Case 18177

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Imaging features of myositis ossificans and panniculitis ossificans complicating dermatomyositis

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Section: Musculoskeletal system
Area of Interest: Musculoskeletal soft tissue
Imaging Technique: MR
Case Type: Clinical Cases
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Patient: 57 years, female

Clinical History:

A 57-year-old woman, with a known history of dermatomyositis, was referred for MR imaging in the preoperative evaluation of large and bilateral painful gluteal soft tissue masses.

Imaging Findings:

Diffuse, coarse calcifications were identified over the soft tissue mass on radiograph.

On MR, diffuse, mass–like calcified lesions were recognized in bilateral gluteal areas extending up to the anterior iliac crests, corresponding to the coarse calcifications revealed by the radiograph (Figure 1). The calcified lesions were hypointense on T2WI fat–saturated (Figure 2a) sequence with prominent signal voids on SWI sequence (Figure 2b). On DWI (800 b values) part of the lesions showed restricted diffusion (Figure 2c). After intravenous contrast administration mild enhancement was identified within the lesions as well as in the adjacent fascia, subcutaneous fat and cutis indicating active myositis, fasciitis and panniculitis (Figure 2d). There were no associated abscess collections.

Discussion:

Dermatomyositis is the commonest idiopathic inflammatory myopathy with a bimodal age distribution (<15 years and 45–54 years) and a female predominance. Diagnosis is based on classical cutaneous manifestations combined with autoantibodies that are myositis-specific, while some patients have anti-synthetase antibodies. The diagnosis is confirmed with skin or muscle biopsy. Muscle involvement in dermatomyositis is predominantly bilateral and symmetric and the most commonly affected muscles are those of the thigh and pelvic girdle [1]. MR findings of muscular involvement in the acute phase consists of intramuscular high signal intensity areas on fat-saturated T2 and STIR images that enhance after contrast administration on T1WI, with a diffuse, patchy, peripheral or honeycomb pattern, corresponding to oedema related to active inflammatory processes. On DWI the lesions show restricted diffusion due to active myositis, fasciitis and panniculitis. The same pattern of involvement may extend to adjacent fascia, subcutaneous and cutaneous tissues. In the chronic phase, myositis ossificans (MO), panniculitis ossificans (PO) and atrophy of the affected muscles may occur. Fatty atrophy of the muscles on T1WI and T2WI is identified as high signal intensity, suppressed in fat-saturated images [1,3,4]. MO is defined as abnormal

development of subcutaneous and interfascial calcification that subsequently ossifies in a centrifugal pattern (5). The hypothesis that correlates to the pathophysiological substrate of heterotopic calcification may involve local muscular damage by trauma and inflammation and local vascular ischemia (6). Histology reveals the benign nature of the lesion, yet in a minority of cases the heterotopic ossification may give rise to the malignant counterpart, osteosarcoma (5). The ossifications in MO, seen as signal voids on SWI sequences, are peripherally located, in contrast to osteosarcoma in which they are located centrally[1,2]. PO lesions are located in the subcutis. Calcifications in the subcutaneous tissues can be subtle or overt and appear hypointense on all MR sequences with a surrounding rim of enhancement. On radiographs coarse, rim-like calcifications in soft tissues are seen within fatty metaplastic areas. The ossifications are distinct and distant from adjacent bony structures. Surgical intervention is indicated when there is functional limitation, persistent pain, neurovascular compromise or severe disfigurement. However, there is a risk of recurrence following resection.

