

**Charcot Knee in Diabetes:
Imaging Features and Diagnostic Challenges in a Rare but Serious Complication**
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Background and aims

- Charcot osteoarthropathy of the knee is a rare but serious complication of diabetic neuropathy. Delayed diagnosis may result in joint destruction and major surgical intervention. This study describes clinical presentation and imaging characteristics of suspected Charcot knee, emphasising the role of advanced imaging in early diagnosis.

Methods

- We performed a retrospective review of medical records and imaging studies of six people with diabetes presenting with knee swelling and pain who were subsequently diagnosed with Charcot knee. Clinical context, radiographic findings, magnetic resonance imaging (MRI) features and management strategies were analysed.

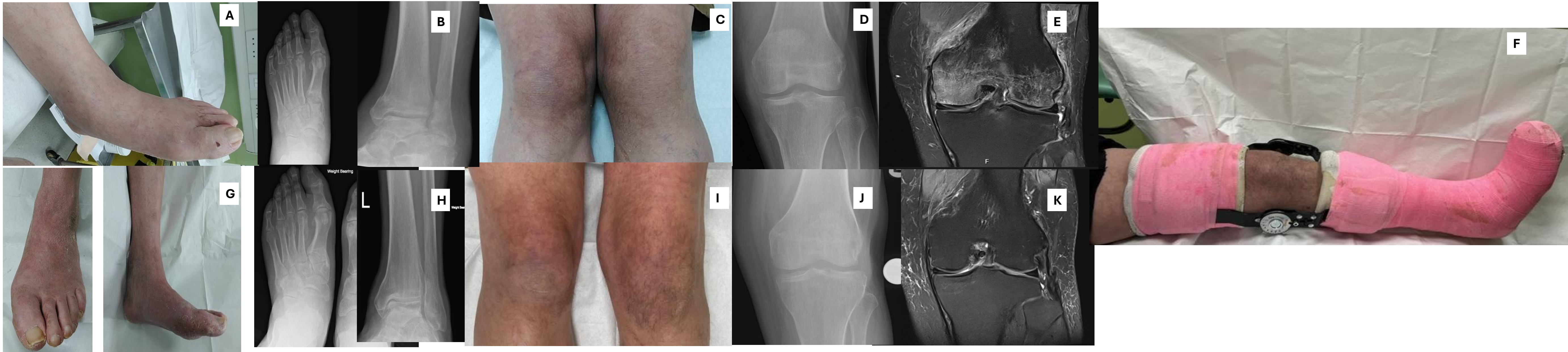
Results

- Nine Charcot knee presentations were identified in four men and two women (mean age 54±9 years).
- Knee symptoms developed during ipsilateral offloading for an active Charcot foot using a total contact cast in two cases (case study 1) and following Charcot foot reconstruction in one case (case study 2).
- In the remaining three individuals, all with type 1 diabetes, symptom onset was unrelated to trauma or active offloading. These patients had bilateral inactive Charcot feet and subsequently developed bilateral Charcot knees at intervals of three months, six months (Case study 3) and fifteen years.
- Initial plain radiographs were normal in most cases, with occasional findings of linear sclerosis (1) or joint space narrowing (1).
- In contrast, MRI demonstrated bone marrow oedema in all knees, fractures in eight, joint effusion in six and ligament injury in three.
- Management included total contact casting with knee bracing in all cases, with additional wheelchair or crutches support where required. One individual required total knee arthroplasty due to progressive joint destruction.

Conclusion

- Charcot knee can occur in people with existing/active or previous/inactive Charcot foot disease, even without trauma or abnormal initial radiographs. New-onset knee swelling and pain in this population should prompt urgent MRI assessment. Early diagnosis and appropriate offloading may limit progression, preserve joint integrity and reduce the need for surgery.

Case study 1



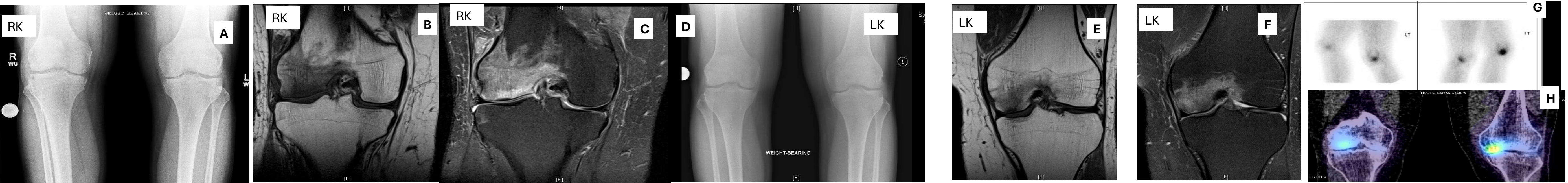
Case study 1: Man, aged 58 with type 2 DM. Hot swollen left foot and leg (A) with multiple foot fractures (forefoot and mid-foot (B) and tibial fracture (C)).Treatment with TCC. Three-months later: left knee hot and swollen (D) with normal X-ray (E). MRI – bone marrow oedema with fractures of medial and femoral condyle, joint effusion with synovitis. Management with TCC and knee bracing (G). Inactive Charcot foot (H) with mild foot deformity (I) and inactive knee (J), resolution of MRI bone marrow oedema and healing of fractures.(K)

Case study 2



Case study 3: Man, aged 61 with type 2 DM. Mid-foot and hind foot Charcot reconstruction (A) for extensive Charcot deformity (B). Painful and swollen right knee (C) medial tibial plateau fracture (D).Treatment with TCCand knee-brace. X-ray follow up (E) and evidence of increased sclerosis at the fracture site suggestive of interval bony consolidation (F) .

Case study 3



Case study 2: Man, aged 37 with type 1 DM and past history of bilateral inactive Charcot feet. Hot swollen and painful right knee (A) with bone marrow oedema of the lateral femoral condyle. Six-months later presented with left knee pain and swelling with bone marrow oedema of the medial condyle and three phase positive bone scan with increased uptake of the LK (LK> RK) and SPECT CT image showing the areas of anatomical abnormality.