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Spindle Cell Lipoma

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Spindle cell lipomas are a group of benign lipogenic soft tissue tumors. Typically they occur in posterior back and shoulder of elderly male patients. Differential diagnosis of this tumor became more important because the number of reports about some other tumors of similar morphology such as mammary type myofibroblastoma and solitary fibrous tumor, are increasing. All these tumors compose of bland spindle cells, mature adipocytes and collagen bundles. In this retrospective study we evaluated clinicopathological and immunohistochemical features of 18 cases of spindle cell lipomas. 15 cases of classical spindle cell lipomas and 3 pleomorphic lipoma variant were all histologically characteristic. Immuohistochemically they were all CD34 positive. Ten cases, whose paraffin blocks available, were desmin negative. We think that spindle cell lipomas are desmin negative tumors and this feature helps us to differentiate them especially from mammary type myofibroblastomas of extramammarian soft tissue.

Introduction

Spindle cell lipoma (SCL) was first described by Enzinger and Harvey [5] in 1975. Several studies about this benign tumor have been reported since then. They are circumscribed lesions arising typically on the posterior neck and upper back of male adults in the fifth and seventh decades [5, 6]. Histologically spindle cell lipomas consist of mixture of bland spindle cells and mature adipocytes. The matrix surrounding the cells is composed of varying amounts of mucoid material and collagen. Because there have been reports describing SCLs at unusual sites such as oral cavity [8], scalp [5, 6, 11], extremities [1, 5, 6, 9], differential diagnosis of these tumors became more important. Tumors showing similar morphology with SCLs, such as mammary-type myofibroblastoma of extramammarian soft tissue [14] and solitary fibrous tumor [12] have been described previously. It has been reported that in SCL spindle cells are positive for CD34 and generally negative for desmin [14, 15, 18, 20]. A recent report claimed that a significant proportion of SCLs express desmin and therefore immunoreactivity for this marker did not exclude the diagnosis and could not help us to differentiate these entities [19]. We present here the clinicopathologic features of eighteen cases of SCLs. For ten of them we were able to apply desmin immunohistochemically. None of our cases showed immunoreactivity for desmin. We aimed to discuss the differential diagnosis of SCL in view of our findings.

Material and Methods

Eighteen SCL cases diagnosed at the Department of Pathology, Cerrahpasa Faculty of Medicine, Istanbul University, between the years 1988–2004 have been retrieved and reviewed. Hematoxylin-eosin stained slides were reviewed for assessing the following parameters: mature lipomatous, spindle cell and myxoid components, cellularity in spindle areas, mitotic activity, vascularization, collagenous content, mast cells and tumor borders. Toluidin blue stain was used for evaluating the mast cells. Immunohistochemical studies were performed using the standart streptavidin-biotin technique with commercially available reagents. Antibodies against the following antigens were used: CD34 [(Labvision [Neomarkers], Ab-1 Clone Qbend/10, Cat # MS363-R7) (7 ml- Ready to use)] and Desmin [(Skytec Laboratories, Logan- Utah, USA) (Monoclonal Mouse Antibody to Human Desmin) (1 ml- Ready to use)]. Immunohistochemistry was performed on deparaffinized sections. We did not perform antigen retrieval. Sections were counterstained with Mayer hematoxylin.

Results

Clinical findings

Clinical data of the cases are summarized in Table 1. Patients were predominantly male: (16 men (89%) and 2 women (11%)). Age ranged between 39 and 77. Mean age was 56. The anatomical distibution of the lesions were typical for SCL in most of the cases but 3 arose (22.2%) at other sites: 12 tumors were located at posterior neck, back, shoulder, 1 at head, 1 at lumbar area and 1 at arm. In three cases location were not available. Follow-up data was limited but recurrence occurred in one case (Case 14) after two years. Tumor size ranged from 10 mm to 210 mm in main diameter. The average maximum diameter was 58 mm.

