QUIZ

CORRECT ANSWER TO THE QUIZ. CHECK YOUR DIAGNOSIS

PROLIFERATIVE MYOSITIS WITH BONE/OSTEOID FORMATION

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There are several reports in the literature pointing out to the risk of misinterpreting pseudomalignant osseous tumours as osteogenic sarcoma because of the high cellularity and mitotic activity of tumour cells [1-5]. However, in most of such cases the proper differentiation between sarcoma and pseudomalignant proliferation is possible. Despite a characteristic clinical picture of pseudomalignant changes, there are several morphological features that enable differentiation between sarcoma and the pseudomalignant tumour.

Clinically, pseudomalignant proliferations are characterized by a very rapid growth, counted in days or weeks, in contrast to a much longer growth typical of sarcomas [5-8].

Morphologically, the lack of high nuclear and/or nucleolar atypia and atypical mitoses, as well as the demonstration of zonal maturing of the bone phenomenon, evident in cases of myositis ossificans [6, 7] and checkerboard pattern typical of proliferative myositis [6, 8, 9] are the most useful features in the diagnosis of pseudomalignant changes.

The checkerboard pattern of the growth is a striking feature of the histological texture of the presented case. It is characterized by alternating areas of proliferating fibroblasts or myofibroblasts and remnants of infiltrated muscle tissue (Fig. 1-4). However, the skeletal muscle fibres are relatively unaffected except for the presence of secondary atrophy, with neither sarcolemmal proliferation nor any evidence of skeletal muscle regeneration [6, 8, 9] (Fig. 1 and 3). The other conspicuous histological sign of proliferative myositis is the presence of large basophilic ganglion-like cells (Fig. 4 arrow) that usually have single eccentrically situated nuclei. The unusual feature of the described tumour is the presence of foci of osteoid formation (Fig. 3 asterisk).

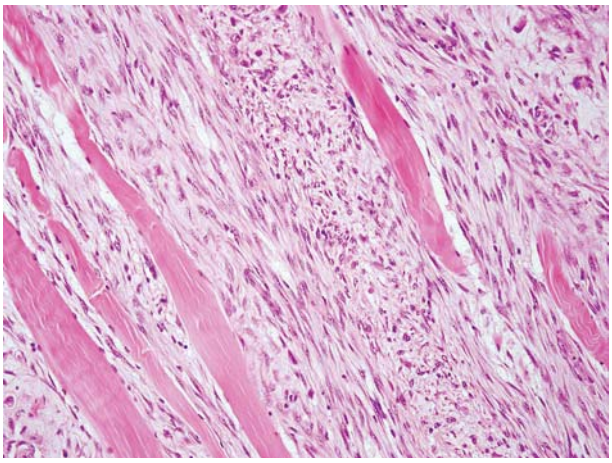

Fig. 1. Low-magnification view of proliferative myositis showing the characteristic "checkerboard" pattern.

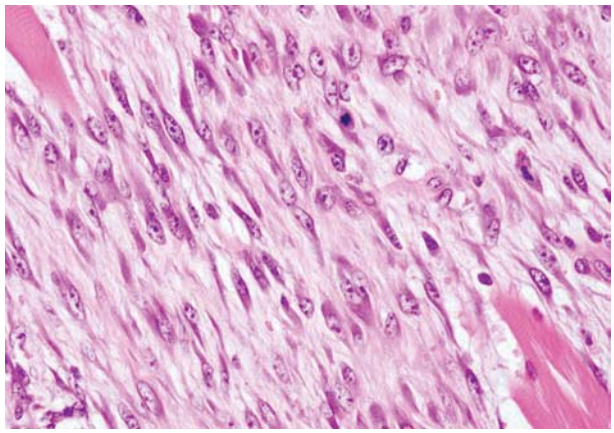

Fig. 2. Highly cellular proliferation of fibroblastic and myofibroblastic spindle cells. Despite mitotic activity the tumour cells do not present high nuclear and/or nucleolar atypia. Atypical mitoses are not visible either.

