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Case Report

Synovial Chondromatosis of the Cubometatarsal Joint

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Synovial chondromatosis is a benign metaplastic condition, and results in either an intraarticular or extraarticular mass lesion. The most common presentation is with a long history of localised pain. It is characterised by large numbers of cartilaginous or ossified rice-like loose bodies, and plain radiographs may reveal these as multiple small heterogeneous opacities.

We present a case of cubometatarsal joint synovial chondromatosis, which is an unusual site for this rare disease.

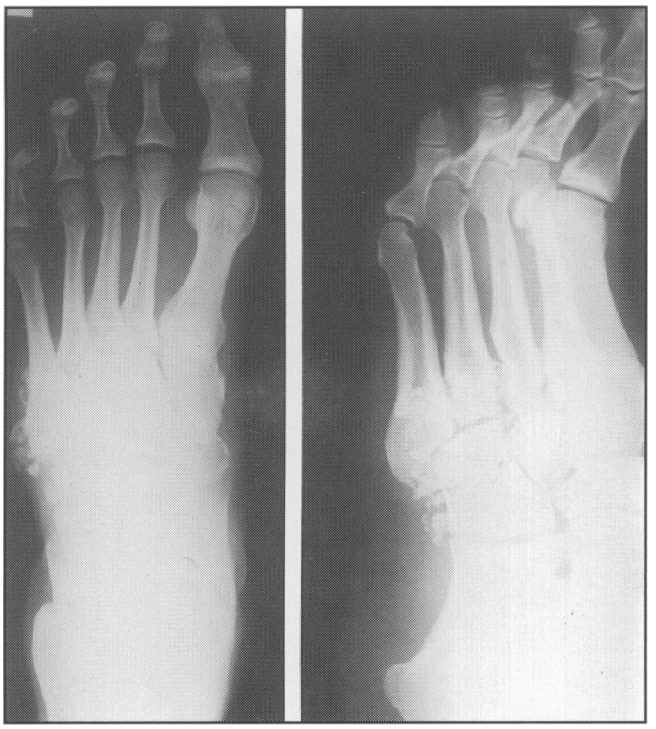

Fig. 1 PA and oblique views of the foot.

CASE REPORT. A 31 year old man presented complaining of a swelling on the sole of his foot and numbness along its lateral border. Examination revealed a tender fullness on the sole of his foot, but no sensory loss.

A plain radiograph showed discrete areas of calcification around the cuboid and bases of his 4th and 5th metatarsals, with scalloping of the cuboid in keeping with a long standing pressure effect (fig. 1); these features were reported as being consistent with synovial chondromatosis. Magnetic resonance imaging (MRI) confirmed the diagnosis by revealing multiple foci of low signal intensity surrounded by fluid (fig. 2). The cubometatarsal joint was later explored, a myriad of loose bodies of approximately 5 mm in size were removed, and an open synovectomy done. Histopathology confirmed synovial chondromatosis. When reviewed after four weeks he was pain free with a full range of movement.

DISCUSSION

Synovial chondromatosis is a metaplastic condition affecting the synovium and similar linings. The stimulus which causes the metaplasia is unknown. There is a slight preponderance of females[1] and it affects a wide age range, although most commonly those in their 3rd and 4th decades.[2] Large variations in reported incidence stem from a difficulty in definition. Milgram has classified the disease into three stages:[3] an early stage where metaplastic cells are seen *within* the synovium, but there are no loose bodies, a transitional stage where the same active process is seen, and loose bodies have been secreted into the joint cavity or bursa, and lastly a quiescent stage in which the epithelial changes are no longer seen, but there are loose bodies within the cavity. It is the last stage which gives rise to the difficulty as some degenerative processes result in loose bodies forming within the joint cavity, without epithelial changes and are therefore difficult to distinguish from quiescent synovial chondromatosis

