Spindle Cell Lipoma of the Dorsal Parts of the Foot

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Abstract

Spindle cell lipoma (SCL) is a tumor of the mature fat tissue that the collagen producing spindle cells take place in varying proportions. Most frequently, it settles on the back and neck and is located in the subcutaneous tissue. It is commonly seen in male patients in the 4th–5th decades. In addition to immunohistochemical examination, histopathological examination is necessary for the differential diagnosis. In this study, a spindle cell lipoma located on the dorsal foot was discussed along with the current literature review.

Keywords: Spindle cell, lipoma, lipocyte, tumor

INTRODUCTION

Spindle cell lipoma (SCL) is a mixture of mature adipocytes and a varying number of collagen producing spindle cells. It has a predilection for the shoulders, back of the torso, and the neck1,2, localized subcutaneously in general. It most often permits confident diagnosis, while differential diagnosis can be difficult due to histopathological variants.2

Spindle cell lipoma was first described in 1975 by Enzinger and Harvey.3,4 While it is known to be most prevalent among males aged 45 to 60,1,4 latest literature reports rare occurrences also in the oral cavity ⁵, the larynx⁶, the bronchial tubes⁷, the breasts⁸, the orbital region⁹, and the lower limbs⁴.

This study aims to discuss an SCL case localized in the dorsal region of the foot in view of the current literature.

CASE PRESENTATION

A 60-year old male patient admitted to our clinic with a long-standing painless lump that had grown to 3-4 cm in the past two years. Physical examination of the patient revealed a moderately firm, mobile, well-circumscribed mass not fixed to the adjacent tissues. Ultrasound assessment of the patient found a lipomatous mass of 35 x 25 x 15 mm. No regional lymphadenopathy or no neurovascular deficit distal to the lesion was identified. The mass was scheduled to be removed surgically.

The patient was operated under sedation and local anesthesia. The capsule of the mass was accessed through a Lazy S incision over the mass on the dorsal of the foot. The mass was released from the surrounding tissues by obtuse and sharp dissection. The mass was totally excised while preserving the adjacent anatomic structures (Figure 1). A macroscopic tissue sample was taken for pathological examination. It was observed to be of yellow-white color with a well-circumscribed capsular structure slightly firmer than a typical lipomatous mass.

Histopathological examination using H&E staining confirmed a well-circumscribed, lipomatous mass. Mature lipocytes were seen to be separated into lobules by fibrous septa. Multiple collagen bundles and spindle-shaped nucleated cells were observed in the lobules (Figure 2).
Immunohistochemical evaluation reported positive for S100 protein, CD34 antibody showed peripheral staining of lipocytes while cytoplasmic staining was observed in spindle-shaped cells. The findings were found to be consistent with SCL.

Since the lesion was localized to the foot, controlled mobilization was begun following the surgical procedure to avoid complications in healing. Plaster cast and splint were used for 7-10 days. No serious issues were experienced in the post-operative period and no findings associated with local recurrence were identified during the 12-month follow-up.

**DISCUSSION**

Lipomas are benign tumors seen commonly in soft tissues. Their prevalence is about 1/1000 in the general population.2 SCL incidences are 60 times less frequent than typical lipomas.4,10,11 This benign tumor described by Enzinger and Harvey3 is characterized by spindle cell proliferation at varying degrees in the mature adipose tissue. Spindle cells are responsible for collagen formation in this region.1,3,4

Lipomatous masses can be radiologically evaluated with ultrasound imaging (USI) and also computerized tomography (CT) and magnetic resonance imaging (MRI). Such imaging can reveal the relation of the mass to its adjacent anatomic structures. An evaluation can help to find significant data regarding the patient’s condition prior to the surgical procedure. MRI evaluation can help to identify whether the lipomatous mass shows an increase in fibrous components. Fibrous tissue increase has been reported to display less signal intensity in T2-weighted images compared to subcutaneous tissue.9 These radiological data have been assessed to be beneficial in the differential diagnosis of spindle cell lipoma and differentiated liposarcoma.

