CASE REPORT

MYOSITIS OSSIFICANS OF HAND

Muhammad Inam, Malik Javed Iqbal, Abdul Satar, Mohammad Arif, Mohammad Shabir
Department of Orthopedics, Hayatabad Medical Complex Peshawar, Pakistan

ABSTRACT

A 13 year old boy presented with a hard swelling in his right palm. According to him, he developed pain and swelling after being beaten by his teacher with wooden stick on his palm. The swelling reduced in size and the pain subsided. It was a hard, non tender, 2x2 centimeter, hemispherical lump in the right palm between the ring and little finger metacarpals. It was movable from side to side but not in line of tendons. It was neither attached to the skin nor to bones. Neurovascular status was intact. His serum Alkaline phosphatase was double the normal values. X-rays showed a bony mass in the palm. CT scan showed a well circumscribed hyper dense mass in between and volar to the 4th and 5th metacarpal. The diagnosis was confirmed by subsequent histopathological examination.

Key words: Myositis ossificans, Heterotopic calcification, Hand.

INTRODUCTION

The term heterotopic ossification was originally described in sixteen century, a condition that was observed in children and was called myositis ossificans progressiva.[1] The next major development in the history of heterotopic ossification came in 1918 because of military injuries sustained during World War I.[1] A condition observed in patients with paraplegia caused by gunshot wounds to the spinal cord which they referred to as paraosteoarthropathy, is used synonymously with heterotopic ossification or myositis ossificans.[2]

The historical terms for heterotopic ossification have been superseded, but ectopic ossification and myositis ossificans are used interchangeably with the term heterotopic ossification.[1,2] Heterotopic ossification is the formation of mature lamellar bone in nonosseous tissue, whereas myositis ossificans is a specific type of heterotopic ossification that occurs in inflammatory muscle.[3] Both of these processes are examples of ectopic ossification, and they may coexist, although they are distinct from periarticular calcification, which is the deposition of pyrophosphates within the soft tissues surrounding the joints.[4]

The etiology of traumatic heterotopic ossification remains uncertain. During the past fifty years, a number of theories have been developed.[5] Migrated bone marrow cells have been suggested as a potential cause of osteogenesis in connective tissue.[5] Alternatively, muscle lesions or interstitial hemorrhagic foci have been suggested as a potential cause of muscle degeneration, perivascular connective tissue proliferation, and subsequent bone metaplasia.[5] A further theory has considered that periosteal damage could induce a differentiation of periarticular osteogenic cells.[6]

CASE REPORT

A thirteen year old school going boy was presented to us with a hard swelling in his right palm for the last two years. He was beaten by his teacher with wooden stick on his palm in school as a punishment of not performing his home work. After that he developed pain and swelling. The pain was subsided but the swelling persist. Initially the swelling was so cumbersome that he was unable to form a fist. Later on the swelling was reduced but not subsided completely. On examination there was a hard, non tender, 2x2 centimeter, hemispherical lump in the right palm between the ring and little finger metacarpal. It was movable from side to side but not in line of muscle tendons. It was neither attached to the skin nor to bone. Neurovascular status was intact. His all routine investigations were normal except hemoglobin which was 11.8 g/dl. Alkaline phosphatase was double of normal value. X-rays showed a bony mass in palm. CT scan showed will circumscribed hyperdense mass in between and volar to the fourth and fifth metacarpal. (Figure 1 & 2). The diagnosis was confirmed by subsequent histopathological examination.