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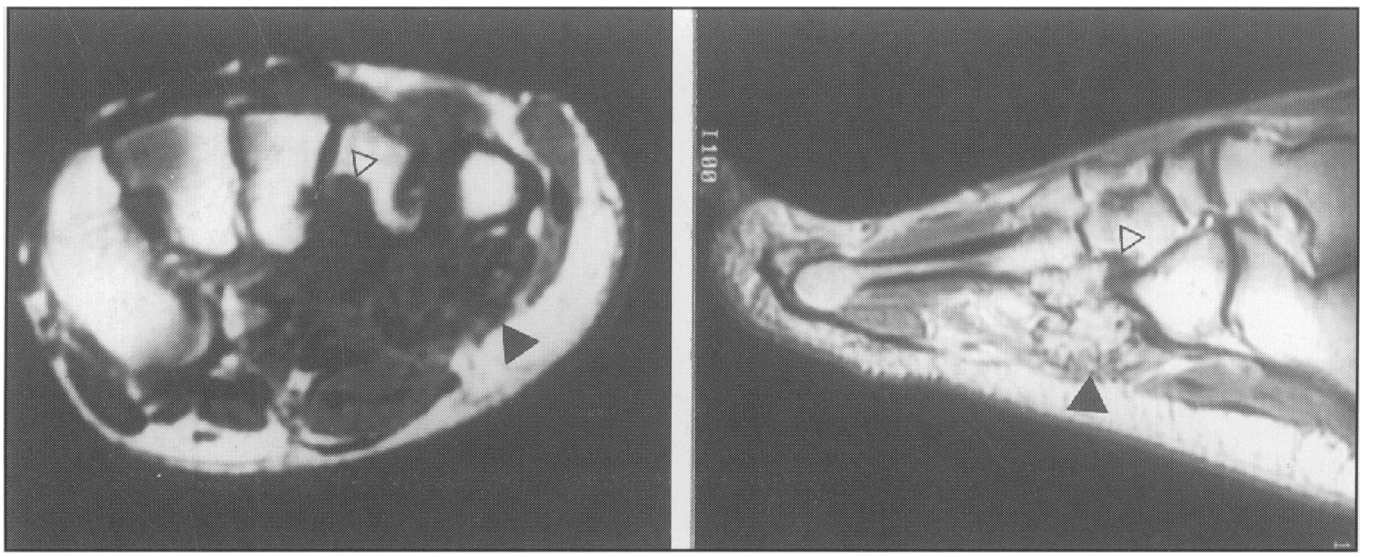

Fig 2(a). Coronal view Tl weighted MRI Low signal tissue is seen adjacent to the base of the 4th and 5th metatarsals (closed arrow head); it has the same signal strength as the surrounding muscle. Within this region there are multiple foci with very low signal in keeping with calcification. The low signal soft tissue is seen eroding into the plantar aspect of the 4th metatarsal (open arrow head).

Fig 2(b). Sagital T2 weighted MRI The soft tissue mass shows higher signal than the surrounding muscle indicating increased fluid within the tissue, in this case synovial fluid (closed arrow head). Again discrete areas of low signal are seen, representing the rice-like loose bodies. Erosion into the lateral cuneiform bone is indicated by the open arrow head.

The most commonly affected joint is the knee: one of the larger studies showed only two cases out of 53 in which ajoint of the foot was involved,[1] extrasynovial involvement of the synovium in tendon sheaths is not uncommon,[4] but more bizarre situations have included the bursa overlying an osteochondroma,[5] or within the iliopectineal bursa. Macroscopically there are multiple, smooth, well circumscribed loose bodies in a clear viscous synovial fluid. The loose bodies are usually less than 10 mm in size, but have been reported up to 50 mm. They may be purely cartilaginous, or heterogeneous in their degree of calcification. The presenting symptoms vary depending on how the mass effect is exerted: the most common symptom is intermittent long-standing pain focused at a joint, sometimes associated with a palpable mass. Other manifestations include joint locking, decreased range of movement and a limp.

The initial investigation is plain film radiography: the only changes visible may be those of non specific degenerative disease or of a soft tissue mass, but up to 88% of plain films may show discrete radio opacities within the affected joint.[1] Pressure erosion of bone is seen in approximately 11% of cases, particularly of the anterior aspect of the distal femur in knee involvement, and is caused by the pressure effect of a bulky synovium.

The malignant potential of synovial chondromatosis is uncertain: there are several well documented case reports showing histologically proven progression into extraskeletal myxoid chondrosarcoma with metastatic spread.[6] However without metastatic spread the histopathology alone is not conclusive: synovial chondromatosis which follows a benign course may on histology display several features normally associated with malignancy, for example a variation in nuclear size and staining characteristics, an increase in nuclear cytoplasmic ratio, two or more nuclei per lacunar space and a pleomorphic growth pattern.[7] Furthermore it may also become locally invasive, for example breaching the joint capsule and spreading throughout neighbouring soft tissues. Conversely extraskeletal myxoid chondrosarcoma tends to follow a benign course when compared with chondrosarcoma arising from bone – there are several reports of patients living for may years following positive identification of metastases.[8] Thus it has long been accepted that the clinician must be cautious when diagnosing malignancy on the basis of some cellular atypia, but it also

raises the possibility that so called synovial chondromatosis which was thought to have progressed to malignancy, may in fact always have been a low grade extraskeletal myxoid chondrosarcoma.

The standard treatment for intraarticular synovial chondromatosis is arthrotomy, removal of loose bodies and synovectomy; it has been argued that if the synovium looks macroscopically normal it may be assumed that the active disease is burnt out (Milgram stage 3) and therefore the synovium may be left intact.[9]

ACKNOWLEDGMENT

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