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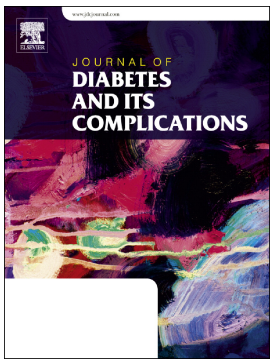

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A review of bone metabolism and developments in medical treatment of the diabetic Charcot foot

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Background:

Charcot neuro-osteoarthropathy is a rare but severe disorder of bones and joints in weight-bearing skeletal structures. It exclusively occur in patients with neuropathy, and as neuropathy is among the most common chronic complications to diabetes (1–3), it is among diabetics that most cases today occur. By far the most common location is in the feet (Charcot foot) (4–8), usually localized unilaterally to either the midfoot, hindfoot or ankle (9,10).

The diabetic Charcot foot occur with an incidence around 0.3% (10–12). It manifests as an aseptic inflammation and progressive degeneration, which can lead to spontaneous fatigue bone fractures, potentially causing irreversible deformity as well as ulcerations.
The initial clinical presentation of an acute Charcot foot is a red and swollen foot, with a temperature difference of >2 ^{O}C compared to the unaffected foot. These symptoms may go unnoticed by the patient, as pain can be absent or disproportional to the extensive damage the foot is sustaining (8). There may be an initial triggering event such as a minor fracture, trauma or repetitive stress, although such events are often unrecognized (13).
Radiographs in the early phase of Charcot foot can be normal, thus additional examinations with MRI or three-phase bone scintigraphy is vitally important to detect the condition as early as possible (14,15). Especially MRI scans have the advantage of revealing the initial bone marrow edema, thereby detecting the Charcot foot before severe bone damage has occurred (16,17).

The Charcot foot is a severe diabetic complication and it is associated with increased morbidity and mortality (18). Furthermore, both the condition and its treatment are associated with a loss of quality of life as self-rated by the patients (19,20).
Although the precise pathological mechanism is unknown, the development of a Charcot foot requires peripheral neuropathy. Patients who develop a Charcot foot have often had poor glycemic control, and thus often other concomitant late stage diabetic complications as well (21,22).

Current treatment:

Due to the potentially devastating consequences of a Charcot foot, prompt identification and