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Case Report

Synovial chondromatosis of the pisotriquetral joint

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CASE REPORT A 45 year old right-handed male presented with a soft-tissue mass arising on the volar aspect of the right wrist at the distal end of the ulna. The mass had been present for one year and had been slowly enlarging. He gave no history of preceding trauma, and had no mechanical problems arising from the mass. He had no significant medical history of note and had no symptoms with any other joints.

On examination he had a 5 cm x 4 cm mass which was soft, non-tender and fluctuant. He had full range of wrist and hand function. He had some irritability of the ulnar nerve at the elbow but no other significant clinical findings. The initial presumptive diagnosis was of a wrist ganglion

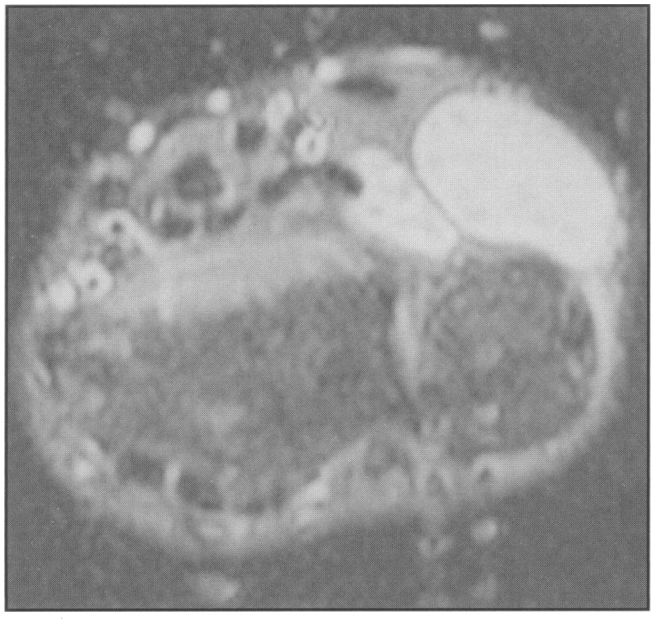


Fig 1

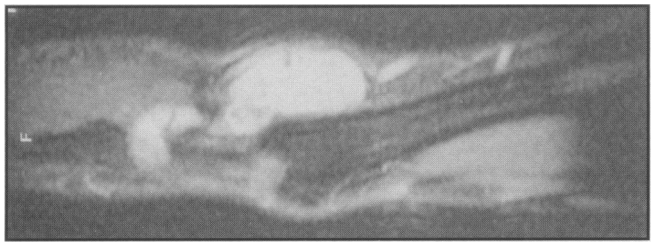


Fig 2

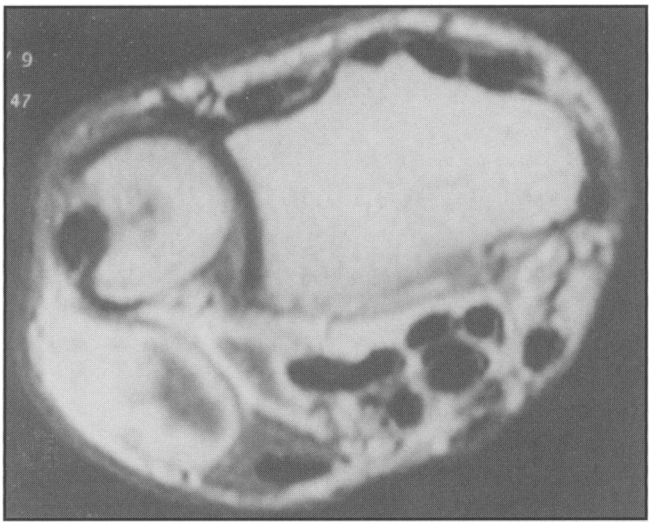
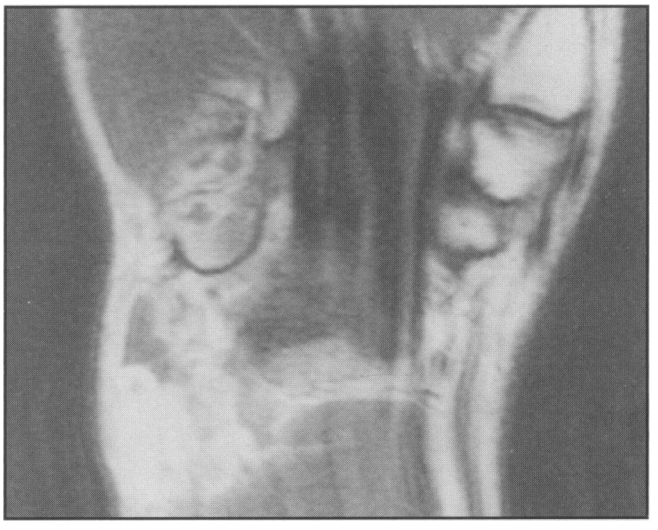


Fig 3



Figures 1,2,3,4. Gadolinium enhanced MRI scans of the right wrist showing 'lucent' synovial based tumour arising from piso-triquetral joint in cross-section, coronal and saggital planes.

