



Carpal giant cell tumour

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Received: Jan 28, 2020

Accepted: Mar 18, 2020

Published Online: Mar 24, 2020

Journal: Journal of Case Reports and Medical Images

Publisher: MedDocs Publishers LLC

Online edition: <http://meddocsonline.org/>

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Clinical image description

A 18 year old female presented with pain of insidious onset associated with swelling over the right wrist joint for 6 months. Swelling and pain gradually increased over the duration of 6 months. She came to the Orthopedician's out-patient clinic when her symptoms affected her day to day activities. There was no history of trauma or pain in other joints. Radiograph of the right wrist postero-anterior and lateral view showed an expansile lytic lesion in the capitate and hamate bone with thinned out cortex. Computed Tomography (CT) of the wrist showed an expansile lytic lesion in the capitate and hamate bone with periosteal thinning and multifocal breach (Figure 1 a & b).

The matrix showed soft tissue attenuation with fine calcified septations. Adjacent carpo-metacarpal joint and inter-carpal joints were normal. Contrast enhanced Magnetic Resonance Imaging (MRI) of the right wrist was performed which revealed a well-defined lobulated soft tissue signal intensity lesion involving the capitate and hamate (Figure 1 c & d).

No fluid-fluid levels were seen. On post-contrast study, there was homogeneous enhancement. The lesion was closely abutting the carpal tunnel. The median nerve was displaced laterally but no obvious infiltration of nerve and adjacent tendons was seen. Differential diagnosis at the end of imaging investigation included Giant Cell Tumour (GCT), Aneurismal Bone Cyst (ABC), and enchondroma. Incisional biopsy of the lesion was performed which revealed numerous multinucleated giant cells dispersed amidst sheets of mononuclear cells with surrounding areas of haemorrhage (Figure 2).

Patient underwent curettage followed by autologous iliac crest bone graft. At 6 month follow up, the patient was symptom free with near normal range of movements and with no evidence of recurrence (Figure 3).



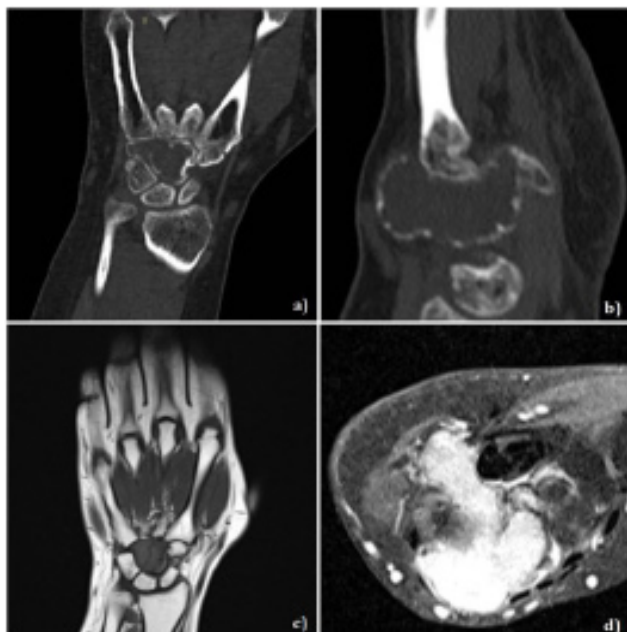


Figure 1: (a,b) Computed tomography of the wrist showing a well-defined lobulated expansile osteolytic lesion with sharp margins arising from the capitate and hamate with soft tissue attenuation, periosteal thinning and multiple areas of cortical breach; (c) Coronal T1W sequence of MRI showing hypointense lobulated soft tissue mass involving capitate and hamate which shows homogenous intense contrast enhancement on Post GD T1W sequence (d).

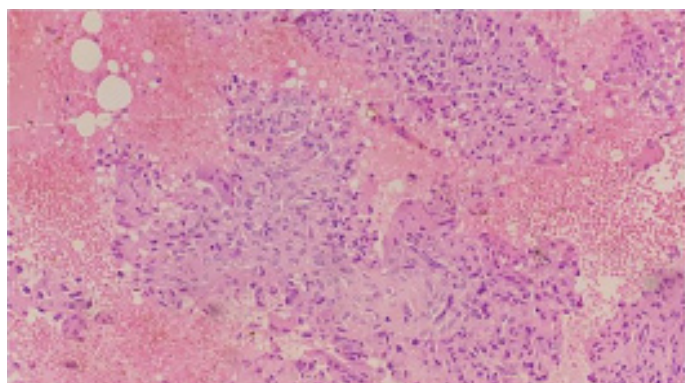


Figure 2: Histopathological photomicrograph showing multinucleated giant cells dispersed amidst sheets of mononuclear cells with surrounding areas of haemorrhage.



Figure 3: Radiograph of wrist 6 months after the surgery showing autologous iliac crest bone graft in-situ.

Giant cell tumour is a common neoplasm of long bones in skeletally mature patients. Common sites of occurrence include distal femur, proximal tibia & distal radius in decreasing order of frequency [1]. Only a handful of cases have been reported in small bones with only 0.2% of giant cell tumours being localised to the carpal bones. Capitate and hamate account for more than 60% of carpal giant cell tumours [2]. Averill et al reviewed 28 giant cell tumours of hand, 26 were in the tubular bones and only two involved the carpal bones [3]. Radiologically, it is difficult to differentiate carpal GCT from other osteolytic lesions of that area including aneurysmal bone cyst, enchondroma and brown tumour of hyperparathyroidism. Brown tumour of hyperparathyroidism can be excluded in the absence of other changes of hyperparathyroidism. Enchondromas are most common tumours of hand frequently localized in phalanges and metacarpals. Enchondromas commonly show ring and arc pattern of calcification. Fluid-fluid level is an important imaging feature of ABC which is not seen in our case [4].

Biscaglia R et al reviewed giant cell tumours of the bones of the hand and foot at the Rizzoli Orthopaedic Institute over a period of 50 years (1947-1997) and found that GCT of hand is more frequently seen in younger females (as in our case), with nonspecific radiographic features and more aggressive nature than GCTs of large bones. So far, there is no standardized treatment protocol for these lesions. Proper curettage with bone grafting can give good functional results with minimal complications. Although longer follow up will be required to comment on the recurrence rates [5].

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