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Post-traumatic Myositis Ossificans: Rare Case Diagnosis Through Histopathology

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A benign disorder called Myositis Ossificans (MO) is characterised by aberrant bone production within muscles, which is frequently brought on by trauma [1]. Myositis Ossificans Progressive (MOP) is a rare inherited autosomal dominant genetic disorder. Myositis Ossificans Circumscripta (MOC), the more common variant, is usually localised and acquired. It can be caused by a number of things, including burns, and traumatic MO (muscle or joint injuries). Iatrogenic MO occurs as a result of joint surgery, whereas neurogenic MO occurs due to acute insults to the central nervous system [2]. Hereby, the authors present a case of an elderly patient who had a history of a cerebrovascular event and who fell during physiotherapy treatment, resulting in the development of MO in her hip joint.

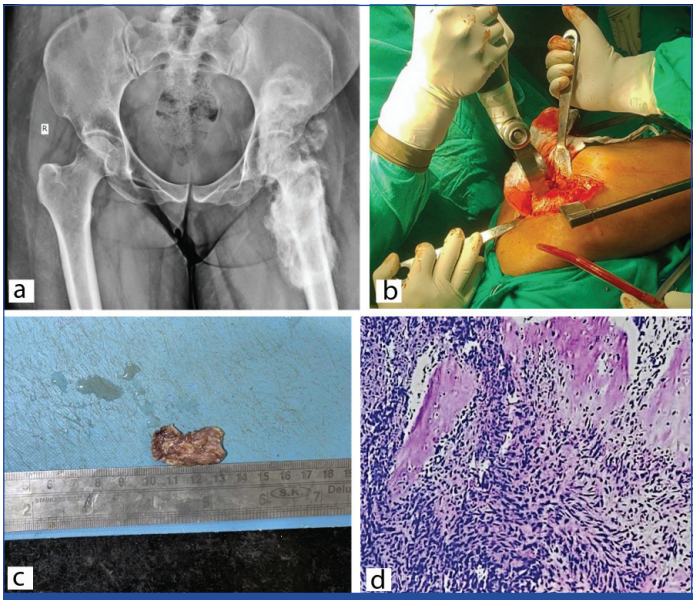
A 50-year-old woman presented to the Orthopaedic Outpatient Department with complaint of acute onset of pain at the left hip joint since 20 days, which was gradually progressing and increasing in intensity accompanied by fever and generalised weakness. She also complained of restricted joint movement at the hip joint 20 days after a fall during the physiotherapy session. She had a history of a cerebrovascular accident, indicating an acute infarct in the temporal lobe, which occurred one year ago. She was on medication of tablet aspirin 75 mg.

The general and physical examination was normal. On clinical inspection in a standing position, there were no signs of swelling, sinuses, discharge, engorged veins, or shortening of the limb. On further inspection in the supine position, the left lower limb was externally rotated with the lateral border of the foot touching the bed and abducted. On palpation, there was no local rise in temperature, but tenderness was present over the anterior joint line of the hip.

The patient was sent for haematology and biochemical investigation, which included calcium, phosphorus, and alkaline phosphatase levels. All the investigations were within normal values. The patient was then sent for radiographic X-ray imaging, which revealed an 8×4 cm mass that extended from the medial and anterior edge of the acetabulum to the lesser trochanter [Table/Fig-1a]. The differential diagnosis of soft-tissue sarcoma, haematoma, or traumatic myositis was made.

The decision of surgical excision of the mass was made. During surgical intervention, the mass was noticed to originate from the anterior and superior aspect of the acetabulum, with significant attachment to the anterior and medial aspect of the femur near the level of the lesser trochanter [Table/Fig-1b]. It formed a bony bridge within the hip joint anteriorly, impeding normal hip movement. The procedure was uneventful, and the patient was shifted to the orthopaedics recovery room.

For confirmation of diagnosis and appropriate postoperative treatment regimen, the surgical sample was sent to histopathology for confirmation of diagnosis. Grossly, a single, irregular, blackish-brown, bony-hard tissue piece was received [Table/Fig-1c]. Microscopic examination {Haematoxylin and Eosin (H&E) stained} revealed a characteristic zonal pattern, with the inner zone exhibiting plump fibroblasts and myofibroblasts. In some areas, immature bone was observed surrounding these zones. These histological features were suggestive of MOs [Table/Fig-1d].



