A Case of Well-Differentiated Liposarcoma

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Liposarcoma is a rare mesenchymal tumor that occurs most commonly in the soft tissue of the extremities. It develops deeply in the intramuscular fatty tissue and consists of lipoblasts.

We experienced a case of well-differentiated liposarcoma on the thigh of a 48-year-old female, who presented with a skin-colored, child fist-sized mass. Liposarcoma is rare in the dermatologic field, so we herein report a case of well-differentiated liposarcoma.

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INTRODUCTION

Liposarcoma is one of the most common soft tissue sarcomas which occurs in adults\textsuperscript{1,2}. The lower extremities and the retroperitoneum are the sites of greater incidence of this mesenchymal tumor\textsuperscript{3}. Enzinger and Weiss\textsuperscript{1} divided liposarcoma into the following 5 major morphologic subtypes: well differentiated, myxoid, round cell, dedifferentiated, and pleomorphic liposarcoma. Myxoid liposarcomas account for 40% to 50% of these tumors. Well-differentiated liposarcomas are less-aggressive neoplasms and can produce metastases.

One case of myxoid liposarcoma has been described in the Korean dermatologic literature\textsuperscript{3}. Liposarcoma is rare in the dermatologic field, so we herein report a case of well-differentiated liposarcoma affecting the right thigh.

CASE REPORT

A 48-year-old female visited our clinic with the chief complaint of a skin lesion on her right thigh of two years duration. She had no remarkable past or family history. Physical examination revealed a skin-colored, child fist-sized mass on her right thigh (Fig. 1).

When the biopsy was performed, the specimen was obtained by an incisional biopsy technique. Because the mass was attached to the surrounding muscle fibers and fascia, the mass could not be removed entirely. MRI (Magnetic Resonance Imaging) was then performed. MRI results showed a well-defined, \(5 \times 3 \times 8\) cm-sized heterogeneous mass in the deep seated soft tissue (Fig. 2). The patient was transferred to the department of orthopedic surgery and the lesion was widely excised. Postoperative radiotherapy then followed. There was no recurrence in 4 months following the excision.

Fig. 1. A skin-colored, child fist-sized mass on the right thigh.
Fig. 2. Magnetic Resonance Imaging (MRI) showed a well-defined, about $5 \times 3 \times 8$ cm sized heterogenous mass in the deep seated soft tissue.

Fig. 3. Histopathological findings. (A) Fibrous septa containing cells with enlarged hyperchromatic atypical nuclei ($\times 100$). (B) Many atypical cells exhibiting pleomorphism, bizarre nucleus and abundant eosinophilic cytoplasm are seen, and considered to be lipoblasts ($\times 400$). (C) Signet-ring cells were present, filled with a single large lipid globule, and showing a lateral displacement of the nucleus ($\times 400$).

In excisional biopsy, the histopathologic examination revealed univaculated fat cells of various sizes and fibrous septa containing cells with enlarged hyperchromatic atypical nuclei (Fig. 3-A), plus many atypical cells exhibiting pleomorphism, bizarre nucleus and abundant eosinophilic cytoplasm were seen, and considered to be lipoblasts (Fig. 3-B). Signet-ring cells were present, filled with a single large lipid globule, and showed a lateral displacement of the nucleus (Fig. 3-C). In immunohistochemistry,
vimentin (Fig. 4-A) and S-100 protein (Fig. 4-B) were positive, but desmin and alcian blue were negative.

**DISCUSSION**

Liposarcoma is reported to comprise of 7% to 27% of soft tissue sarcomas, and they may occur wherever fat is present. Liposarcoma was once considered to be the most common type of soft-tissue sarcoma. However, it now seems that their true incidence is much lower, because the recognition of the myxoid variant of malignant fibrous histiocytoma is thought to be a separate entity. In fact, it develops deeply from the intramuscular fatty tissue and consists of lipoblasts. The role of trauma in the etiologic mechanism of a liposarcoma is admittedly controversial.

Detailed histological examination is essential in all well-differentiated liposarcoma, which can be commonly mis-diagnosed as its benign counterpart. Lipoma is considered as differential due to the bland clinical course and indolent tumor behavior. However, careful histological analysis of tumor features denoted a lack of capsule, plus invasion of deep connective tissue and muscle fibers by lipoblasts in various stages of differentiation, and pointed to the diagnosis of a malignant fat tumor. Additionally, lipocytes which show different shapes, mesenchymal cells containing tiny droplets in their cytoplasm, and signet ring cells were observed. This is also in accordance with the cases of well-differentiated liposarcoma previously described in the literature.

The main utility of immunohistochemistry in the diagnosis of liposarcoma is one of exclusion, because no specific or useful immunohistochemical marker has been found for malignant fatty tumors. Immunohistochemistry can be quite helpful in revealing the true identities of various sarcomas that may contain vacuolated bizarre cells, such as malignant schwannoma (S-100 protein), rhabdomyosarcoma (myoglobin), and leiomyosarcoma (desmin). S-100 protein is positive in adipocytes and can be focally positive in spindle cells.

In our case, histopathologic examination showed univacuolated fat cells of various sizes, fibrous septa containing cells with enlarged hyperchromatic atypical nuclei (Fig. 3-A), and many atypical cells exhibiting pleomorphism, bizarre nuclei and abundant eosinophilic cytoplasm were seen, and considered to be lipoblasts. In immunohistochemistry, vimentin (Fig. 4-A) and S-100 protein (Fig. 4-B) were positive, but desmin and alcian blue were negative. We therefore diagnosed our case as a well-differentiated liposarcoma.

Other entities should also be considered in the differential diagnosis of liposarcoma, including spindle cell lipoma, myxoma, myxosarcoma, benign fat tumors (fibroma), angiolioma, fibrolipoma, pseudosarcomatous fasciitis and malignant histiocytoma. For well-differentiated liposarcoma, a wide local excision is always recommended and radiotherapy is occasionally considered as an adjunct therapy.

The outcome of liposarcoma is determined to be of a significant degree by many factors such as histological subtype, tumor location, age older than 50 years, tumor size greater than 10 cm, positive
microscopic margins, and locally recurrent presentation. Clinical behavior is associated with histology. The most significant parameters in grading liposarcoma are tumor differentiation, mitotic count, and extent of necrosis. Low-grade lesions show a high incidence of local recurrence but little-to-no propensity for metastasis, while high-grade lesions show good prognosis for long-term survival, in contrast to high-grade or poorly-differentiated tumors which often manifest clinically aggressive behavior with a high incidence of local recurrence and distant metastasis. In our present case, the patient was younger than 50 years old, the tumor was smaller than 10 cm, and well-differentiated type. Also there was no locally-recurrent presentation, so the prognosis was considered to be favorable.

After histopathologic diagnosis of a well-differentiated liposarcoma, the patient was treated by wide local excision, followed by postoperative radiotherapy. Long-term follow up was recommended. At the 4 month check-up, the patient was found to be free of disease.

REFERENCES