

Case Report**Giant cell tumor of soft tissue in groin region,  
clinically diagnosed as inguinal lymphadenopathy***Ahmad Sobhan Ardakani\*, Fereshteh Mohammadizadeh\*\****Abstract**

Giant cell tumor of soft tissue is a rare primary soft tissue neoplasm with clinical and histological similarities to giant cell tumor of bone. Most cases arise from superficial soft tissue of extremities and present as painless and well circumscribed masses.

Adequate surgical treatment by complete excision is associated with a benign clinical course in most cases. We report a case of primary giant cell tumor of soft tissue in groin region of a young man which was thought to be an inguinal lymphadenopathy in clinical examination.

**KEY WORDS:** Giant cell tumor, soft tissue, inguinal lymphadenopathy, groin.

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**G**iant cell tumor of soft tissue (GCT-ST) is a rare primary soft tissue neoplasm that is clinically and histologically similar to giant cell tumor of bone<sup>1-3</sup>. It affects both sexes in equal numbers and mainly occurs in the fifth decade of life, but can affect patients ranging in age from 5 to 89 years. The tumor usually occurs in soft tissues of upper and lower extremities. Less frequently, affected areas are in the trunk, head and neck region. GCT-ST usually involves superficial soft tissue (subcutaneous tissue and fascia), but deeply located cases also occur<sup>1</sup>. Clinically, the tumor presents as a painless growing mass with an average duration of symptoms of 6 months. It ranges in size from 0.7 to 10 cm and presents as a well-circumscribed, solid, nodular mass with a fleshy red-brown or gray cut surface<sup>1</sup>.

Microscopically, most tumors display a multinodular architecture at low magnification. The cellular nodules are separated by fibroconnective tissue septa and are composed of a mixture of round to oval (some fibroblast-like) mononuclear stromal cells and osteoclast-like multinucleated giant cells with both cell types immersed in a richly vascularized stroma<sup>1,4-6</sup>. GCT-ST displays immunoreactivity to vimentin, CD68, and smooth muscle actin. CD68 strongly marks giant cells, while mononuclear cells only show focal staining. Smooth muscle actin stains a few mononuclear cells and does not mark giant cells<sup>1,7</sup>. Multinucleated giant cells also show intense positivity for acid phosphatase<sup>4,7</sup>.

Here, we report a case of giant cell tumor of soft tissue in the groin region.

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### Case report

A 20-year-old man presented with a painless right-sided groin mass noticed by the patient 4 months before presentation. In clinical examination, the mass was superficially located, well circumscribed, and nontender. The clinical impression was inguinal lymphadenopathy. No other remarkable finding was detected in physical examination.

According to clinical diagnosis, the surgical plan of excisional lymph node biopsy was considered for the patient. Macroscopic examination of the excised specimen revealed a well-circumscribed mass measuring  $3.5 \times 2.5 \times 2$  cm. On section, the mass had a rather firm consistency and a solid, nodular gray-colored cut surface. No focus of necrosis and hemorrhage was evident (figure 1). Microscopically, the lesion was composed of plump to fibroblast-like mononuclear cells admixed with osteoclast-like multinucleated giant cells. Mitotic activity and nuclear pleomorphism were absent (figures 2 & 3). Multiple sections from periphery of the mass were prepared, none of which revealed lymph node structure.

According to these findings, our diagnosis was primary giant cell tumor of soft tissue. Although the mass was well circumscribed and superficial and extension from a giant cell tu-

mor of bone to soft tissue seemed very far from expectation, plain radiographic films were taken from pelvis, showing no abnormal finding and thus excluding such a probability. For further confirmation of our diagnosis, immunohistochemical study was also conducted, using the markers CD68, vimentin, and actin (DakoCytomation). Both mononuclear and multinucleated giant cells were CD68- and vimentin-positive (figures 4 & 5), while actin stained only a few numbers of mononuclear cells with no apparent reaction in multinucleated cells (figure 6).

