Osteoid osteoma of the capitate: A case report

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Abstract

Osteoid osteoma is a benign relatively uncommon osteogenic tumour of unknown aetiology, affecting mainly the long bones and rarely the carpal bones. Because of its nonspecific presentation in the wrist, it remains a diagnostic challenge. We report an unusual case of osteoid osteoma of capitate in a 15year old school going girl where it presented as chronic nagging nocturnal pain and weakness of hand. Diagnosis was made by MRI scan of the wrist and surgical excision lead to a dramatic relief of symptoms.

Keywords: Osteoid Osteoma, Solitary, Capitate, Carpal Bone.

Introduction

Osteoid osteoma is benign bone-forming tumour characterized by small size, limited growth potential and disproportionate pain. It is a painful small osteoblastic lesion. Presents with nocturnal pain which relieves from aspirin and NSAIDS. On radiographs it is characterised by a nidus of size less than equal to 1.5 cm[(1)] which is the main predominant pain producing component, but sometimes the cause joint pain is synovitis and joint effusion if it is located close to cartilaginous structures.

It is surrounded by normal sclerotic bone due to reactive sympathetic bone deposition. Femur and tibia account for most of the cases followed by humerus and axial skeleton. The lesions are classically cortical in long bones located in the diaphysis while *periosteal* and *intramedullary* forms can be seen in small tubular bone. Few cases have been reported with the involvement of chromosome 22q13 and loss of part of chromosome 17q.[(2)]

Case Report

A 15-year-old right-handed girl was referred to our multispecialty centre for persistent right wrist pain, worsening at night time and difficulty in performing activities of daily living. On initial visit, the patient complained of constant pain and decrease in grip strength in her hand forearm. On examination, atrophy of the right forearm and decreased muscular strength of the right hand were noted. Investigation demonstrated normal complete blood cell count and erythrocyte sedimentation rate. Hand radiograph demonstrated a lesion in the right capitate (Fig. 1).

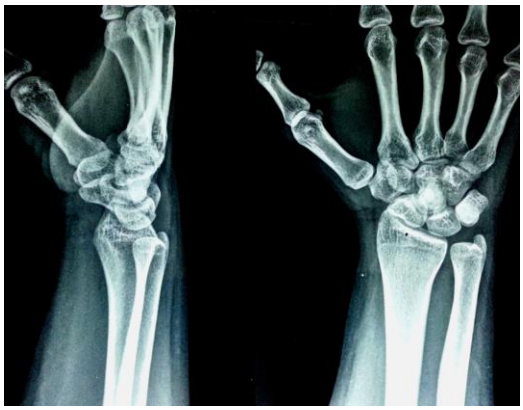

Fig. 1: Radiographs of the hand demonstrated a sclerotic lesion in the right capitate of more than 1 cm

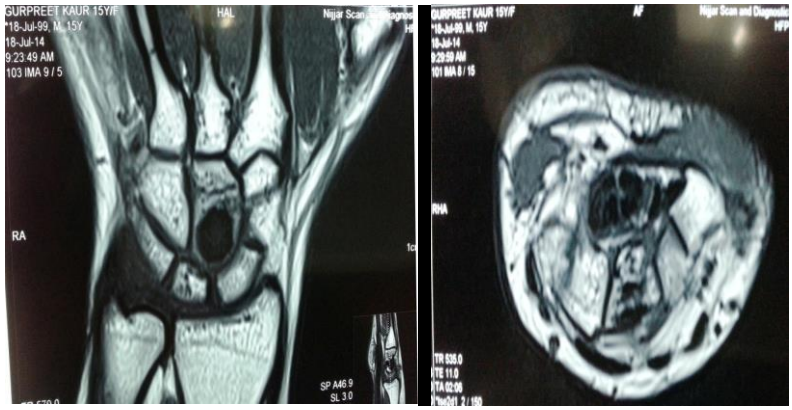

Fig. 2&3: MRI scan demonstrates a hypointense lesion with mild central hyperintensity and mild perilesional oedema (Fig. 2&3)

The patient subsequent underwent extended curettage with a high speed burr where upon (Fig. 4&5) exploration of the right wrist joint was performed.

