom occur in the soft tissue of the head and neck region. Misdiagnosis of these neoplasms as more aggressive tumors can lead to unnecessary treatment.

Methods. We describe a myoepithelioma of cervical soft tissue. The histopathology of the tumor, its immunophenotype, its differential diagnosis, and a review of the literature are presented.

Results. Histopathologically, the tumor was composed of epithelioid cells with eosinophilic cytoplasm and eccentric nuclei arranged in cords and files. On immunohistochemical analysis, the cells expressed cytokeratin 14, calponin, glial fibrillary acid protein, and p63 and showed focal positivity for S-100 protein. Together, these markers identified the cells as myoepithelial type. A literature review identified only five cases of myoepithelioma in the soft tissue of the head and neck region in which detailed clinical information was provided.

Conclusions. Myoepitheliomas can have cells with variable morphology arranged in different histologic patterns. Immunohistochemical analysis is crucial for unequivocal diagnosis when myoepitheliomas occur in extraglandular locations. © 2004 Wiley Periodicals, Inc. Head Neck 26: 470–473, 2004

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The World Health Organization defines myoepithelioma as a rare tumor composed of myoepithelial cells that have a solid, myxoid, and reticular growth pattern.1 Characteristic of these tumors are spindle, plasmacytoid, epithelioid, and clear cells, with electron-microscopic and immunohistochemical features of myoepithelial differentiation and an almost total absence of ductal epithelial structures.1–3 The most common site of myoepithelioma is the salivary glands.3 Myoepithelial tumors of the soft tissue were recognized only 10 years ago,4–10 and in a recently published series <15% occurred in the head and neck region.11 In this report, we provide the clinicopathologic, light microscopic, and immunohistochemical features of a rare case of myoepithelioma of the soft tissue of the cervical region.

MATERIALS AND METHODS

Hematoxylin-eosin–stained slides and immunohistochemically stained slides were retrieved from the consultation files of one of the authors (MAL). The immunohistochemically stained sections were examined by the avidin-biotin peroxidase complex method. The following primary antibodies were
used: cytokeratin AE1/AE3 (AE1/AE3, 1:500; BM, Indianapolis, IN), cytokeratin (CK 14) (LLOO2, 1:50; Biogenex, San Ramon, CA), epithelial membrane antigen (EMA) (E29, 1:20; Dako, Carpenteria, CA), calponin (Calp, 1:75; Dako), p63 (4A4, 1:200; Santa Cruz Biotechnology, Inc., Santa Cruz, CA), glial fibrillary acid protein (GFAP) (4A11, 1B4, 2El, 1:6000; BD Pharmingen, San Diego, CA), S-100 protein (4C4.9, 1:250; CellMarque, Austin, TX), and thyroid transcriptional factor (TTF-1) (8G7G3/1, 1:25; Dako). Clinical and follow-up information was obtained from the patient’s records.

**CASE REPORT**

A 55-year-old man was referred to an otorhinolaryngologist at an outside institution because of a 3-month history of discomfort in the left cervical region. Physical examination done at The University of Texas M. D. Anderson Cancer Center disclosed the presence of a palpable, nontender, firm lesion at the lateroposterior aspect of the left neck, away from the salivary gland. A CT scan showed a 3.0-cm mass containing minimal calcifications in the cervical region at the level of the hyoid bone. The physician also noted an anterior cervical lymph node of 1.3 cm on the left and a node 1-cm deep to the sternocleidomastoid muscle.

The patient had undergone sinus surgery along with a nasal septoplasty for an inverted papilloma a year before the start of his cervical discomfort. Since that time, he had been followed up regularly, and the most recent CT scan showed no evidence of papilloma. He smoked approximately 1 1/2 packs of cigarettes per day. He had no dysphagic, odynophagic, or otologic symptoms. He underwent excisional biopsy for the cervical mass and after 12-months follow-up showed no evidence of disease.

**Pathologic Findings.** The specimen consisted of multiple fragments of soft tissue containing a tumor predominantly composed of cells arranged in cords and files embedded in a myxoid matrix (Figure 1A). The cells had an abundant eosinophilic cytoplasm, concentric or eccentric nuclei, and occasional prominent nucleoli (Figure 1B). The adipose tissue and skeletal muscle showed evidence of infiltration by neoplastic cells. No ductal component was present. Mitotic figures were rare. No atypical mitotic figures, necrosis, or lymphvascular invasion were present. Two
benign lymph nodes with lymphoid hyperplasia were present.

On immunohistochemical examination, the tumor demonstrated positivity for CK 14 (Figure 2A), p63 (Figure 2B), GFAP (Figure 2C), and calponin (Figure 2D). There was focal positivity for S-100 protein. It was negative for TTF-1.

