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Autonomic Neuropathy in Diabetes Patients with Charcot Osteoarthropathy

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Objective: Determination of the degree and impact of peripheral autonomic neuropathy in the pathophysiology of acute Charcot Osteoarthropathy in diabetic patients**. Research Design and Methods:** 49 patients with diabetes were investigated. The patient population at interest was the patient with an acute Charcot foot (n=17) and chronic Charcot foot (n=7). The inclusion criterion for an acute Charcot foot was a temperature difference of more than 2°C between the two feet, oedema of the affected foot, hotspots in a bone scintigram, and a typical clinical course. In addition a high-risk group for development of COA was investigated (n=5), and two control groups consisting of diabetes patients with (n=9) or without somatic neuropathy (n=11). Regional blood flow in the feet was measured by venous occlusion plethysmography. Somatic neuropathy was quantified by the neuropathy disability score, and the modified neuropathy symptoms score. Autonomic neuropathy was measured by the activity of the local veno-arteriolar sympathetic axon reflex in the feet, and by heart rate variability during controlled respiration. **Results:** The patients with acute Charcot foot and first toe amputation both had an increased blood flow in the affected foot, and weakened but not absent veno-arteriolar sympathetic axon reflex. The other patient groups had preserved veno-arteriolar sympathetic axon reflex and normal blood flow in the feet. **Conclusion:** Peripheral sympathetic neuropathy is not likely to be the pathophysiologic mechanism behind the hyperaemia in the foot during an acute attack of Charcot osteopathy. The hyperaemia is more likely secondary to local inflammatory events.