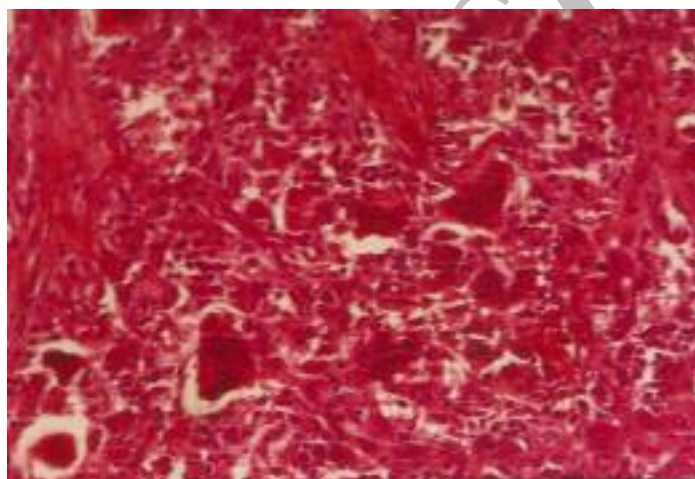
The main differential diagnosis was "plexiform fibrohistiocytic tumor", which is a soft tissue neoplasm usually presenting as a slow-growing dermal or subcutaneous mass in an upper extremity. Microscopically, it is composed of fibroblast-like and histiocyte-like mononuclear cells admixed with osteoclast-like giant cells. However, it occurs chiefly in children and young adults and has myofibroblastic differentiation. Therefore, it shows diffuse positivity of tumor cells for smooth muscle actin in contrast to only scattered immunoreactivity of mononuclear cells of GCT-ST for this marker<sup>4,8,9</sup>.



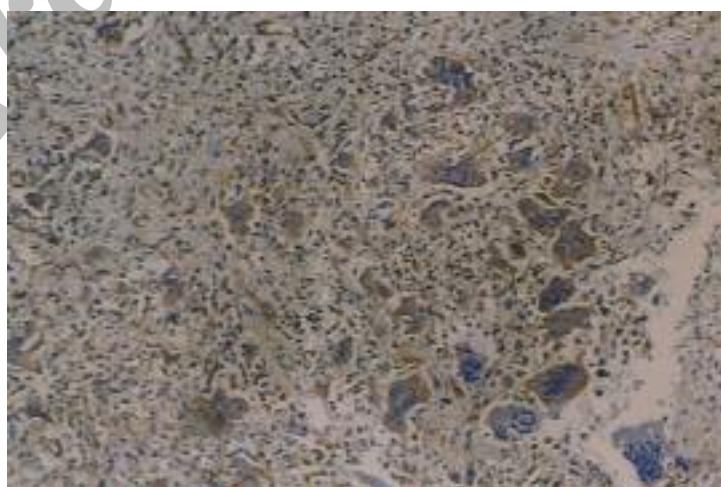
**Figure 1.** Cut surface of the excised lesion, showing a well circumscribed mass with solid nodular gray surface.



**Figure 2.** Microscopic view of the mass, showing admixture of oval mononuclear cells and multinucleated giant cells (X100).