TABLE 1
Clinical findings

	Age (years)	Sex	Location	Size (mm)
Case 1	45	F	Lumbar area	210
Case 2	59	M	Back	100
Case 3	39	F	Arm	10
Case 4	61	M	Posterior neck	40
Case 5	58	M	Posterior neck	25
Case 6	68	M	Back	18
Case 7	70	M	Posterior neck	45
Case 8	42	M	NA	40
Case 9	65	M	NA	35
Case 10	58	M	Posterior neck	20
Case 11	55	M	NA	30
Case 12	50	M	Posterior neck	40
Case 13	68	M	Posterior neck	40
Case 14	53	M	Posterior neck	100
Case 15	65	M	Shoulder	75
Case 16	77	M	Posterior neck	115
Case 17	62	M	Head	45
Case 18	55	M	Posterior neck	20

Pathological features

Histopathological features are summarized in Table 2. Macroscopically the tumors were yellow to grey. 15 of them were encapsulated but 3 tumors had infiltrative borders. No multiple cases were seen. In 7 cases lipomatous component, in 4 cases spindle cell component (Fig. 1) were dominant microscopically. 15 cases were classical spindle cell lipomas and 3 cases were pleomorphic lipomas. No other

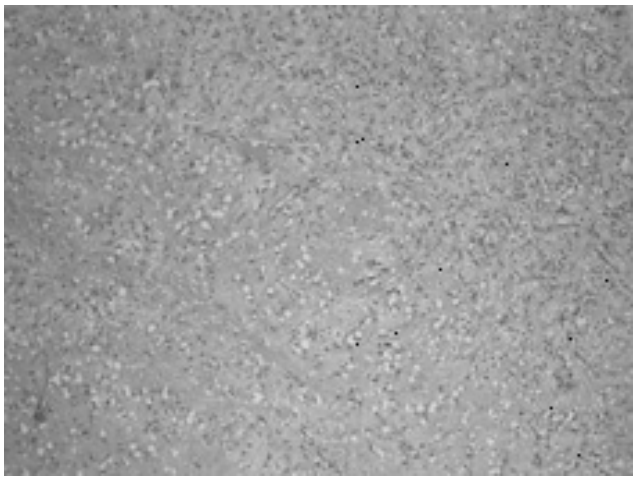

Fig. 1. Bland spindle cells are predominant. (Case 15. H&E ×40).

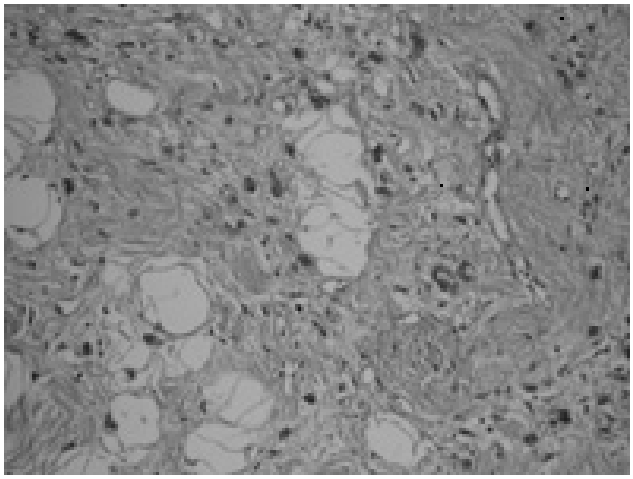

Fig. 2. Floret type giant cells with hyperchromatic nuclei. (Case 16. H&E ×100).

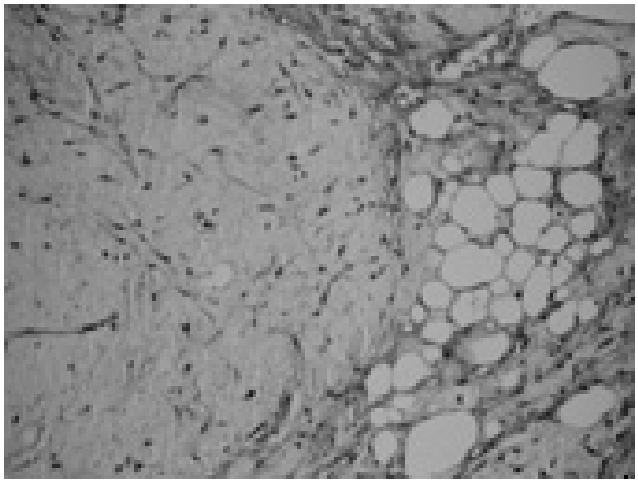

Fig. 3. Focal myxoid area in otherwise typical spindle cell lipoma. (Case 10. H&E x100).

