Giant Cell Tumor of Tendon Sheath in Supraclavicular Region: Cytological Aspect of a Common Tumor in an Uncommon Location

Sirithep Plumworasawat, MD, MIAC ; Artit Jinawath, MD, PhD



Sirithep Plumworasawat, MD

Department of Pathology, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

*Address Correspondence to author:
Artit Jinawath MD, PhD
Department of Pathology, Faculty of Medicine Ramathibodi Hospital
270 Rama VI Rd. Ratchatewi
Bangkok 10400, Thailand.
email: artitjp@yahoo.com

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Abstract

Giant cell tumor of tendon sheath (GCTTS) is a common neoplasm, frequently developed around small digital joints of hand, and less commonly in wrist, ankle, foot and knee. GCTTS of other locations are very rare. The cytological feature of GCTTS is unique, but it could mimic neoplasm, inflammation or other lesions when arising in unusual locations. We reported a case of a 26-year-old male who presented with a supraclavicular mass. Microscopic features of excised mass revealed well-demarcated oval nodule, composed of polymorphous population of multinucleated giant cells and mononuclear cells with fibrous septa, consistent with the diagnosis of GCTTS. Local recurrence is not occurring during five-year follow-up. The purposes of this report is to present the rarity of this tumor in an exceedingly rare location and to help avoid misdiagnosis with other mimics.

Keywords: giant cell tumor of tendon sheath, cytology, localized tenosynovial giant cell tumor

Giant cell tumor of tendon sheath (GCTTS) or localized tenosynovial giant cell tumor is the most common lesion of giant cell tumors.[1] GCTTS usually involves upper limb especially small joints of the fingers and less commonly occurring in wrist and lower extremities. Most patients frequently present with a gradually growing painless mass with normal adjacent skin. On histologic examination, tumor is composed of various populations of cells, including mononuclear stromal cells, osteoclast-like multinucleated giant cells, lipid or hemosiderin-laden foamy cells. Although GCTTS is a common soft tissue tumor with distinct histologic features, it can be disregarded and misdiagnosed as other mimic lesions especially when originating in uncommon locations. Like this case reported, we present a case of GCTTS in the unusual site of left supraclavicular region, which is clinically suspected to be a pathologic lymph node. To our best knowledge, there is no previous case report of GCTTS in this location in literature.

Case Report

We report a case of 26-year-old male patient, who presented with asymptomatic left supraclavicular mass for a year. Clinical findings were suspicion of pathologic lymph node. Then, fine needle aspiration for cytology was performed and revealed dispersed single histiocyte-like cells, exhibiting round to oval, eccentrically located nuclei, evenly distributed nuclear chromatin, inconspicuous nucleoli, and scant granular cytoplasm. Osteoclast-type multinucleated giant cells and hemosiderin-laden macrophages were also found in minor population, but neither polymorphous population of lymphoid cells nor the background of necrosis was demonstrated. No atypical cellular change or abnormal mitotic figure was displayed (Figure 1). These cytological findings were inconclusive and the possibility of granulomatous inflammation could not be entirely excluded. However, physical examination and chest radiography did not show any supporting evidence of tuberculosis. At a later time, surgeon excised this nodule for histologic examination. Microscopic findings demonstrated well-demarcated oval mass with fibrous septa. The tumor cells were a polymorphous population, comprising of osteoclast-like multinucleated

giant cells, mononuclear stromal cells, hemosiderin-laden macrophages and some xanthoma cells without cytological atypia, lymphoid cell proliferation or tissue necrosis. Mitotic number was 0-1 per 10 high-power fields (HPF). These osteoclast-like multinucleated giant cells and xanthoma cells are positive for CD68 by immunohistochemistry (Figure 2). The pathologic diagnosis was giant cell tumor of tendon sheath at left supraclavicular region. Patient had good post-operative symptoms. During five-year follow-up, no local recurrence developed.