Differential Diagnosis List: Myositis ossificans and panniculitis ossificans developing in the substrate of dermatomyositis, Soft tissue sarcoma , Paraosteal Osteosarcoma , Synovial Sarcoma , Pyomyositits , Hematoma , Necrotizing fasciitis

Final Diagnosis: Myositis ossificans and panniculitis ossificans developing in the substrate of dermatomyositis

References:

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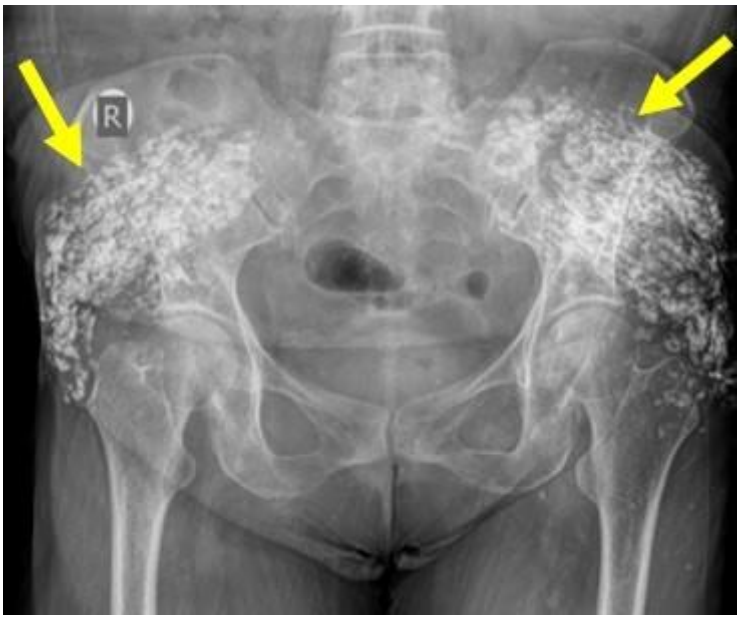
Figure 1

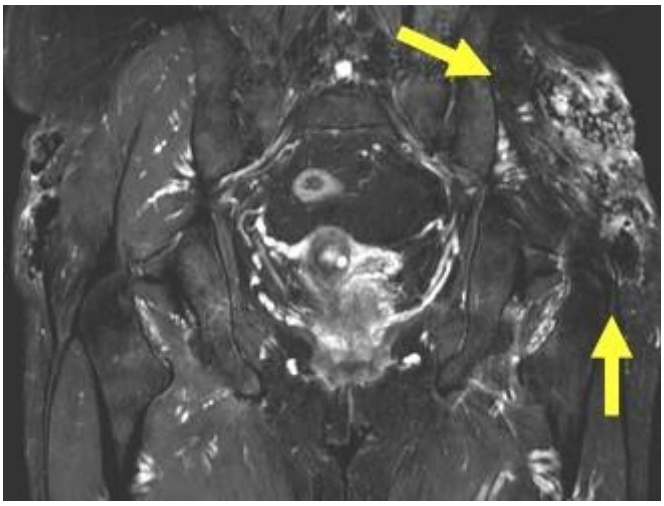
a



Description: Antero – posterior radiograph of the pelvis showing bilateral clumped calcifications on gluteal regions (arrows) **Origin:** Department of Radiology, University Hospital of Ioannina, Ioannina, Greece, 2023