TABLE 2
Histopathological and immunohistochemical findings

	Borders	Mature lipomatous component	Spindle cell component	Myxoid component	Cellularity in spindle areas	Mitosis (1/10 HPF)	Vascularisation	Collagenous content	Mast cells (1/10 HPF)	CD34	Desmin
Case 1	infiltrative	++	+++	-	++	-	+	+++	11-12	+++	
Case 2	encapsulated	+++	+	-	+	-	++	+	15-16	+++	
Case 3	infiltrative	++	++	-	+	-	++	++	6-7	+++	
Case 4	encapsulated	+	+++	-	++	-	++	+++	15-16	+	-
Case 5	encapsulated	++	++	-	++	-	+	+	18-19	+++	-
Case 6	encapsulated	+	+++	+	++	-	++	+++	13-14	+++	
Case 7	encapsulated	++	++	-	++	+ (1)	+	+	1-2	+	
Case 8	encapsulated	+++	+	-	+	-	+	+	10-11	+++	-
Case 9	encapsulated	+++	+	-	+	-	+	+	10-12	+++	-
Case 10	encapsulated	++	++	+	+++	-	++	++	11-12	+++	-
Case 11	infiltrative	+++	+	-	+	-	++	++	8-9	+++	
Case 12	encapsulated	+++	+	-	+	-	+	+	6-7	+++	-
Case 13	encapsulated	+++	++	-	+	-	++	+	9-10	+++	-
0Case 14	encapsulated	+++	+	-	+	-	+	++	8-9	+++	-
Case 15	encapsulated	+	+++	-	++	-	++	+	6-7	+++	-
Case 16	encapsulated	++	++	-	+	-	++	+	2-3	+++	-
Case 17	encapsulated	++	++	-	+	-	+	+	2-3	+++	
Case 18	encapsulated	++	++	-	++	-	+	+	5-6	+++	

SCL variants were seen. In three pleomorphic lipoma cases floret type giant cells with hyperchromatic nuclei were detected (Fig. 2). We detected myxoid component in two cases (Fig.3). Rare mitotic figures (1/10 HPF, 1 HPF= 0,152 mm^2 on the microscope used) were seen in spindle cells of another case. None of the tumors contained lipoblasts. Mast cells were numerous for all tumors.

Immunohistochemical features

Immunohistochemically CD34 was applied all cases routinly. Diffuse and strong positivity in spindle cells was detected for nearly all cases. In two tumors CD34 expression was weak but diffuse. In this retrospective analyze ten cases' paraffin blocks were available so we were able to apply desmin only for them. None of the spindle/pleomorphic lipoma cases showed immunoreactivity for desmin. Immunohistochemical features are presented in Table 2.

Discussion

SCL is a distinct entity with its characteristic clinicopathological and immunohistochemical features. In our series we present 18 SCL cases. SCL is a benign tumor however it contains different components. Therefore differential diagnosis can be very difficult especially when they occur other than its typical anatomical locations (posterior neck, back, shoulder). In our series 3 of 15 cases, a ratio of 20% were located other sites such as lumbar area, head and upper extremity. In largest series [5, 6] it is reported that SCL can occur at other sites up to 25% and in intradermal variant nearly 50% [7]. Another characteristic feature of SCLs is positivity for CD34 immunohistochemically [1, 18, 19, 20]. All of our cases also showed strong and diffuse CD34 positivity, supporting this finding.