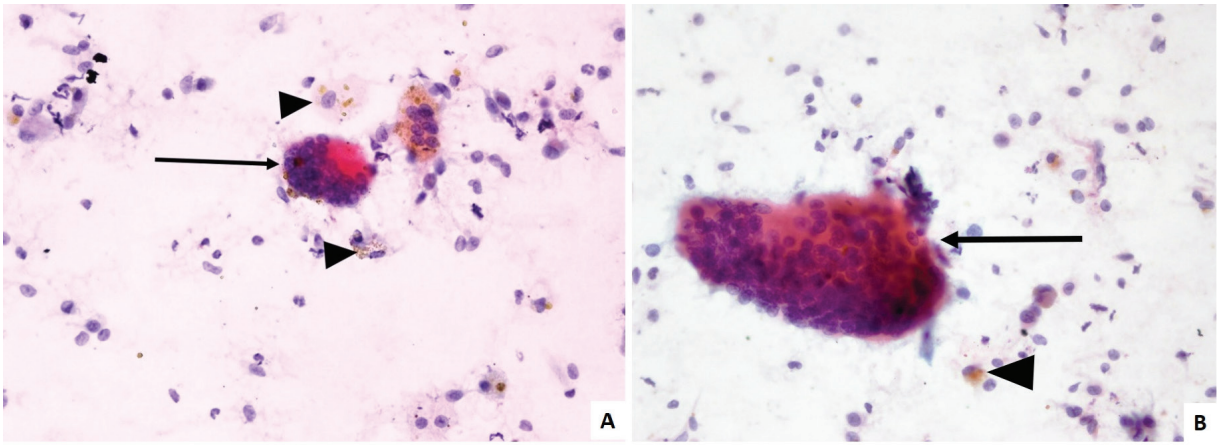


Figure 1: Cytological findings of GCTTS with dispersed histiocyte-like cells, multinucleated giant cells (arrow) and hemosiderin-laden cells (arrowhead) (A-B: Papanicolaou stain, x400)

