Giant cell tumor of soft tissue: Cytological diagnosis of a case

ABSTRACT
Giant cell tumors of soft tissue (GCT-STs) are rare neoplasms and are mainly seen in adults and in the elderly population, usually in the extremities. When evaluated along with clinical features, the cytological features are sufficient to distinguish GCT-STs from other more common tumors with giant cell morphology. We report here a case of a giant cell tumor of soft tissue diagnosed on the basis of fine needle aspiration cytology and confirmed after histopathology.

Key words: Giant cell tumor; multinucleated giant cell; fine needle aspiration cytology.

Introduction

A giant cell tumor of the soft tissue (GCT-ST) is a rare tumor that was first described in 1972 by Salm and Sissons, followed shortly by Guccion and Enginger. This tumor has been considered to be synonymous with the giant cell variant of malignant sarcoma, and is reported to have frequent local recurrence and metastasis. GCT-STs represent the soft tissue analog of giant cell tumors of the bone because of their histological and immunohistochemical similarities. Most of the reported tumors have been in the extremities with the thigh being the most commonly affected site.

These tumors show unpredictable behavior—some patients are cured by simple surgical excision whereas others develop metastasis. A primary giant cell tumor of soft tissue of low malignant potential should be considered in the differential diagnosis of bland-looking, giant cell-rich lesions.

Case Report

A 30 year-old male presented with a superficial, tender mass of three months’ duration, around 2.5×1.5 cm in size, and involving the lower part of the thigh. No bone involvement was visible on the radiographs. Fine needle aspiration cytology (FNAC) was done and slides stained with Giemsa stain. Microscopic examination showed numerous, elongated stromal cells, singly and in clusters, along with numerous, large, osteoclastic giant cells. Pleomorphism, cytological atypia, and mitotic activity were absent [Figure 1]. Diagnosis of a giant cell tumor of the soft tissue was made based on FNAC. The mass was excised. On gross it showed multiple, grey-brown fragment of soft tissue altogether measuring 2.5 cm in diameter. Processing was routine and hematoxylin and eosin staining was done. Microscopic findings were of a cellular tumor composed of spindle to oval cells admixed with numerous, multinucleated giant cells. These giant cells were scattered uniformly and appeared to have a similar nucleus as that of the surrounding spindle cells. As before, pleomorphism, cytological atypia, and mitotic activity were absent [Figure 2]. Thus, the diagnosis of a giant cell tumor of soft tissue was confirmed histologically. The patient’s recovery was uneventful after surgery.

Discussion

A giant cell tumor of the soft tissue is a tumor whose cytomorphology closely resembles that of a giant cell tumor of the bone. Many consider malignant giant cell tumors of the soft parts as histological variants of malignant fibrous histiocytomas. These GCT-STs occur in patients in all age groups ranging from one to 87 years. Our patient was a young adult male aged 30 years having a soft tissue mass in the lower thigh. Approximately 80–90% of all giant cell tumors are located in the extremities. Other tumor locations include the face, abdominal wall, shoulders, neck, and retroperitoneum. The histogenesis is unclear and the behavior is dependent upon

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the location, size, and microscopic appearance. Low- and high-grade forms have been separated from each other on the basis of the atypia, pleomorphism, and mitotic activity of the mononuclear neoplastic component. Malignant forms of giant cell tumors of soft tissue show a mixture of osteoclast-like, multinucleated giant cells, cytoplasm-rich histiocytes, and fibroblasts. The latter two cell types exhibit varying degrees of cellular and nuclear pleomorphism. Hemorrhage and necrosis are frequent findings; fibroblasts show varying degrees of atypia with fibrosarcoma-like areas. The mitotic activity of mononuclear histiocytes and fibroblast-like cells has been found to be high, with up to ten mitotic figures per high power field (HPF).

Differential diagnoses of GCT-ST includes soft tissue mesenchymal tumors that are rich in giant cells, especially nodular tenosynovitis, which is encapsulated, shows characteristic, nodular growth patterns, lacks the typical spindle stromal cells of a conventional giant cell tumor, and contains scattered giant cells, lymphocytes, foamy macrophages, and large amount of fibrous tissue. These features are scarce or absent in GCT-STs. Other benign tumors include pigmented, villonodular synovitis, which affects synovial lined joints, bursae, and tendon sheaths. This is characterized by the presence of hemosidrin-laden, multinucleated giant cells. Nodular fascitits with osteoclast-like giant cells are composed of immature fibroblasts in sheets and irregular bundles. Giant cells surround the area of hemorrhage and myxoid degeneration. Giant cell malignant fibrous histiocytoma, osteoclast-like, giant cell-rich leiomyosarcoma, and extraskeletal osteosarcoma are usually large, deep-seated lesions with obvious cellular atypia. In contrast, GCT-ST is frequently superficial and devoid of significant pleomorphism and atypical mitosis.

Teiera et al. described primary giant cell tumor of soft tissue in a 54 year-old man that appeared histologically identical to a giant cell tumor of the bone. Kim et al. described cytological features of giant cell tumor of soft tissue in a 58 year-old woman with a well demarcated dermal tumor. Histopathological examination showed numerous, osteoclast-like giant cells and mononuclear cells with a bland nucleus. The authors concluded that a primary giant cell tumor of soft tissue should be considered in the differential diagnosis of bland-looking, giant cell-rich lesions.

In our case, the tumor did not show any pleomorphism, cellular atypia, or mitotic figures, and the patient remained well and asymptomatic after tumor removal.

In conclusion, GST-ST occurs as a primary, soft tissue neoplasm and it is identical clinically and morphologically to giant cell tumor of the bone. Complete excision of the GCT-ST results in a benign clinical course because episodes of distant metastasis and tumor-associated death seem to be exceedingly rare.

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