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Asymptomatic big toe changes in diabetic patients with early Charcot knees—a report of 2 cases

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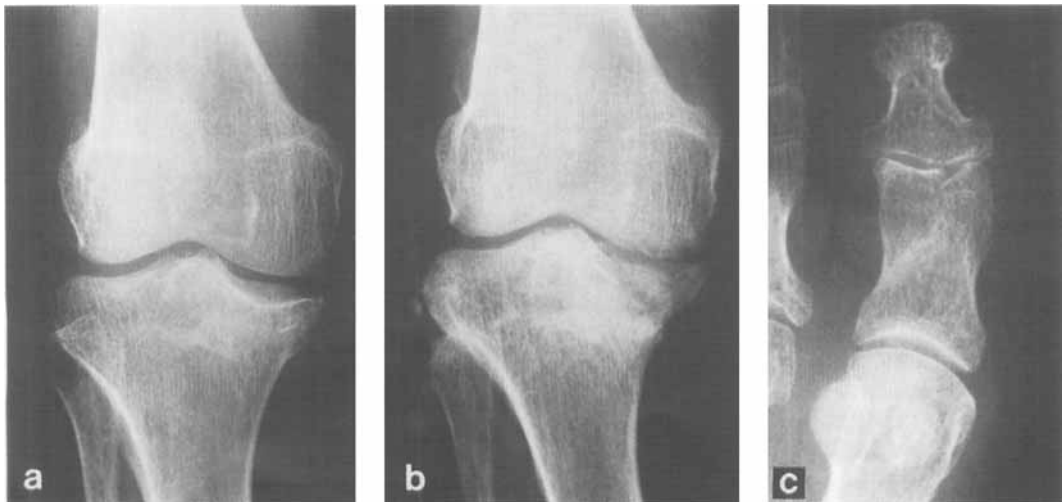
Case 1

A 59-year-old woman had had diabetes mellitus for 25 years. She had been treated with insulin for 16 years, and had severe neuropathy and retinopathy. While standing, she twisted her right knee in November 1991 and began to complain of mild pain and swelling. She was diagnosed as having gonarthrosis at a nearby hospital and received physical therapy. Since the symptoms did not subside, she visited our department in December 1991.

Hydrops was present in the right knee. The range of motion was 5–130 degrees and there was slight medial instability. Both superficial and deep sensations in her lower extremities were decreased, and ankle and knee jerks were absent. A plain radiogram of the knee

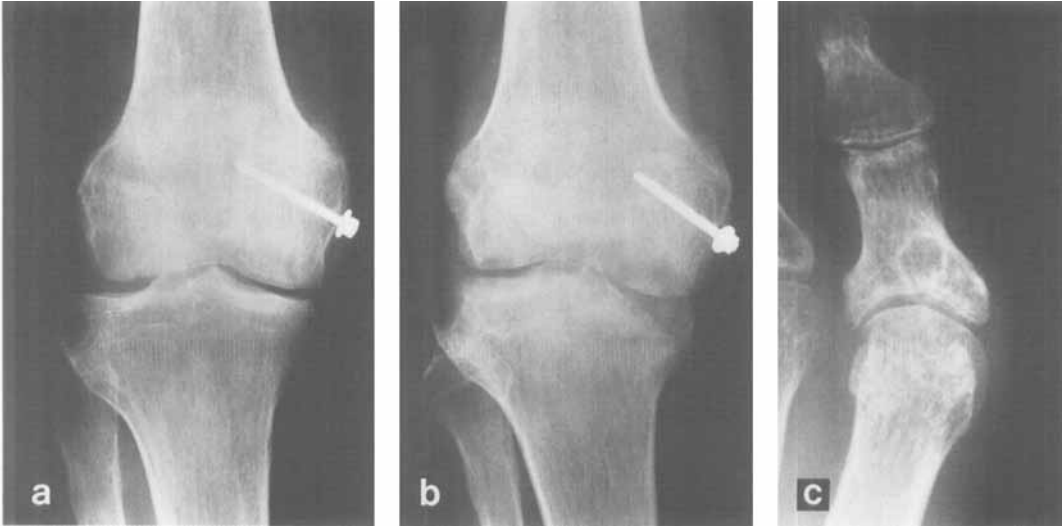
showed slight indentation of the medial tibial plateau and an obscure, transversely running small fracture line. Although her complaints were confined to her right knee, radiographic surveys of other joints of the lower extremities were done. Distinct changes showing a fracture at the distal end of the proximal phalanx of the right first toe were found, although there was no complaint or history of trauma to the foot.

