SARCOIDOSIS VASCULITIS AND DIFFUSE LUNG DISEASES 2023; 40 (4): e2023056 DOI: 10.36141/svdld.v40i4.14004

An unusual case of sarcoidosis presenting as calf pain

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Abstract. Sarcoidosis is a multisystem chronic inflammatory disease predominantly affecting the lungs. Myositis as a presenting manifestation of sarcoidosis is extremely uncommon and seldom reported. Here we report a 20-year-old male who presented with bilateral calf pain for six months. On evaluation magnetic resonance imaging showed features of myositis, and muscle biopsy was suggestive of sarcoidosis with granulomatous vasculitis. Positron emission tomography-computed tomography scan revealed involvement of spleen in addition to the muscles. Patient was managed with corticosteroids and azathioprine, and showed good treatment response.

Key words: granulomatous myositis, myositis, sarcoidosis

Sarcoidosis is a multisystem chronic inflammatory disease of unknown etiology, characterised by formation of non-caseating granulomas. Lungs are the most commonly affected organs. However, any organ can be affected. Lesions in the extra-pulmonary organs without involvement of lungs is not common (1). Asymptomatic muscle involvement can be found in 25-75% of patients (1), while symptomatic involvement occurs in <3% (2). Sarcoidosis presenting as myositis is extremely uncommon and seldom reported (3). We report a case of sarcoidosis with granulomatous angitis involving muscles and spleen, where myalgia was the only presenting manifestation.

A 20-year-old male presented with bilateral calf pain for six months. Pain was constant and dull aching in nature, not limiting any physical activities. On examination mild tenderness was elicited in bilateral calf muscles, without any induration or swelling. Skin over the calf region was unremarkable. Power in proximal and distal muscle groups of all the extremities was normal.

Evaluation showed elevated erythrocyte sedimentation rate (54 mm/hr) and C-reactive protein, neutrophilic leucocytosis, and thrombocytosis. Liver and renal function tests, urine examination, creatine phosphokinase, serum calcium, angiotensin-converting enzyme, and echocardiography were normal. Hepatitis B surface antigen, anti-hepatitis C virus, and human immunodeficiency virus antibodies were negative. Magnetic resonance imaging of the lower limbs showed irregular T2 and Spectral attenuated inversion recovery (SPAIR) hyperintensities in the muscles of both legs (arrows in figure 1a and 1b), and lower thighs. Anti-nuclear and anti-neutrophil cytoplasmic antibodies were negative. Myositis specific and myositis associated antibodies on line immunoassay were also negative. Histopathology of the biopsy tissue from the gastrocnemius muscle demonstrated non-caseating granulomas in the perimysium (arrows in figure 2a), endomysium (arrow in figure 2b), and around the blood vessels (figure 2c). Fibrinoid necrosis was also noted in the vessel walls (arrow in figure 2c). Acid fast bacilli stain and mycobacterium tuberculosis polymerase chain reac-

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tion on the muscle tissue were negative. Serum interferon-gamma release assay was also negative. Whole body positron emission tomography-computed tomography (PET-CT) scan showed areas of increased fluorodeoxyglucose uptake in the muscles of bilateral legs (arrows in figure 3a and 3e) and lower thighs, and splenomegaly with multiple hypodense metabolically active splenic lesions (arrowhead in figure 3a, and arrow in figure 3c).

A diagnosis of sarcoidosis with granulomatous vasculitis was made. Patient was treated with oral corticosteroids and azathioprine. Corticosteroids were gradually tapered and stopped over next three months, and azathioprine was continued. A repeat PET after five months of treatment showed significant decrease in the size, number and metabolic activity of muscular and splenic lesions (figure 3b, 3d and 3f), suggesting a good treatment response.

Muscular sarcoidosis is rare condition requiring prolonged immunosuppressive treatment. When a patient with history of sarcoidosis develops new onset myalgia or muscle weakness, the diagnosis remains straightforward. Whereas, in patients presenting with muscular symptoms without a history of sarcoidosis, diagnosing muscular sarcoidosis remains challenging (4). Three clinical types of sarcoid myopathy have been well described. First and the most common type is *chronic sarcoid myopathy*, which presents with insidious onset symmetrical proximal muscle weakness and normal muscle enzymes. Second is *nodular sarcoid myopathy*, which is characterised by single or multiple painful palpable nodules in the extremity muscles, without motor deficit. Third and the rarest type is *acute sarcoid myopathy*, which presents with rapid onset myalgia, proximal muscle weakness and elevated muscle enzymes (2). In addition to these