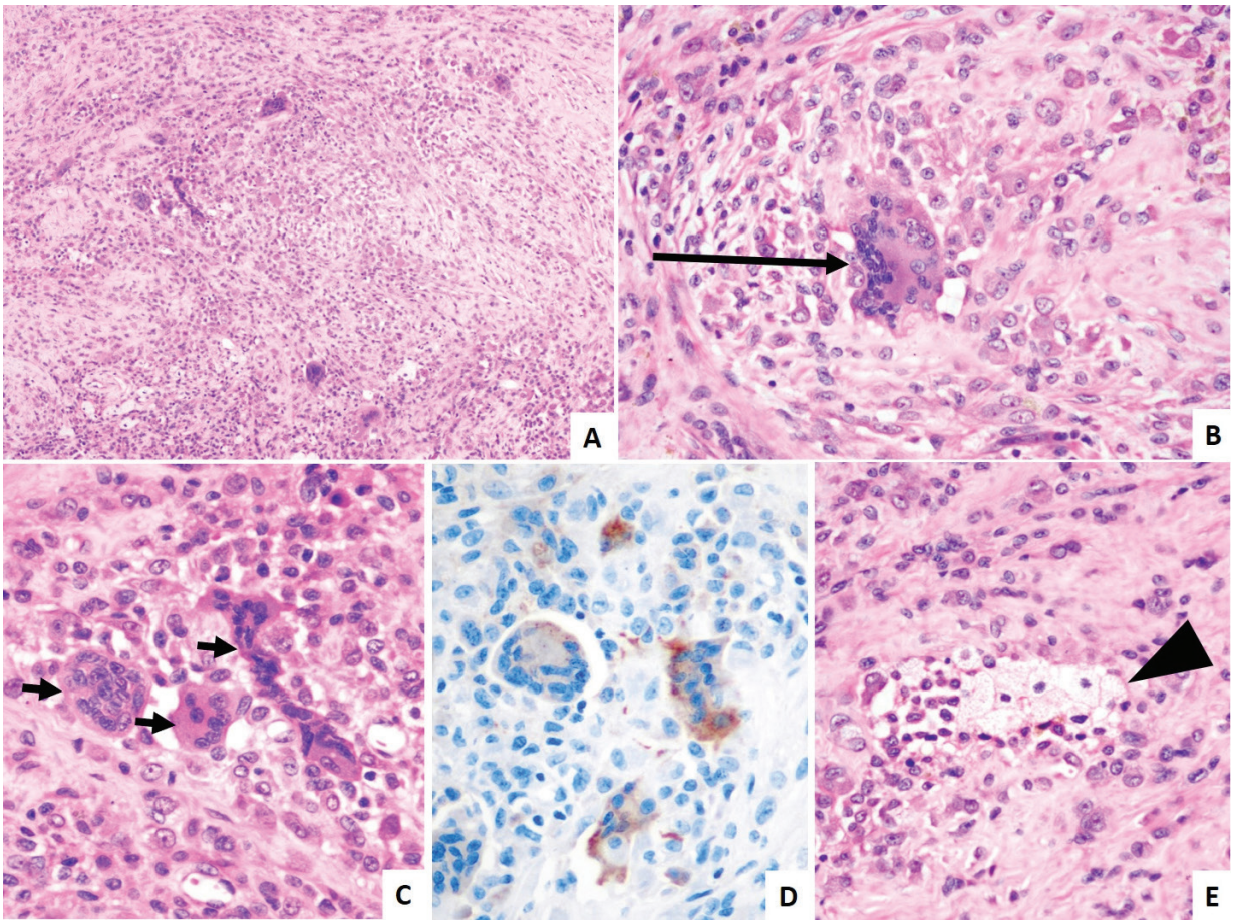


Figure 2: Microscopic findings of GCTTS (A-C) various population of cells in tumor, composing of scattered mononuclear stromal cells and osteoclast-like multinucleated giant cells (arrow) (A: hematoxylin-eosin stain, x100; B-C: hematoxylin-eosin stain, x400); (D) Osteoclast-like multinucleated giant cells are positive for CD68 (x400); (E) aggregates of xanthoma cells (arrowheads) in tumor (hematoxylin-eosin stain, x400).

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Discussion

Giant cell tumor of the tendon sheath have been recently known as localized type tenosynovial giant cell tumor, and most commonly occurred in the small joints of hands and feet.[1-2] Some studies also reported GCTTS at knee, periungual, palmar and shoulder regions.[3-6] Cytological features are unique and are composed of two main components, including stromal cells and multinucleated giant cells.[2,7] First are the stromal cells or histiocyte-like cells that appear round to fusiform, eccentrically placed nuclei, even chromatin distribution, single micronucleoli and a small to moderate amount of cytoplasm with dispersed individual cells or loosely aggregated sheets.[2,7-9] Binucleation, nuclear groove or intranuclear pseudoinclusion may be illustrated in some cases.[2,8,10] Multinucleated giant cells are another main feature of GCTTS. They usually contain 3 to more than 50 nuclei in each cell with amphophilic cytoplasm.[2,7,9] Other features, advocating GCTTS diagnosis, are hemosiderin-laden macrophages, xanthoma cells and myxoid background.[2,7,9,11] According to these features in those prior studies, almost all findings could be found in our presented case, comprising stromal cells, multinucleated giant cells and hemosiderin-laden macrophages. Nevertheless, xanthoma cells and myxoid stroma were not prominent.

According to the histopathology, differential diagnosis of GCTTS includes inflammatory process, particularly granulomatous inflammation, or neoplasm (such as pigmented villonodular synovitis (PVNS), giant cell tumor (GCT) of soft tissue or metastatic carcinoma).[7] Especially unique and uncommon location, granuloma or metastatic giant cell rich carcinoma should also be highly considered and distinguished from GCTTS. PVNS is usually found in large joint space with ill-defined infiltrative margin. GCT of soft tissue has more uniform distributed giant cells through the lesion. From these former statements, PVNS and GCT of soft tissue are less likely in our case. As could be seen in the reported case, numerous histiocyte-like cells with focal aggregates and frequent multinucleated giant cells may resemble lymphohistiocytic aggregates in granuloma, having more incidence than GCTTS in supraclavicular region. However, scant lymphoid cells and no necrotic background were unlikely to support the diagnosis of granulomatous inflammation. Therefore, cytological diagnosis should be careful in giant cell rich lesion with strict diagnostic criteria to prevent the misleading diagnosis for unnecessary treatment.

Conclusion

Although GCTTS have specific morphologic features to diagnose them, it may not be recognized, however, when it occurs in an unusual region and may probably mislead to other mimickers. Based on our knowledge, there is no prior report of GCTTS in this area and few studies of these tumoral cytological features. This reported case demonstrates another GCTTS in supraclavicular area, suggesting concern of the cytological diagnosis of its mimics in uncommon location.

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