However, a few cases of proliferative myositis with bone and/or osteoid formation were reported [1, 6]. Such cases should be differentiated mainly from myositis ossificans. The key features of differential diagnosis between these two entities, as well as extraskeletal osteogenic sarcoma are depicted in the table I.

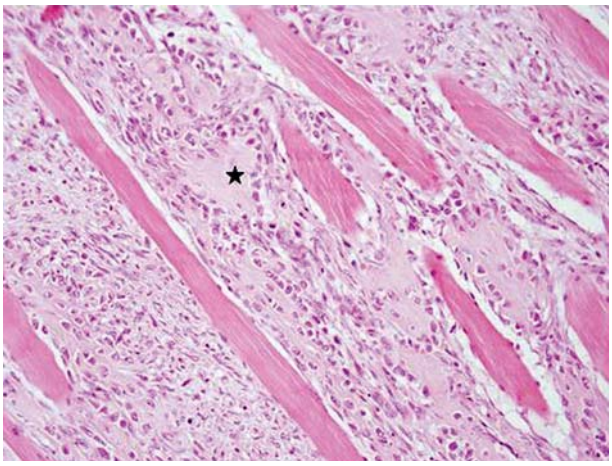

Fig. 3. Proliferative myositis with osteoid formation. Note the foci of osteoid (asterisk) inside the typical checkerboard texture of the tumour. The osteoid foci are surrounded by osteoblastic rimming.

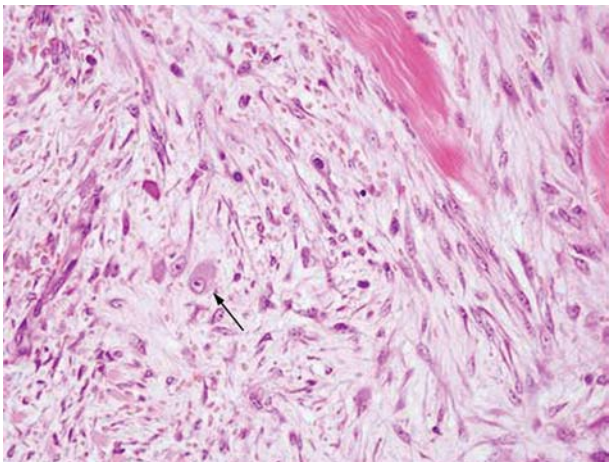

Fig. 4. Ganglion-like cells with large nuclei (arrow) are seen between the fibroblastic and myofibroblastic spindle cells.

Table I. Differential diagnosis of mesenchymal proliferations with osteoid/bone formation within muscles

Lesion	Clinical symptoms	Peak age	Site	Size	Morphological characteristics (border)	Specific histological hallmark	Cell pleomorphism	Mitoses
Proliferative myositis	rapidly growing, palpable lesion affecting the muscle, it may double in size within a few days or weeks	median age of 50 years	mainly trunk and limb girdles	1-6 cm in diameter	solitary, poorly marginated lesion that infiltrates the muscle tissue in a diffuse manner	typical checkerboard pattern* and ganglion-like cells, and/or bizarre giant cells	absent to mild	numerous but atypical mitoses absent
Myositis ossificans	pain or tenderness followed by soft tissue swelling noted within a few days or weeks	2nd-3rd decades	lower or upper extremities	3-6 cm in diameter but it can be as large as 15 cm	well circumscribed lesion	typical zonal pattern that reflects a different degree of cellular maturation (zonal maturation of the bone from the centre to the periphery)	absent to mild	numerous but atypical mitoses absent
Extraskeletal osteosarcoma	progressively enlarging soft tissue mass that is painful in about one-third of patients, the duration of symptoms varies from a few weeks to several months (mean 6-8 months)	6th-7th decades	lower or upper extremities	most measure more than 5 cm	infiltration of the neighbouring tissue in a destructive manner	"reverse zoning effect" (i.e. osteoid or bone formation in the interior and spindle cell formation at the margin of the lesion)	moderate to severe	numerous; some of them are atypical

References

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