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Bone mineral density in diabetes mellitus patients with and without a Charcot foot

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Objective: The Charcot Osteoarthropathy (CA) foot has been known in more than 130 years, and yet there still remains a large effort reveal the pathogenesis. CA is a progressive disease of bone and joints characterized by often painless bone and joint destruction, osteoporosis have been suggested as part of the pathogenesis. This study measured bone mineral density in patients with CA and control groups.

Research Design and Methods: 49 patients with diabetes were investigated. The patient population consisted of patients with an acute Charcot foot (n=17) or chronic Charcot foot (n=7). The patient inclusion criterion was a temperature difference more than 2° between the two feet, oedema of the foot, typical hotspots on a bone scintigram and a typical clinical course. Three control groups consisted of diabetes patients with (n=9), without neuropathy (n=11) and who had an amputation of the 1. Toe (n=5). Values measured were bone mineral density (BMD) in whole body, lumbar spine, hip and calcaneus, using lunar prodigy DEXA scanner. The bone turnover markers CTX-1 and N-MID were also measured.

Results: There were no differences in bone mineral density measured in the spine, hip or whole body. There was an increase in markers of bone turnover in the patients with acute CA. The BMD of the calcaneus was statistically lower in the affected foot in patients with chronic Charcot ($p < 0,01$), than the un-affected foot, but there was difference no statically significant differences between the feet's in the other groups. **Conclusions:** This suggests that the Charcot foot in diabetes is a rather local phenomenon, than general osteoporosis, with little effect on the skeleton in general.