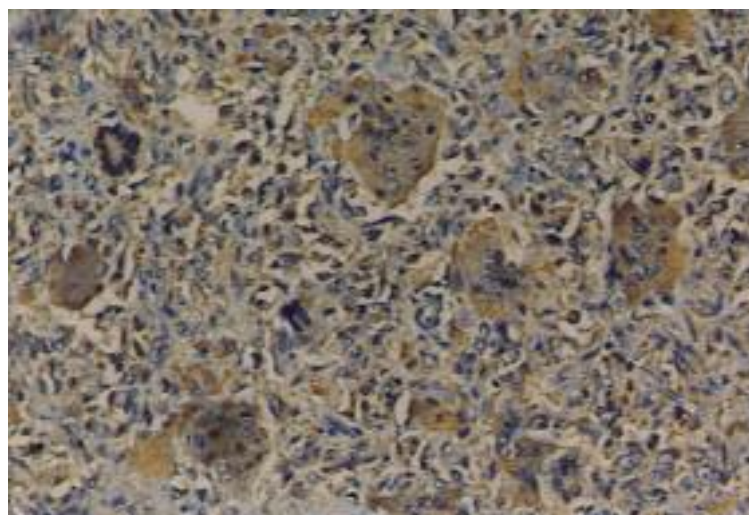


**Figure 3.** High power magnification microscopic view of the mass. Admixture of oval mononuclear cells and osteoclast-like multinucleated giant cells is evident (X400).

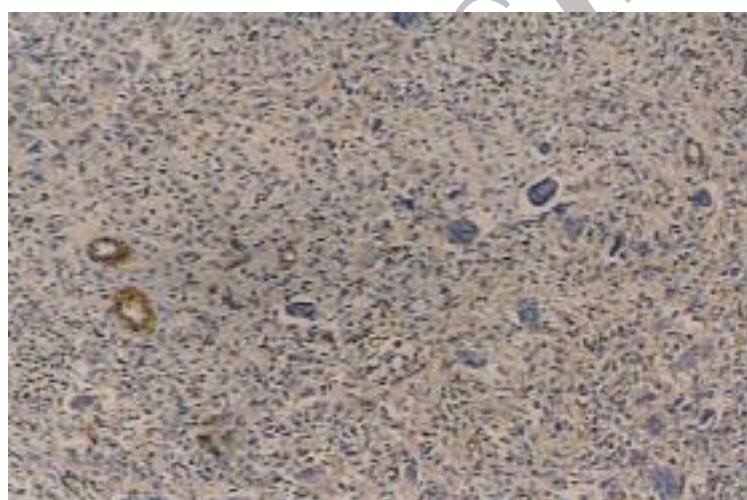


**Figure 4.** CD68 immunohistochemical staining has marked multinucleated giants cells and some mononuclear cells (X100).





**Figure 5.** Vimentin immunohistochemical staining has marked both mononuclear cells and multinucleated giant cells (X400).



**Figure 6.** Actin immunohistochemical staining. Only scattered mononuclear cells have been marked (X100).

## Discussion

In earlier schemes, giant cell tumor of soft tissue had been included as one of the histologic types of malignant fibrous histiocytoma, but this is no longer favored<sup>4</sup>. Today, it is considered as the soft tissue analogue of giant cell tumor of bone according to light microscopic, ultrastructural and histochemical characteristics<sup>1,3,7</sup>. The behavior is dependent upon the location, size, and microscopic appearance. Low-grade (benign, of low malignant potential) and high-grade (malignant) forms are separated from each other on the basis of the atypia, pleomorphism and mitotic activity of

the mononuclear neoplastic component<sup>4,10</sup>. Since the presented case was devoid of nuclear atypia and mitotic activity, it can be placed in the benign category; this combined with its superficial location and complete surgical excision predicts a favorable behavior for it. In patients with clinical follow-ups ranging from 34 to 45 months, GCT-ST was associated with a local recurrence rate of 12% and very rare metastasis and death. Incomplete surgical excision is apparently followed by local recurrence<sup>1</sup>. Three-year follow-up of 19 patients with GCT-ST by Folpe et al revealed recurrences in four patients<sup>7</sup>. Follow-up information from 16

patients with GCT-ST by Oliveira et al indicated local recurrence in only one case <sup>11</sup>. O'Connell et al study of 18 cases of GCT-ST revealed no recurrence in benign tumors <sup>12</sup>.

## Conclusion

GCT-ST occurs as a primary soft tissue

neoplasm and should be considered in the differential diagnosis of giant cell-rich soft tissue tumors. Provided that GCT-ST is treated adequately by complete excision, a benign clinical course is expected in most cases.

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