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but there was concern regarding the size and location.

Standard radiographs were reported as normal. A MRI scan revealed a lesion 4 cm long extending from the region of the pisiform proximally and medially and spreading distally to the hook of the hamate. There was marked displacement of the neurovascular bundle laterally. The features were thought to be in keeping with a synovial-based tumour, and probably synovial chondromatosis.

At operation the mass was exposed through a volar approach to the distal forearm and palm. The tumour was found to be bifurcated deep to flexor carpi ulnaris and was dissected out bluntly from the main branches of the ulnar neurovascular bundle. The sac extended into the pisotriquetral joint. The pisiform was excised with the mass to ensure complete excision of the tumor. A further extension of the tumor was excised from around the hook of the hamate. The wound was closed and the wrist splinted for 18 days.

Wound healing was uneventful and wrist function returned satisfactorily post-operative. Histological analysis revealed synovial chondromatosis with no evidence of malignancy.

DISCUSSION

Synovial chondromatosis is an uncommon monoarticular condition of the large joints (knee, hip, elbow, shoulder and ankle) originally described by Laennac in 1813. It is rare (fewer than 100 cases reported) in the joints of the wrist and hand. Of these it is most commonly reported in the distal radioulnar joint, radiocarpal joint, metacarpophalangeal joints and proximal interphalangeal joints. It has been postulated that most of the wrist cases actually arise from the piso-triquetral joint but as Milgram(1977) reported only one case arising in the pisotriquetral joint in his study of 30 cases, there is no strong evidence for this. It can also arise from the tendon sheaths or bursae.

The aetiology of synovial chondromatosis is largely unknown. It is described as a metaplastic condition of the synovium and related tissues. A pleuripotent synovioblast reverts to either a fibroblast, a chondroblast or an osteoblast. These cells then undergo metaplastic change to connective tissue, cartilage or bone. These represent the components found in the nodules of synovial chondromatosis. The condition affects males slightly more frequently than females. There is a wide variation in age-range with a peak in the 3rd and 4th decades. There is an association with trauma in cases arising from the tenosynovium, but no such link in cases arising from joints. Milgram described three stages of the disease: 1 active synovial disease with no free or loose bodies; 2 a transitional stage where there is active synovial disease with osteochondral bodies in the synovial tissue and loose in the joint cavity or bursa; and 3 a dormant stage in which there are multiple osteochondral loose bodies but no active synovial disease.

Clinical features of the condition include pain, presence of a mass, loss of movement and joint crepitus. Functional features such as triggering and locking have also been reported as have features related to nerve compression. Many cases however remain asymptomatic.

X-ray appearance of multiple peri-articular radio-dense bodies often with an indiscrete outline is suggestive, but not specific to the condition. These often have the stippled appearance of a cartilaginous lesion. With larger lesions peripheral linear densities with radiolucent centres develop and bony trabeculation may be seen in mature areas of the nodules. The differential diagnosis include degenerative joint disease, rheumatoid disease, osteochondritis dessicans, tuberculous arthritis, crystal arthropathy, psoriatic arthropathy and pigmented villonodular synovitis. In the present case radiographic examination had been unhelpful. The size of the swelling clinically was suggestive of neoplasia. MRI scanning accurately identified the size and extent of the lesion as well as strongly suggesting the actual diagnosis. The characteristic findings are on T-1 weighted images an intraarticular lobulated homogeneous appearance isointense with the surrounding soft tissues and on T-2 weighted images a hyperintense signal. Some nodules have foci of signal void on all pulse sequences (calcification) and others have a halo of low intensity around the central soft-tissue like signal (ossification). This pre-operative information allowed the surgical approach to be more conservative than might have otherwise been with a swelling of this size in this location.

Macroscopic appearance is of multiple pearly grey/white osteochondral nodules from 3 to 10 mm in size sometimes as large as 50 mm, normal articular cartilage and hyperaemic synovium. Histological analysis reveals cartilaginous and osseous pockets within a fibrous-tissue envelope.

The only treatment is surgical, as spontaneous regression is rare. Localised disease is best excised completely. Removal of loose bodies either by open surgery or arthroscopically is effective for mechanical symptoms while pain and swelling are best dealt with by open synovectomy.

CONCLUSION

Synovial chondromatosis is a rare condition of the wrist. It may cause confusion with clinical diagnosis of common tumours such as giant cell tumours or ganglions arising in unusual sites. Radiographs may not be diagnostic. MRI scanning is appropriate in the investigation of any swelling of the wrist in an unusual site.

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