Case Report

Glomus tumor mimicking eccrine spiradenoma on fine needle aspiration

ABSTRACT

Glomus tumors are usually small painful nodules situated most commonly in the subungual region, and subcutis of upper and lower extremities. The histologic features of glomus tumor are characteristic and do not pose any diagnostic difficulty. However, cytomorphologic features have been poorly defined and rarely reported. We present a case of glomus tumor which mimicked a cutaneous adnexal neoplasm – eccrine spiradenoma on fine needle aspiration.

Key words: Aspiration cytology; eccrine spiradenoma; glomus tumor.

Introduction

Glomus tumor is an unusual tumor, comprising 1–2% of soft tissue tumor.[1] They are benign neoplasms that arise from modified smooth muscle cells of the glomus body. The majority of glomus tumors are small painful nodules, which occur in the subungual region, deep dermis and subcutis of upper and lower extremities.[1] Though, the histology of glomus tumor is very characteristic, cytologic features are poorly defined. Less than 10 cases describing cytologic features have been reported so far.[2] The cytomorphologic picture may mimic that of an epithelial neoplasm, carcinoid tumor or a hemangiopericytoma and hence, may cause diagnostic difficulties.[3-5]

Case Report

A 28-year-old female presented with a swelling in the flexor aspect of left forearm since one year. On examination, the swelling measured 2×1 cm, was mobile and firm in consistency. Routine investigations were within normal limits. A clinical diagnosis of lipoma/neurofibroma was made. Fine-needle aspiration cytology (FNAC) was performed using a 23 gauge needle. The patient experienced severe pain while doing the procedure. Smears were stained with Papanicolaou and May-Grünwald Giemsa stain and examined.

The aspirate yielded high cellularity and consisted of uniform round-to-oval cells in tight and loose cohesive clusters admixed with strands of magenta-colored material reminiscent of basement membrane [Figure 1]. A few spindle-shaped cells were seen crossing clusters of tumor cells [Figure 2]. A diagnosis of cutaneous adnexal tumor probably eccrine spiradenoma was offered.

The lesion was excised and gross examination revealed, a single grey white nodule measuring 2×1×0.5 cm. The cut surface was grayish white and nodular. Microscopic examination revealed a well-circumscribed tumor consisting of uniform round to cuboidal cells arranged in nests and sheets around thin-walled capillary-sized blood vessel lined by endothelial cells [Figure 3]. Cells had round, centrally placed nuclei with moderate amount of eosinophilic cytoplasm. Intervening stroma showed myxoid change. A few mast cells were identified with toludine blue at the periphery of the tumor. A diagnosis of glomus tumor was made, with a differential diagnosis of eccrine spiradenoma. Immunohistochemical examination was positive for smooth muscle actin (SMA) and vimentin. The lesion was nonreactive for desmin, cytokeratin and myoglobin. Review of cytological smears showed the presence of spindle-shaped endothelial cells crisscrossing tumor clusters, which is highly suggestive of a vascular lesion, but was overlooked initially.

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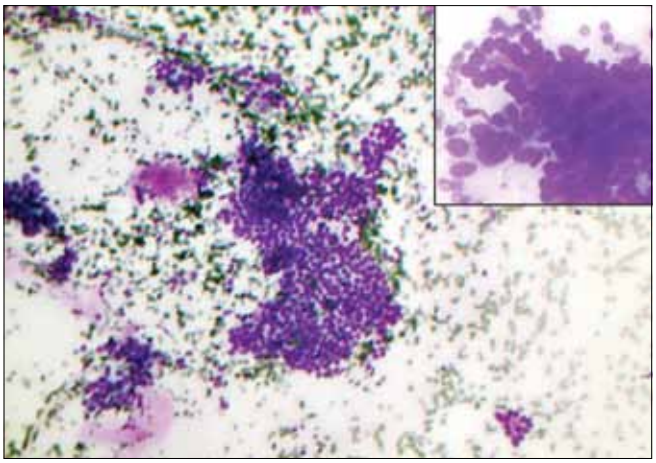

Figure 1: Microphotograph showing clusters of round-to-oval cells (MGG, ×100). Inset showing wisps of magenta-colored material (MGG, ×400)

Figure 2: Microphotograph showing spindle-shaped endothelial cells (arrow) crossing a cluster of tumor cells (MGG, ×400)

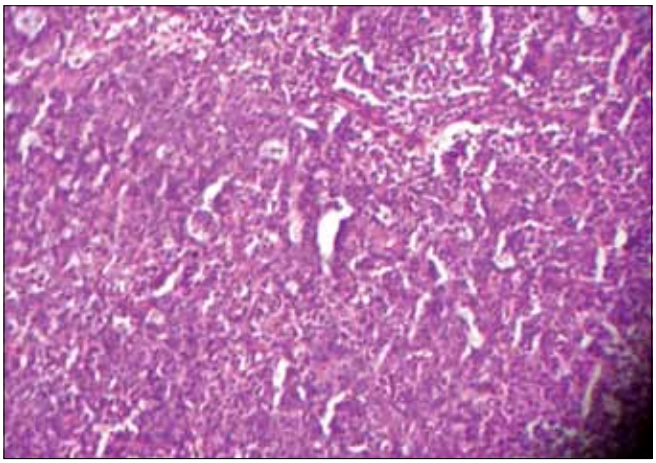

Figure 3: Histopathologic sections showing nests and sheets of tumor cells around endothelium-lined small blood vessels (Hand E, ×100)

