Extra-osseous tenosynovial chondromatosis is rare and has a high rate of local recurrence. We report a 23-year-old man who presented with a 6-month history of pain and swelling of the right middle finger and painful limitation of the ring finger flexion secondary to this condition. Surgical exploration revealed multiple loose bodies of varying size arising from the flexor tendon sheath. Histopathological examination revealed mature chondroid tissue and focal calcification. After 2 years of follow-up, the patient had achieved an excellent functional recovery and showed no evidence of recurrence.

Key words: chondromatosis, synovial; fingers

INTRODUCTION

Extra-articular tenosynovial chondromatosis is considered a component of articular synovial chondromatosis that commonly ensues in knee and hip joints. Its occurrence in the hand is rare and the local recurrence rate is high. Synovial chondromatosis is the result of synovial metaplasia. It can be primary (cause unknown) or secondary to a joint abnormality (osteoarthritis, osteochondral fracture, and neuropathic arthropathy). It may occur within the joint (intra-articular synovial chondromatosis), which is more common, or within the tendon sheath (tenosynovial chondromatosis).

CASE REPORT

In January 2011, a 23-year-old man presented with a 6-month history of pain and swelling on the palmar aspect of the right middle finger, and painful limitation of the ring finger flexion. The remaining fingers and joints were normal. There was no history of trauma, fever, or major illness. Routine haematological tests were within normal limits, as were routine biochemical test results, including serum levels of calcium, phosphate, alkaline phosphatase, and uric acid.
Radiographs revealed volar bony excavation of the proximal phalanx and multiple-calcified bodies of varying size on the volar aspect of the middle finger from the metacarpophalangeal joint to the distal interphalangeal joint (Fig. 1).

Surgical exploration revealed multiple loose bodies of varying sizes arising from the flexor tendon sheath. The proximal interphalangeal and metacarpophalangeal joints were not involved. The bony excavation in the proximal phalanx was curetted free of the loose bodies and soft-tissue mass (Fig. 2). Complete clearance with removal of loose bodies was confirmed using a C-arm image intensifier.

Gross examination of the excised tissue revealed cartilaginous and osteocartilagenous bodies attached to the synovial membrane. Histopathological examination revealed cartilaginous nodules under the synovial membrane (Fig. 3). High-power microscopy revealed mature cartilaginous cells. The diagnosis of tenosynovial chondromatosis was made.

After 2 years of follow-up, the patient had achieved an excellent functional recovery and showed no evidence of recurrence.

DISCUSSION

Primary synovial chondromatosis represents an uncommon benign neoplastic process, in which hyaline cartilage nodules form in the subsynovial tissue of a joint, tendon sheath, or bursa. Synovial chondromatosis is categorised as primary or secondary. The primary form is a benign neoplastic process occurring in the synovium of a joint, which results in the formation of multiple intra-articular chondral bodies. The same process can also involve the synovium that extends along tendons and bursae, and referred to as tenosynovial and bursal chondromatosis, respectively. Secondary synovial chondromatosis occurs with mechanical joint abnormalities, injuries, or arthritis that cause intra-articular chondral bodies.3,4

Tenosynovial or bursal chondromatosis most commonly affects adults (females more than males) in the fifth decade of life. Tenosynovial chondromatosis occurs most commonly in the hands and feet, followed by the knees, shoulders, hips, and ankles.2,3 Symptoms include pain, swelling, and reduced range of movement. Tenderness on pressure and reduced range of movement is due to soft-tissue swelling.5,6

Figure 1 Radiograph showing soft-tissue swelling of the middle finger, multiple loose bodies on the volar aspect and bony excavation.

Figure 2 Intra-operative photograph showing chondromatosis and bony excavation.

Figure 3 Histopathological examination showing cartilaginous nodules attached to synovium (H&E, 40x).
The duration of symptoms is usually prolonged, with a median of approximately 2 years. Gross pathological examination reveals bluish-white subsynovial nodules of hyaline cartilage, which may detach from the synovium and lie within the tendon sheath. These chondral bodies can vary in size from a few millimeters to several centimeters in diameter. Microscopy reveals lobules of hyaline cartilage surrounded by an attenuated synovial lining, and chondrocytes with a degree of atypia with nuclear crowding, hyperchromasia and multinucleation, although these features are not necessarily indicative of malignancy. Radiological examination of tenosynovial chondromatosis reveals multiple calcifications. Long-standing cases may show round, oval, or elongated mineralisation within a tendon sheath. Extrinsic erosion of the underlying bone can ensue, but the adjacent joints are normal. The differential diagnosis of extra-osseous tenosynovial chondromatosis includes soft-tissue chondroma, periosteal chondroma, tumoral calcinosis, hydroxyapatite deposition disease, and haemangiomatosis. Unlike tenosynovial chondromatosis, chondromas comprise mature hyaline cartilage lobules that are not covered by synovium. Tumoral calcinosis contains calcium deposits, and haemangiomatosis is characterised by capillary proliferation. The treatment of choice is surgical resection. The aim of surgery is complete excision of the tenosynovium and loose bodies together with curettage of any bony excavation. The overall recurrence rate for intra-articular disease ranges from 3 to 23%, which may be related to incomplete resection. Removal of chondral bodies along with synovectomy is associated with a lower rate of recurrence. Rare instances of malignant transformation can cause the lesions to resemble synovial chondrosarcoma. The distinction between them is based on the presence in chondrosarcoma of obvious cytologic features of malignancy in the chondrocytes.

REFERENCES