DISCUSSION

The most common location of myoepitheliomas is the salivary gland, where they account for 1.5% of all tumors of the major and minor salivary glands. In addition to the major salivary glands, myoepitheliomas have been found in extrasalivary locations, such as soft tissue, skin, breast, and lung. Myoepitheliomas of the soft tissue are usually located in the subcutis, and <30% occur in the deep soft tissue. The first published case of soft tissue myoepithelioma, which occurred in the retroperitoneum, was described by Burke et al at M. D. Anderson Cancer Center in 1995. Until 2002, only 13 cases of myoepithelioma in the soft tissue were reported; of these, only five were in the head and neck region. Recently, Hornick and Fletcher published a series of 101 soft tissue myoepithelial tumors. Fifteen cases (14.4%) were in the head and neck region, and of these, only nine (8.8%) were in the neck. Table 1 summarizes our findings and those of previously reported cases of soft tissue myoepitheliomas of the head and neck region in which detailed clinical information was provided. In the Hornick and Fletcher series, 15 cases were located in the head and neck region, but no clinical information was given.

Neoplastic myoepithelial cells may have different morphologies (epithelioid, spindle, plasmacytoid, and clear cell), and occasionally they can have a biphasic pattern. Because of its cellular variety, myoepithelioma may be misdiagnosed as a malignant tumor. The cells can be uniform or more pleomorphic and are often found within a myxoid matrix. They can be arranged in fascicle or in a reticular pattern.

Immunohistochemical findings in the Hornick and Fletcher series showed that the myoepithelial cells of the soft tissue expressed keratin in 93% of the cases (most often AE1/AE3 and pankeratin), 87% expressed S-100 protein, 86% expressed calponin, 63% expressed epithelial membrane antigen, 46% expressed glial fibrillary acidic protein, 36% expressed smooth muscle actin, 32% expressed CK 14, 23% expressed p63, and 7% expressed desmin. In our case, immunohistochemically the tumor expressed CK14, calponin, GFAP, and p63, and it was focally immunoreactive for S-100 protein, confirming the myoepithelial nature of the tumor.

Histologically, the differential diagnosis should include pleomorphic adenoma, mixoid chondrosarcoma, chondroid syringoma, parachordoma, myxoid liposarcoma, ossifying fibromyxoid tumor of soft parts, synovial sarcoma, epithelioid sarcoma, and metastatic carcinoma.

Soft tissue myoepithelioma is distinguished from pleomorphic adenoma by its epithelial differentiation. Pleomorphic adenoma also has ductal differentiation, with no sharp demarcation between the epithelial component and the myxoid, cellular stroma, whereas myoepithelioma lacks the chondroid differentiation and the extensive ductal component typical of pleomorphic adenoma. Distinguishing between the two tumors is important, because myoepitheliomas are more aggressive than are pleomorphic adenomas and occasionally undergo malignant transformation.

Distinguishing extraskeletal myxoid chondrosarcoma can be difficult on the basis of morphology alone. In general, myxoid chondrosarcomas are larger than myoepitheliomas. Furthermore, extraskeletal myxoid chondrosarcoma very often arises in deep soft tissue. The neoplastic cells are displayed in cords within a chondroid matrix and usually do not express cytokeratin, calponin, GFAP, or actin.

Parachordomas are extremely rare soft tissue tumors. They are usually lobulated and contain nests of pale-staining vacuolated cells within a myxoid to hyalinized matrix. The parachordomas share with myoepitheliomas an immunohistochemical reactivity for cytokeratin and S-100 protein. Parachordomas invariably stain negative for actin, calponin, and GFAP.

Chondroid syringoma is a sweat gland neoplasm that typically arises in the head and neck.
region. These tumors are intradermal papules or superficial subcutaneous nodules measuring <2.0 cm at their largest diameter, with little myoepithelial differentiation. The existence of such lesions in true soft tissue is not widely appreciated.7

Metastatic carcinoma should also be considered in the differential diagnosis. Histologically, it usually shows definitive signs of malignancy, such as pleomorphism and mitotic activity.8

The biologic potential of myoepitheliomas varies, and some have recurred.6–8 An abnormal DNA content and high proliferative activity can be predictive of aggressive behavior.6 We believe that, like their salivary gland counterparts, most of the soft tissue myoepitheliomas are benign, with a recurrence rate of 18%.11 The recurrence rate is higher (42%) for those myoepithelial neoplasms with cytologically malignant features.11 For this reason, complete excision with a clear margin seems to be the treatment of choice. This is in concurrence with the literature.4–11

In conclusion, myoepitheliomas can occur in an extraglandular location. In soft tissue, they are rare. These tumors can have cells with different morphologies (epithelioid, spindle, plasmacytoid, and clear cell) and different histologic patterns (solid, fascicular, and reticular with minimal ductular formation). Immunohistochemical studies are crucial for unequivocal diagnosis.

REFERENCES