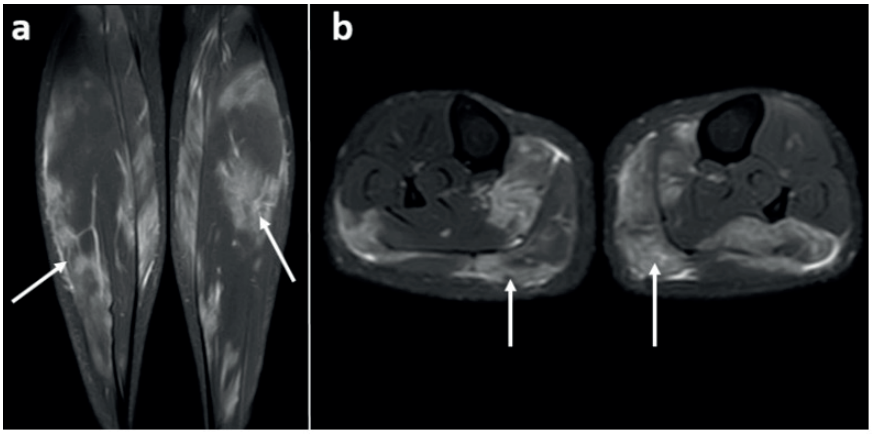

Figure 1. (a) Coronal, and (b) axial SPAIR Magnetic resonance images of both legs showing hyperintensities in the muscles (arrows).

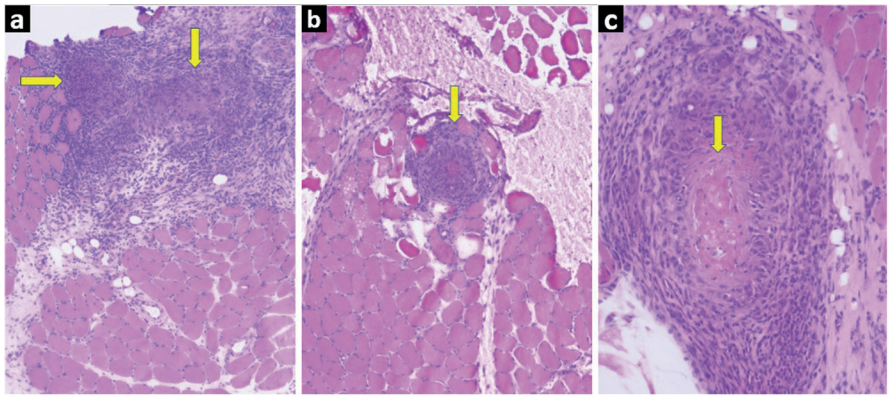

Figure 2. Histopathology of the muscle showing, (a) perimysial granuloma (arrow) with dense inflammation (×10); (b) endomysial granuloma (arrow) (x10); and (c) perivascular granuloma with fibrinoid necrosis of the vessel wall (arrow) (x20).

