Pleomorphic lipoma: A gentle giant of pathology

ABSTRACT
Pleomorphic lipoma is a relatively rare adipocytic neoplasm, occurring predominantly in elderly males in the subcutaneous tissues of the neck or shoulder. To the best of our knowledge, only five cases have been reported in which the lesion was intramuscular. We hereby report a case of a 60-year-old female patient, presenting with an intramuscular, posterior shoulder mass. The aspirate showed a giant cell-rich lesion, admixed with short, plump-looking, spindly cells. There was no overt evidence of malignancy; however, the cell cytology was sufficiently atypical to warrant concern. Subsequent excision revealed a classical pleomorphic lipoma on histology with no evidence of malignancy. CD34 staining by immunohistochemistry further supported the diagnosis. Differential diagnosis and the cytological diagnostic pitfalls of pleomorphic lipomas have been discussed with a review of the literature.

Key words: Bizarre cells; intramuscular; pleomorphic lipoma

Introduction
Spindle cell/pleomorphic lipoma is a relatively rare adipocytic neoplasm, which occurs predominantly in male patients aged 50-70 years.[1] In most cases, it is detected in the subcutaneous tissues of the neck or shoulder. To the best of our knowledge, only five cases have been reported in which the lesion was intramuscular, the last one being a rare occurrence of spindle cell lipoma within an intramuscular lipoma.[2,3]

Case Report
A 60-year-old lady presented with a large, slowly-growing mass over the posterior aspect of the neck and back. It was indolent and long-standing to start with, presenting with a spurt of growth in the recent past.

Fine-needle aspiration cytology (FNAC) was performed. The aspirate showed a cellular picture of spindle cells, pleomorphic multinucleated giant cells, and many bizarre cells. There was no necrosis or mitosis appreciated in the smears but the bizarre cells were alarming and the intramuscular location suggested a possible sinister pathology [Figure 1]. A cautious diagnosis of a “mesenchymal tumor, rich in multinucleated giant cells of uncertain malignant potential” was offered and a wide excision was advised.

Gross
A gross examination of the excised specimen showed a well-circumscribed intramuscular mass measuring 8 cm × 5 cm × 4 cm. The cut surface showed recognizable yellowish adipocytic areas admixed with streaks of gray white glistening areas. There were no areas of hemorrhage or necrosis. No infiltrating tongues of tissue or features to suggest invasion were identified. Muscle was seen all around the lesion and the resection margins were clear.

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Microscopy
The classical morphology of a pleomorphic lipoma was seen consisting of adipocytic cells admixed haphazardly with dispersed spindle cells and scattered pleomorphic cells [Figure 2]. Floret giant cells were present. There was no mitosis or necrosis. No lipoblasts or plexiform capillary network was appreciated.

Immunohistochemistry with CD34 highlighted the spindly cells, further substantiating the diagnosis.

Discussion
Pleomorphic lipoma is a relatively uncommon benign adipocytic tumor that shows a variable lipomatous component, spindle-shaped cell component, and floret-like giant cells with nuclear pleomorphism, and was first described by Shmookler and Enzinger in 1981.[4] It is reported to be four times more common in males, in the age group of 50-70 years.[1] Only 10% of tumors occur in females. Our patient was an elderly lady.

The most typical location is the subcutaneous tissue in the head and neck region. However, few unusual sites have been reported such as the tonsillar fossa, orbit, and tongue and very few in the intramuscular compartment.[2,3] In our case, the site was the shoulder, which is typical; however, the intramuscular location was unusual. Most published cases have been described in the superficial compartment of the dermis. Typically, the lesion appears as a circumscribed, subcutaneous mass, which looks like the ubiquitous lipoma. However, microscopically, instead of the mature adipose tissue cells of the usual lipoma, it is characterized by an intimate admixture of variable-sized fat cells, spindle cells and bizarre, pleomorphic, multinucleated giant cells. Many of the giant cells show a distinctive floret-like arrangement of the nuclei and are associated with interlacing bundles of dense ropy collagen.[4] In our case, the cells were more bizarre than usual with intranuclear inclusions, SR-like cells, and pleomorphic multinucleation.

While histology is well-documented in the literature, very few articles outline the cytological features of a pleomorphic lipoma.[5-8] The cytology shows a population of floret cells and pleomorphic cells admixed with adipocytes and spindle cells.[8] The floret cells show multiple enlarged hyperchromatic nuclei arranged in a circle or semicircle in the cytoplasm. No atypical lipoblasts or arcuate capillary network is present. The diagnosis must be given with caution and with clinicoradiologic correlation because pleomorphic lipomas can mimic other benign and malignant soft tissue tumors such as giant cell fibroblastoma, myxoid liposarcomas, fibrosarcomas, or even anaplastic carcinomas.[6-8] Giant cell fibroblastoma is a juvenile form of dermatofibrosarcoma protuberans, which is also CD34-positive and can have a similar giant cell-rich picture on cytology.[9] However, it predominantly affects infants and children while pleomorphic lipoma mainly occurs in elderly men.

Myxoid liposarcoma involves the deep soft tissue of the extremities with a peak age incidence in the 4th or 5th decade. Cytologically, these tumors have myxoid background matrix with many univacuolated lipoblasts or multivacuolated lipoblasts and a characteristic rich plexiform vascular meshwork.

Myxoid fibrosarcoma is more common than pleomorphic lipoma in elderly males but the majority of these tumors occur in the extremities, and rarely on the trunk or head.
and neck area. Histologically, myxoid fibrosarcoma usually consists of spindle-shaped cells and multinucleate giant cells, and is characterized by prominent elongated, curvilinear, thin-walled blood vessels. Although the spectrum of myxoid fibrosarcoma is also variable, it tends to have more cellular atypia and mitotic activity. Moreover, myxoid fibrosarcoma usually lacks strong CD34 expression.[1]

The rarity of intramuscular pleomorphic lipomas and the atypical cellular features of the aspirate can cause difficulty in diagnosing this entity.[5] Even in our case, a malignant tumor was suspected because of the tumor location and the cytological picture. However, the classical histology of the excision specimen was reassuring. The differential diagnoses of a bizarre-looking but benign pleomorphic lipoma must always be kept in mind when evaluating the cytology of soft tissue tumors located at this anatomic site in the adult age group.

Conclusion

Cytology serves as a guide to the reporting pathologist, in that it cautions us to rule out potentially malignant tumors because there is a growing awareness of the existence of a benign giant cell-rich tumor at this particular anatomic site. Pleomorphic lipomas are “clinicopathologic” entities, which necessitate attention to details such as the age and sex of the patient, the anatomic plane of the tumor, and this particular giant cell-rich morphology.

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Conflicts of interest
There are no conflicts of interest.

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