DISCUSSION

Myositis ossificans is rare in the muscles of the hands and feet.[1] However, other manifestations of heterotopic bone occur in these locations.[2] These manifestations are usually associated with

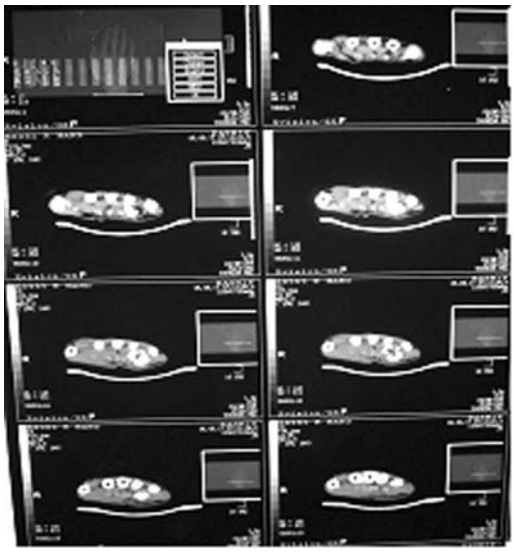

Fig. 1: CT scan of hand showing traumatic heterotopic ossification.

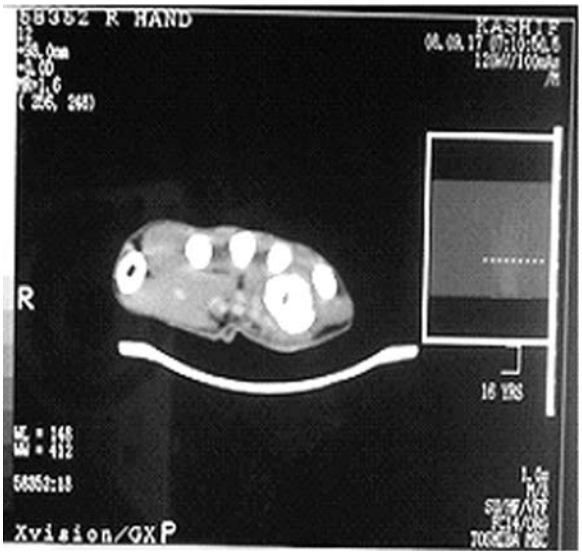

Fig. 2: Enlarged view of CT scan.

the periosteum or periarticular fibrous tissue and, therefore, should not be regarded as myositis ossificans.[2]

In literature, most of the cases have been described as atraumatic myositis ossicans but our case is a traumatic myositis ossificans.

The etiology is determined by the type of heterotopic ossification. The rare autosomal dominant condition myositis ossificans progressiva accounts for the inherited metabolic disease in children.[7]

It is thought that three conditions must be met in order for heterotopic ossification to develop; osteogenic precursor cells must be present, an inductive stimulus should exist and the local tissue environment should be favorable. The osteogenic precursor cells are thought to be pluripotential mesenchymal cells that are stimulated to differentiate into osteoblasts.[8]

Once the osteogenic cells are stimulated, they begin to form osteoid, which in turn develops into mature heterotopic ossification. The underlying process is thought to be an inflammatory process in response to local tissue trauma.[8] Bone morphogenic protein is believed to be important in regulating the development of heterotopic ossification. The heterotopic bone is known to be metabolically very active and contains more osteoblasts than ordinary bone. In addition, the tissue does not follow anatomic tissue planes and is generally more diffuse in nature than normal bone. The presence of the heterotopic ossification surrounding the bones and joints may affect the function of the normal soft tissues. Cases of heterotopic ossification causing ankylosis have been reported.[8]

If heterotopic ossification is excised, improvements in functional range of movement can be expected and those patients who have pain from the heterotopic ossification may not have complete resolution of these symptoms. Alkaline phosphatase levels may be used to indicate osteoblastic activity and can be used to assess the development of heterotopic ossification in the postoperative phase.[9]

CONCLUSION

Particular attention should be paid to previous trauma while taking the history in these atypical instances of myositis ossificans of the hands which may also be misdiagnosed as osteosarcoma. Therefore, awareness of their distinctive clinico-radiologic features is necessary to prevent this misdiagnosis.

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Address for Correspondence:

Dr. Muhammad Inam
House-5, Street-1, Sector K-2
Phase-3, Hayatabad
Peshawar, Pakistan
E-mail: dr_mohammadinam@yahoo.co.uk