In histopathological evaluation of SCL cases the fibroblast-like cells found next to lipocytes are seen to be spindle-shaped cells. Spindle cells have a uniform structure and contain one nucleus. Immunohistochemical evaluation of these cells reported positive for CD34 and vimentin12,13 while S100 protein, actin, desmin, laminin or MAC387 were reported to be negative.14 Apart from SCL, CD34—or the human hematopoietic progenitor cell antigen—is seen to be positive in other mesenchymal neoplasia including Kaposi’s sarcoma, dermatofibrosarcoma protuberans, epithelioid sarcoma, gastrointestinal sarcoma, and solitary fibrous tumor.12,13 Immunohistochemical evaluation is helpful in reaching a diagnosis.

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**Table 1. Differential diagnosis, clinical and histopathological features**

<table>
<thead>
<tr>
<th>Seq. No.</th>
<th>Clinical picture</th>
<th>Clinical differentiation</th>
<th>Histopathological differentiation</th>
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<tbody>
<tr>
<td>1</td>
<td>Neural fibrolipoma</td>
<td>Seen in hands and wrists of young patients.</td>
<td>CD34(-), arises from the nerve sheath.</td>
</tr>
<tr>
<td>2</td>
<td>Spindle cell lipoma</td>
<td>Mobile, well-circumscribed, painless masses Usually encountered in the 4th and 5th decades.</td>
<td>CD34 (+), does not contain lipoblast. Atypia and mitosis are not identified. Irregularly aligned collagen fibers.</td>
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<tr>
<td>3</td>
<td>Well-differentiated liposarcoma</td>
<td>Mass is deeper penetrated.</td>
<td>CD34(-), more cellular than spindle cell lipoma, nuclear polymorphism.</td>
</tr>
<tr>
<td>4</td>
<td>Dermatofibrosarcoma</td>
<td>Attached to surrounding tissue, uncircumscribed margins. Seen in young patients.</td>
<td>CD34 and vimentin (+) Atypia and mitosis are identified.</td>
</tr>
</tbody>
</table>
In differential diagnosis SCL can be confused with neural fibrolipoma. Neural fibrolipoma is mostly localized to the hand and wrist in younger patients.1,13 Dermatofibrosarcoma (DFS) should be considered for differential diagnosis. Even though CD34 antibody can be found positive in DFS, higher prevalence of DFS in younger patients and subcutaneous tissue infiltration during histopathological examination facilitates clinical differentiation.1 While it can also be confused with myxoid liposarcoma, SCL can be differentiated by its well-defined margins and superficial location, and absence of lipoblast characteristics (Table I). Differential diagnosis of sclerosant and myxoid types of well-differentiated liposarcoma is of particular importance. Compared to SCL, well-differentiated liposarcoma is seen to be of a more cellular structure and to demonstrate polymorphism in the nucleus. While it can also be confused with myxoid liposarcoma, SCL can be differentiated by its well-defined margins and superficial location, and absence of lipoblast characteristics (Table I). Differential diagnosis of sclerosant and myxoid types of well-differentiated liposarcoma is of particular importance. Compared to SCL, well-differentiated liposarcoma is seen to be of a more cellular structure and to demonstrate polymorphism in the nucleus. While it can also be confused with myxoid liposarcoma, SCL can be differentiated by its well-defined margins and superficial location, and absence of lipoblast characteristics (Table I).

CONCLUSION

In conclusion, SCL can be confused with a group of more aggressive mass lesions presenting spindle-shaped cells, especially neural fibrolipoma. Apart from clinical findings, detailed histopathological examination and immunohistochemical examination are required for differential diagnosis. It will be possible to reach an accurate diagnosis when clinical findings are supported with histopathological data and adjunct diagnostic procedures.

Informed Consent: Written informed consent was obtained from patient who participated in this case.

Peer-review: Externally peer-reviewed.


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