Discussion

Glomus tumor is a small benign neoplasm derived from the specialized cell of the glomus body, which is intimately associated with and surround arteriovenous anastomosis. The most important site is the subungual region, deep dermis and subcutis of upper and lower extremities, where arteriovenous anastomoses are numerous. Rare sites include the stomach, mediastinum, lung, trachea, vagina, etc.[5-8]

Cytological features of this tumor was first described by Holck and Bredeson in 1996.[3] Cytologically, the tumor consists of uniform round to oval cells seen in tight or loose cohesive clusters or 3D pattern, along with wisps of magenta-colored intercellular material. Spindle-shaped endothelial cells are seen either in the periphery of a cell cluster or crossing the cell cluster. Glomus tumors have to be differentiated from other vascular lesions, such as hemangiopericytoma, paraganglioma and lobular hemangioma, depending upon the site of origin of this tumor. In hemangiopericytoma, cellular smears show knobby clusters of oval- to spindle-shaped cells with ill-defined finely granular cytoplasm, bland nuclei, but the number of mitotic figures varies.[1] In paragangliomas, cells may show moderate nuclear pleomorphism with fine red granules in the cytoplasm on Romanowsky stains. Lobular capillary hemangioma show Clusters of oval to spindle shaped cells along with a cellular infiltrate of neutrophils and mononuclear cells.[1]

The uniformity of the cells in glomus tumor, along with unusual sites of presentation usually led to misdiagnosis of an epithelial lesion. Holck and Bredeson[3] reported a case of glomus tumor in the axilla of a woman. The fine-needle aspirate was initially interpreted as ectopic breast tissue, considering the oval to polygonal cells as epithelial in origin. Though spindle cells probably endothelial in origin were seen crossing tumor cells along with the presence of myxoid hyalinizing material, the unusual site and the lack of recognition of the cytological features led to a misdiagnosis of ectopic breast tissue.

Vinette-Leduc and Yazdi[4] reported a case of gastric glomus tumor on percutaneous FNAC. Cytological features were initially interpreted as a well-differentiated carcinoma. Histology of the resected tumor revealed a classic glomus tumor. Mai Gu *et al*[2] and Debol *et al*[5] reported cases of gastric glomus tumor on endoscopic ultrasound-guided FNAC. Cytological features showed similar clusters of uniform round cells, with the close association of endothelial cells. However, a cell block and immunohistochemistry helped them to make an initial correct diagnosis of a vascular lesion rather than an epithelial lesion.

In the present case, the site of the lesion with associated pain, and the uniformity of the cells, along with the presence of basement membrane like magenta-colored intercellular

material led to a misdiagnosis of eccrine spiradenoma. Endothelial cells were overlooked on initial examination. The close association of endothelial cells with tumor cells is highly suggestive of a vascular lesion. Both eccrine spiradenomas and glomus tumors are painful cutaneous tumors.[9] Cytologic features of both lesions, which form close differential diagnosis, have been rarely reported. Review of literature revealed only four cases of eccrine spiradenoma reported so far on cytology.[9] Smears of eccrine spiradenoma show the presence of bland uniform cells in cohesive clusters, and cribriform sheets with rosette-like structures surrounding amorphous material.[9] However, the cytologic distinction rests on identifying three types of cells – larger epithelial cells, myoepithelial cells and smaller lymphocytes, which were not seen in our case.

Histologic sections of solid glomus tumor are also known to masquerade as adnexal tumors, such as eccrine spiradenoma and hidradenoma. Determination of immunohistochemical profile usually establishes the diagnosis. Glomus tumors are usually positive for vimentin and SMA, and negative for desmin, S-100, factor –VIII and epithelial markers.[10]

In conclusion, though cytologic features of glomus tumor are similar to that of epithelial cells, meticulous attention to clinical history and cytopathology wherein, endothelial cells are seen in close association to tumor cells, is helpful in arriving at a correct diagnosis.

References

1. Handa U, Palta A, Mohan H, Punia RP. Aspiration cytology of glomus tumor: a case report. Acta Cytol 2001;45:1073-6.
2. Debol SM, Stanley MW, Mallery S, Sawinski E, Bardales RH. Glomus tumor of the stomach:cytologic diagnosis by endoscopic ultrasound-guided fine-needle aspiration. Diagn Cytopathol 2003;28:316-21.
3. Holck S, Bredeson JL. Solid glomus tumor presenting as an axillary mass: report of a case with morphologic study, including cytologic characteristics. Acta Cytol 1996;40:555-62.
4. Vinette-Leduc D, Yazdi HM. Fine needle aspiration biopsy of a glomus tumor of the stomach. Diagn Cytopathol 2001;24:340-2.
5. Gu M, Nguyen PT, Cao S, Lin F. Diagnosis of gastric glomus tumor by endoscopic ultrasound-guided fine-needle aspiration biopsy. A case report with cytologic, histologic and immunohistochemical studies. Acta Cytol 2002;46:560-6.
6. Tank CK, Toker C, Foris NP, Trump BF. Glomangioma of the lung. Am J Surg Pathol 1978;2:103-9.
7. Sheffield E, Dewar A, Corrin B, Addis BJ, Conroy B. Glomus tumor of the trachea. Histopathology 1988;13:234-6.
8. Moldavsky M, Stayerman C, Turani H. Vaginal glomus tumor presented as a painless cystic mass. Gynecol Oncol 1998;69:172-4.
9. Kolda TF, Ardaman TT, Schwartz MR. Eccrine spiradenoma mimicking adenoid cystic carcinoma on fine needle aspiration. A case report. Acta Cytol 1997:41:852-8.
10. Dervan PA, Tobbia IN, Casey M, O'Loughlin J, O'Brien M. Glomus tumors: an immunohistochemical profile of 11 cases. Histopathology 1989;14:483-91

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