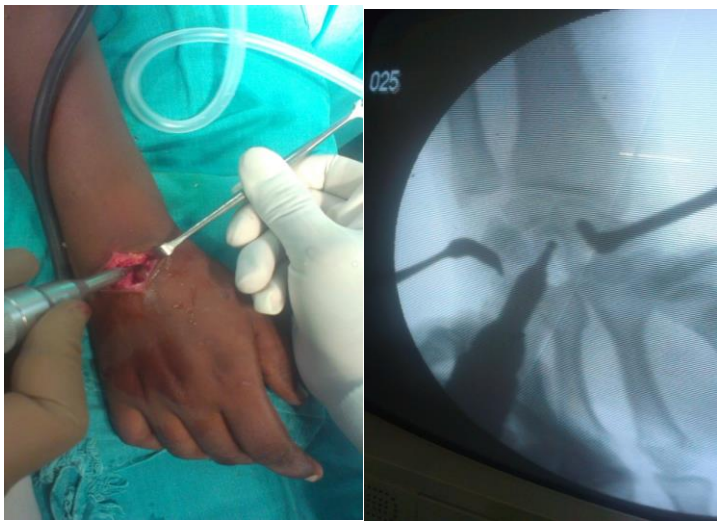

Fig. 4&5

There were no intraoperative and postoperative complications. The biopsy report identified an osteoid osteoma of the right capitate. This was later confirmed after review of the specimen by the pathology department at another centre. Postoperatively, the patient reported a dramatic decrease in pain and an increase in range of motion of the right hand.

Discussion

Osteoid osteoma is relatively uncommon benign bone neoplasm and accounts for 3% of all the excised primary bone tumour.[3] It was first identified by Bergstrand in the year 1930.[4] It effects more frequently patients between 10 to 30 years of age and exhibits 2:1 male:female ratio.[5]

Osteoid osteoma has been reported in practically every bone but occurs most frequently in femur and tibia.[3] Bones of wrist and hand are very rare site of osteoid osteoma and constitutes only 6-13 % of cases.[6] Phalanges are most commonly involved followed by metacarpals among hand bones.[7] Osteoid osteoma of wrist joint is exceedingly rare. Most commonly involved carpal bones are lunate and scaphoid,[8,9,10] Capitate is rarely involved. Most are centred in the cortex (85%) but may also occur in spongiosa (13%) or subperiosteal region (2%).[11,12] In long bones the lesion are usually in metaphysis however in carpal bone most of the lesions are intraarticular.[12]

Most common symptom is sharply localised intense pain and unaccompanied by clinical or laboratory evidence of infection. Pain usually worsens at night and with activity and get relieved by NSAIDS. Carpal bone osteoid osteoma patients may also present with reactive synovitis which presents with more diffuse pain area.

Radiographically the typical findings is a radiolucent central nidus which is not larger than 1.5cm which may or may not accompany dense centre.[1] The nidus is surrounded by peripheral sclerotic reaction that may extend for several centimetres along both side of cortex

Microscopically, the sharply delineated central nidus is composed of interconnecting trabeculae of woven bone lined by plump osteoblasts and growing within highly vascularized connective tissue, without evidence of inflammation. The concentration of prostaglandins in the nidus is found to be 100 to 1000 times higher than the normal tissue. [13]

Radiological Investigations generally done for Detecting osteoid osteoma includes thin slice CT, MRI, Technitium 99m scan and X-ray. CT scan is most specific and MRI is most sensitive investigation to detect osteoid osteoma. [14]

Treatment options include curettage, en-bloc excision and radio frequency ablation. Recurrence has been reported following excision which can be attributed to inadequate bone excision, therefore care should be taken during surgery and histological examination of the tissue should to ensure completeness of surgery and for definitive diagnosis as well.

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