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TEST YOURSELF: ANSWER

A slowly growing painless lump

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Answer: fasciitis ossificans

MRI (Fig. 1a) demonstrated a 1.5 × 1.5 × 3 cm scar-like lesion on the fascia overlying sartorius, which was hypointense on T1-weighted images and demonstrated avid enhancement with minor enhancement of the surrounding fat and muscle (Fig. 1b and c). There was no deep extension or regional adenopathy. On ultrasound (Fig. 2a), the lesion was ill-defined with posterior acoustic shadowing and low level vascularity seen in the periphery of the lesion (Fig. 2b). Excision biopsy was performed and histology (Fig. 3) showed a fascial-based ill-defined stellate lesion composed of fascicles of myofibroblasts and an area of ossification with dilated vessels and an osteoclastic component. The lesion extended to the subcutaneous tissue and skeletal muscle with no significant cytological atypia. *CTNNB1* gene mutation analysis by PCR and restriction enzyme digestion (exon 3) was negative for the three most common substitutions (p.T41A, p.S45P and p.S45F), and there was no evidence of malignancy. A diagnosis of fasciitis ossification (FO) was made.

FO is a benign condition representing a rare form of nodular fasciitis which can affect any age-group with predilection for the 3rd–6th decade, and is classed as a fibroblastic/myofibroblastic tumour in the WHO classification of soft tissue tumours [1, 2] and has been described in the literature as early as 1969 [3]. It typically arises de novo with the minority of lesions associated with trauma; thus, a genetic predisposition has been implicated [4]. Patients commonly present with a rapidly growing mass in the superficial extremity or trunk, but deeper and more varied locations are described. Lesions can be slightly tender or painless and are generally < 3 cm in size [5]. Metastasis or malignant degeneration is not described and lesions do not recur following complete excision. Histologically, FO is composed of myxoid, cellular or fibroblastic components, with metaplastic components such as multinucleated giant cells, osteoid (as in this case) or cartilage sometimes seen, and can often be densely cellular [6]. Metaplastic histological features sometimes make the diagnosis difficult raising concerns for a sarcoma. Imaging features are non-specific, but FO typically appears as a small (< 4 cm), well-circumscribed lesion adjacent to a fascial plane. On ultrasound and MRI, the imaging features can vary depending upon the histological sub-type with, solid and cystic areas seen as well as lesions with low signal intensity on all sequences if there are elements of cartilage or ossification. Following contrast administration, there are varying degrees of peripheral enhancement [4, 7].

Given the cellularity, metaplastic features and sometimes rapid enlargement, FO can often pose a diagnostic dilemma even following complete excision. In the current case, the presence of ossification raised concern for an extra-skeletal osteosarcoma but this would typically demonstrate high-grade atypia, affect those after the 6th decade and would be extremely rare in a 17-year-old [8]. An ossifying myxofibrous tumour could give a similar imaging and histological appearance, but would typically be located deeper and be larger at presentation [2]. Desmoid-type fibromatosis can appear in a similar location but is typically infiltrating and shows mutations of the *CTNNB1* gene [6] . If there is a history of trauma, dystrophic calcification could be considered, but this would not demonstrate cellularity on histopathological examination.

In conclusion, FO is an important benign differential to consider in a calcified soft tissue lesion and while history, demographics and imaging features can help, typically the combination of these with histopathology points to the diagnosis.

The case presentation can be found at https://doi.org/10.1007/s00256-023-04379-4.

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Declarations

Conflict of interest The authors declare no competing interests.

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