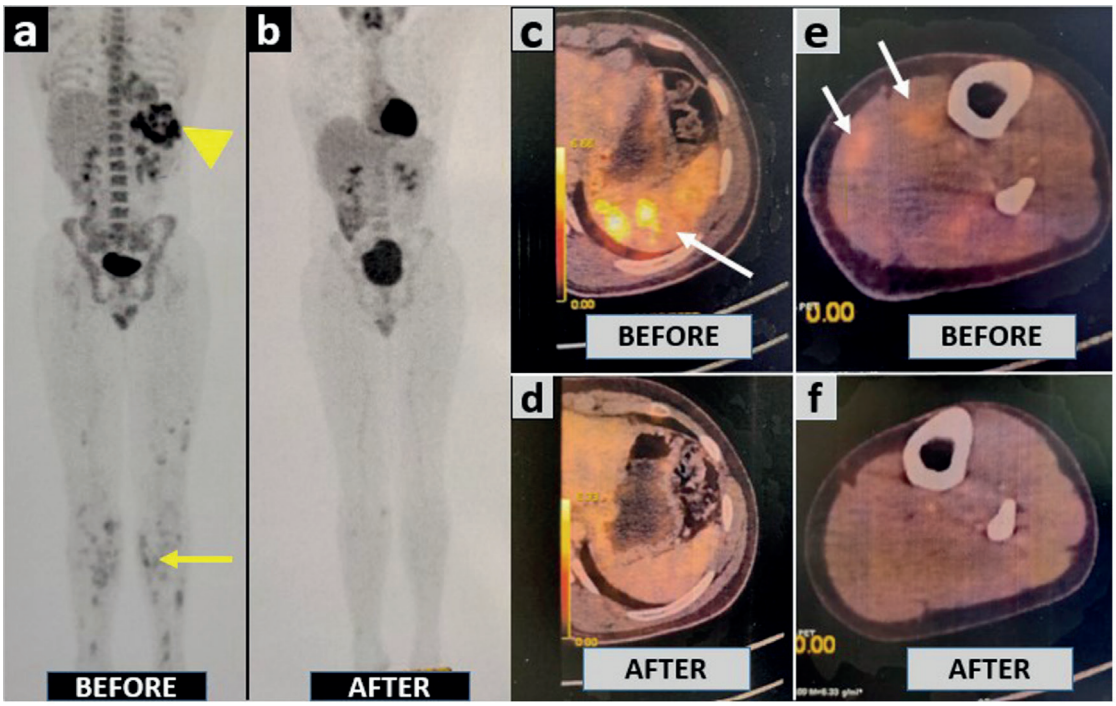

Figure 3. PET-CT images: (a) Pre-treatment MIP image showing soft tissue density lesions in the calf muscles (arrow), and splenic lesions with extensive pattern (arrowhead), which improved (b) after treatment. Images showing metabolically active lesions (arrows) in the (c) spleen, and (e) leg muscles. Post treatment counterpart images of the (d) spleen and (f) leg muscles showing improvement.

phonotypes, a recent study on 48 sarcoidosis patients described a new phenotype where patients had constant myalgia, without nodules or muscle weakness, and it was named as *smoldering sarcoid myopathy* (5). The present case fits best in this smoldering phenotype.

In a suspected case of sarcoid myopathy magnetic resonance imaging of the muscles helps in narrowing down the differentials (4). Histological evidence of non-caseating granulomas on tissue biopsy is required to establish an accurate diagnosis (2). Granulomas in sarcoidosis are usually non-necrotising. However, in necrotising sarcoid granulomatosis, which is considered as a variant of sarcoidosis, the histopathology is characterised by sarcoid like granulomas, variable amount of necrosis, and granulomatous vasculitis (6). Although granulomatous vasculitis was demonstrated in the present case, there was no evidence of necrosis. Like in pulmonary sarcoidosis, corticosteroids and immunosuppressive agents remains the mainstay of treatment. However, no specific guidelines are available to manage muscular sarcoidosis (7).

In recent years PET has gained importance in evaluation and management of sarcoidosis. In a suspected case of sarcoidosis when the diagnosis remains unconfirmed, PET helps in discovering active lesions suitable for biopsy. Like in the present case, if lesions are seen in multiple organs, it confirms the systemic nature of disease, thus narrowing the differential diagnosis. It also helps in assessing the disease activity and monitoring therapeutic response in diagnosed patients (8).

The present case emphasises that, extremely unusual extra-pulmonary manifestations such as myalgia (myositis) can also be the presenting manifestation of sarcoidosis.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

Patient consent: Informed written consent was obtained from the patient

References

1. .Kobak S. Sarcoidosis: a rheumatologist's perspective. Ther Adv Musculoskelet Dis. 2015;7:196-205.
2. Bechman K, Christidis D, Walsh S, Birring SS, Galloway J. A review of the musculoskeletal manifestations of sarcoidosis. Rheumatology (Oxford). 2018;57:777-83.
3. Gupta M, Duggal L, Jain N, Chintala B. Myositis as initial presentation of sarcoidosis: A rarity. Indian J Rheumatol 2020;15:226-8.
4. Ten Dam L, Raaphorst J, van der Kooi AJ, et al. Clinical characteristics and outcome in muscular sarcoidosis: a retrospective cohort study and literature review. Neuromuscul Disord. 2022;32:557-63.
5. Cohen Aubart F, Abbara S, Maisonobe T, et al. Symptomatic muscular sarcoidosis: Lessons from a nationwide multicenter study. Neurol Neuroimmunol Neuroinflamm. 2018;5:e452.
6. Yeboah J, Afkhami M, Lee C, Sharma OP. Necrotizing sarcoid granulomatosis. Curr Opin Pulm Med. 2012;18:493-8.
7. Baughman RP, Valeyre D, Korsten P, et al. ERS clinical practice guidelines on treatment of sarcoidosis. Eur Respir J. 2021;58:2004079.
8. Mostard RL, van Kroonenburgh MJ, Drent M. The role of the PET scan in the management of sarcoidosis. Curr Opin Pulm Med. 2013;19:538-44.