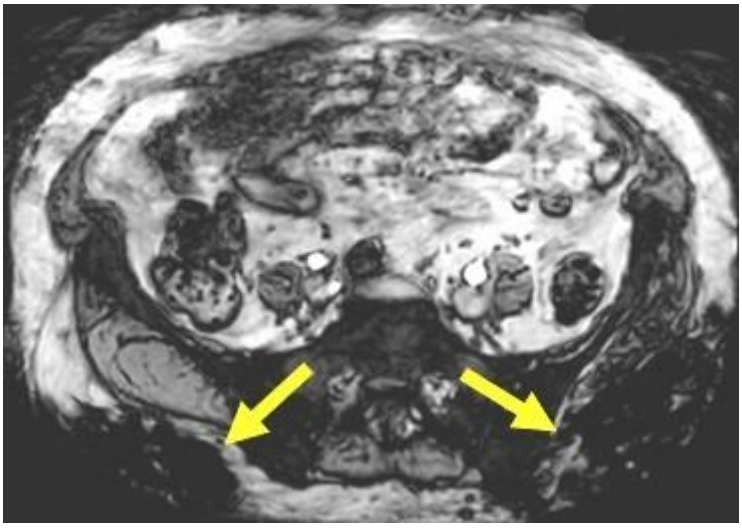
Figure 2

a



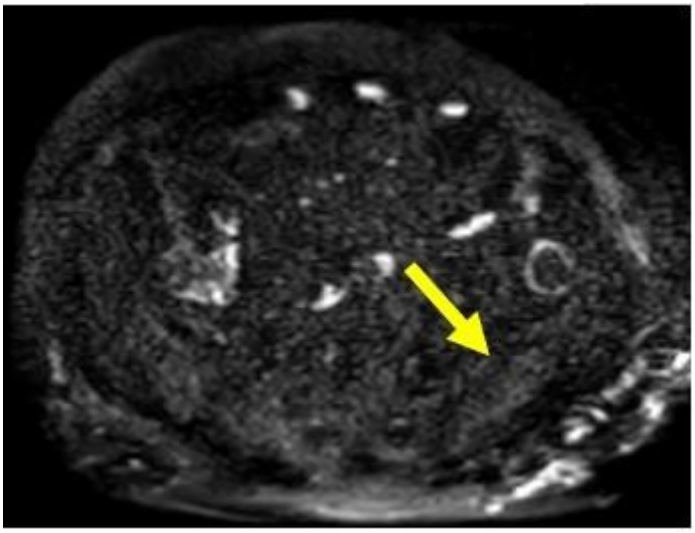
Description: Coronal T2-weighted fat-saturated images show diffuse muscular, fascial, subcutaneous and cutaneous edema, bilaterally, especially on the left gluteal area (yellow arrows). Patchy areas of signal void within the lesions correspond to dystrophic calcifications (white arrows) **Origin:** Department of Radiology, University Hospital of Ioannina, Ioannina, Greece, 2023

b



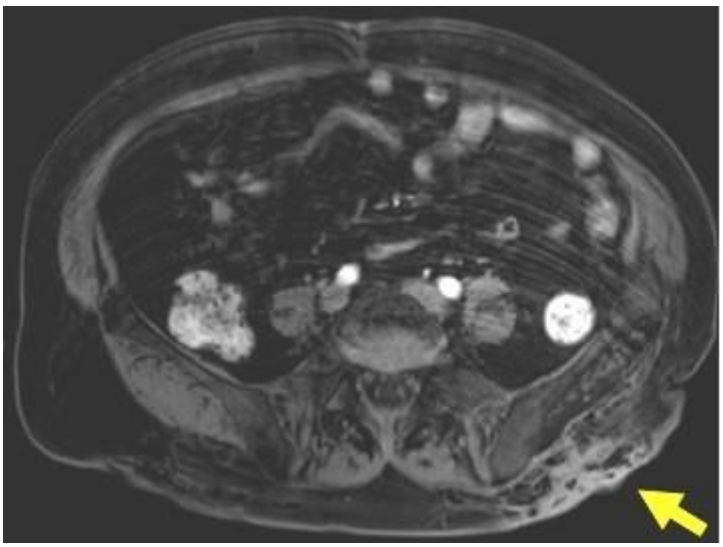
Description: SWI reveal diffuse, coalescent, coarse signal voids on both gluteal areas that correspond to extensive dystrophic calcifications (arrows) **Origin:** Department of Radiology, University Hospital of Ioannina, Ioannina, Greece, 2023

c



Description: DWI images depict areas of restricted diffusion as high signal intensity areas on the left thigh indicating active myositis, fasciitis and panniculitis (arrows) **Origin:** Department of Radiology, University Hospital of Ioannina, Ioannina, Greece, 2023

d



Description: On T1-weighted fat-saturated axial images post- gadolinium, the lesions of the left gluteal region show enhancement corresponding to active myositis, fasciitis and panniculitis (arrow) **Origin:** Department of Radiology, University Hospital of Ioannina, Ioannina, Greece, 2023