1 month later, destruction of the medial tibia condyle became distinct radiographically, varus deformity had progressed and a fracture of the fibula head had developed. She was able to kneel and squat without significant pain, despite the marked joint destruction and instability.



Case 1. The right knee a) in December 1991 and b) in June 1992.

Spontaneous fracture of the distal end of the first proximal phalanx.



Case 2. The right knee a) in June 1993 and b) in July 1993.

Asymptomatic large bone cyst of the first proximal phalanx.

Case 2

A 50-year-old man with diabetes mellitus for 6 years had been treated with insulin for 3 years. He had neuropathy and retinopathy. He had a medial collateral ligament injury of the right knee from a traffic accident 4 years earlier and the ruptured proximal insertion had been fixed with a screw. In June 1993, he developed synovitis of the right knee after walking a long distance. At a nearby hospital, he was diagnosed as having arthrosis and treated with non-steroidal anti-inflammatory drugs. Since his symptoms did not improve, and he developed instability and mild pain in the knee, he visited our outpatient clinic in July 1993.

Physical examination revealed medial instability of his right knee, with normal extension-flexion. Superficial sensibility was normal, but deep sensation and tendon reflexes of both lower extremities were decreased. A radiogram taken 3 weeks before at another hospital was normal, except for a slight lateral subluxation of the tibia and a well demarcated subchondral bone cyst at the lateral tibial plateau. The radiogram taken at our hospital showed destruction and depression of the medial tibial plateau. A radiogram of his forefoot revealed a large sharply outlined bone defect with sclerotic margins which opened towards the articular surface in the proximal end of the right first proximal phalanx. He had had no complaint at this site.

Total knee arthroplasty with a large autogenous bone graft was performed in October 1993. The post-operative course was uneventful.

Discussion

The incidence of Charcot joint (neuroarthropathy) in patients with diabetes mellitus is estimated at 0.15% (Sinha et al. 1972). The foot is most often involved, while the knee is rarely affected (Boehm 1962). It is often difficult to distinguish early-stage Charcot joints from other disorders, owing to the lack of specific clinical and radiological findings. As was the case in our patients, minimal subluxation, degenerative changes and spontaneous fracture are the radiographic features of early stage Charcot-knee (Katz et al. 1961). Apart from these findings, asymptomatic osseous changes in the proximal phalanx of the big toe were observed in both of our patients, a fracture in case 1 and a juxta-articular large bone cyst in case 2. These changes are characteristic of diabetic osteoarthropathy caused by neuropathy. Spontaneous fracture resulting in deformity of a phalanx has been well described as one of the typical findings in diabetic neuroarthropathy (Gondos 1968). Juxta-articular large bone cysts occur in approximately 4% of the cases with diabetic foot (Geoffroy et al. 1979). Our observations indicate that patients who develop diabetic Charcot-knee joints may have preceding osseous changes in the foot.

Although the results of total knee arthroplasty for the Charcot knee have been disappointing (Richardson 1987), satisfactory middle and long-term results are described in more recent reports (Soudry et al. 1986, Yoshino et al. 1993). Bone loss from a Charcot-type destruction impairs the outcome. Therefore, early diagnosis of diabetic joint destruction is important.

We recommend radiographic survey also of the feet in diabetic patients with knee complaints.

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