[Table/Fig-1]: a) Radiographic X-ray image done preoperatively; b) Surgical excision of mass; c) Gross image of tissue piece; d) Microscopic image of characteristic zonal pattern; with the inner zone exhibiting plump fibroblasts and myofibroblasts; (H&E, 40X).

Following surgery and histopathological diagnosis, the patient received treatment with indomethacin {an Non Steroidal Anti-inflammatory Drug (NSAID)} and was advised early physiotherapy. Subsequently, there was a reduction in pain, and the full range of motion of the hip joint was successfully restored. Three weeks postsurgery, the patient was discharged and was advised to follow-up after one week.

DISCUSSION

Myositis Ossificans is a recognised non malignant ossification process primarily affecting muscles or occasionally other soft tissues. Despite its relative rarity, MOs is extensively documented, displaying distinct clinical, radiological, and pathological features [3]. The exact cause of MOs remains unclear. The pathophysiology is difficult to understand as the inflammatory condition, rich in inflammation, may trigger the abnormal transformation of mesenchymal stem cells into chondrocytes and osteoblasts.

Pain, swelling, erythema, warmth, and limited joint mobility are the symptoms that can manifest between three weeks and three months postinjury. Risk factors for heterotopic ossification encompass various soft-tissue traumas, neurological injuries, joint arthroplasty, hypoxic conditions, prolonged immobilisation, mechanical ventilation, and hypermetabolic states [4]. Therefore, diagnosis typically relies on a comprehensive patient history, physical examination, and radiographic imaging. However, depending on the stage of progression, advanced imaging techniques may also prove beneficial. For lesions that are uncertain based on imaging alone,

a biopsy is often required for confirmation of diagnosis [5]. Non surgical management aims at symptom alleviation and optimising functionality. A satisfactory outcome in treating MOs may be achieved through a combination of surgical excision, radiotherapy, NSAIDs, and physiotherapy [6].

In a research study led by Ahrengart L et al., significant complications such as trochanter non union, deep infection, or joint dislocation were not reported. However, one patient (patient 21) passed away due to a myocardial infarction three months postsurgery. Another patient (patient 6) underwent heterotopic bone resection one year after the initial operation due to severe stiffness related to bridging MOs. Periarticular ossification occurred in 23 out of 30 cases [7].

Myositis Ossificans (MOs) is a rare case with a prevalence of less than one per million people [6]. Hence, the diagnosis of rare benign condition will help the surgeons in the proper selection of treatment strategies. The clinical presentation, radiographic imaging, and histopathological diagnosis are of paramount importance for the accurate diagnosis and treatment of conditions. This scenario emphasises how crucial it is to manage MOs with a complete strategy.

REFERENCES

[1] Oc Y, Ozcan MS, Sezer HB, Kilinc BE, Eren OT. Nontraumatic myositis ossificans of hip: A case presentation. Case Rep Orthop. 2016;2016:1982656.
[2] Juneja M, Jain R, Mishra D, Gautam VK. Myositis ossificans of bilateral hip joints in a patient with diplegic cerebral palsy. J ClinNeurosci. 2011;18(4):580-81.
[3] Lungu SG, Copper K, Plc M. Myositis ossificans- Two case presentations. Medical Journal of Zambia. 2011;38(2):25-31.
[4] Sivakumaran D, Pathinathan K, Danisious J, Thayasivam G. Myositis ossificans of the hip joint causing sciatic nerve palsy following Guillain-barré syndrome: A case report. Int J Surg Case Rep. 2021;84:106110.
[5] Walczak BE, Johnson CN, Howe BM. Myositis Ossificans. J Am Acad Orthop Surg. 2015;23(10):612-22.
[6] Anjhazzallah MA, Munidasa D. Myositis ossificans of hip: A case report. sljo-j-tsljos. 2022;8(1):66-69.
[7] Ahrengart L, Sahlin K, Lindgren U. Myositis ossificans after total hip replacement and perioperative muscle ischemia. J Arthroplasty. 1987;2(1):65-69.

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