The differential diagnosis of SCL is important in that they can easily be misdiagnosed as a malignant lesion such as a liposarcoma [6]. Myxoid stroma can sometimes be seen in SCLs [16]. When a myxoid component is detected, SCL can be confused with myxoid liposarcoma. Vascular pattern, pleomorphism and mitotic activity should be carefully estimated. SCLs are composed of bland spindle cells but a minor pleomorphism and mitotic figures can sometimes be seen [2, 3, 21]. Lipoblasts are important because although it is reported that SCL's could contain lipoblasts [7] and suggested that the presence of lipoblasts did not make a diagnosis of liposarcoma [3], it is a rare finding to detect lipoblasts in SCL's [7]. None of our cases contained lipoblasts. Some SCL's can have a prominent plexiform vascular pattern in the myxoid areas [21]. Macroscopical features helps us in such situations. SCLs are more circumscribed and superficially located than liposarcomas [21]. Our two cases which contained myxoid component were both encapsulated. They also showed prominent collagenous stroma, this finding helps us to differentiate SCL's from liposarcomas [21]. In one of our cases, without myxoid stroma, we detected rare mitotic figures. More sampling did not reveal prominent pleomorphism. It was an encapsulated tumor. Histopathologically it displayed cellularity in spindle cells but no prominent pleomorphism, so a diagnosis of SCL was given. Spindle cell liposarcoma should be kept in mind in the differential diagnosis of SCL especially when mitoses were detected. Spindle cell liposarcoma is a low-grade sarcoma consisting of relatively bland spindle cells, mature fat, scattered lipoblasts [10, 21]. CD34 can help us because spindle cells of these tumors show CD34 positivity rarely [21].

Pleomorphic lipomas (PL) were first described by Shmookler and Enzinger [17]. This tumor is now accepted as an extremely pleomorphic variant of SCL. SCL's and pleomorphic lipomas have identical cytogenetics [13] and are considered as a single entity. In three of our cases; we detected floret type multinucleated giant cells and adipocytic cells with hyperchromatic nuclei. Two of these cases was clinically typical for this group of soft tissue tumor (Case 16: 77 year-old male patient, tumor located at posterior neck; Case 18: 55 year-old male patient, located at posterior neck). The third PL case was located in the scalp region which is a location of lesser frequency [17]. In order to differentiate PLs from liposarcomas, vascular pattern and lipoblast content should be evaluated carefully. In our cases no prominent vasculature and no lipoblast was detected. Although it is reported that nearly half of the cases could contain lipoblasts, they were rare and not an ominious finding [2, 17].

The morphologic similarity of SCL to mammary type myofibroblastoma and solitary fibrous tumor (SFT) was described earlier [12, 14]. These tumors share these histopathological features in common: well-circumscriped proliferation of bland spindly-ovoid cells, haphazardly arranged or forming short fascicles and variably admixed with collagen bands. Although mammary-type fibroblastomas are not reported in locations typical of SCL, they are recognized at extramammarian sites [14]. McMenamin and Fletcher states that eventhough it can be very difficult to differentiate these tumors, morphologic differences exist between them: SCL's have more fat and background stroma is less prominent and less hyalinized. Spindle cells of SCL are more delicate and have less distinct cytoplasm. Cells of SCL adopt a more haphazard arrangement. They also add that immunophenotypically mammary-type myofibroblastomas

are positive for desmin whereas SCL's show desmin positivity in less than 2% of cases [14]. Recently Tardio et al. has reported that in their series of 25 SCL cases, they had detected desmin positivity in four cases (16%), a significant proportion [19]. In our series none of our 10 SCL/PL cases (9 SCL, 1 PL) showed desmin positivity. We think that desmin negativity is still a reliable feature of SCL in differential diagnosis.

Solitary fibrous tumor, a CD34 positive, desmin negative lesion enters in the differential diagnosis of SCL, especially of fibrous variant, which represents one end of the histopathologic spectrum of SCL [4, 12, 14]. It is suggested that these tumors with mammary type myofibroblastoma, are in the spectrum of a single bio-morphological entity [12].

In conclusion SCL is a benign soft tissue tumor with characteristic clinicopathological features. Immunohistochemically it is CD34 positive. Differential diagnosis with other tumors of similar morphology may be difficult. Origin of stromal cells in SCL is still a controversial issue but we think that SCL is generally a desmin negative tumor and this finding can help us in the differential diagnosis.

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