Improved Sensory Perception in Diabetics

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BACKGROUND: There is no therapy for peripheral neuropathy (PN) which occurs in more than 50% of long-term diabetics. PN is the primary cause of diabetic ulcers and the most predictive diagnosis for an eventual amputation. As part of the therapeutic approach to post operative incisions and disease induced wounds experienced by diabetic patients, physical therapists at TMCA and DHMC routinely use a medical device, the Anodyne Therapy System (ATS). The ATS is FDA cleared for pain reduction and improving circulation. It emits monochromatic, near infrared photo energy (MIRE) from a series of 60 diodes in a flexible array that is placed in contact with the skin. Occasionally, diabetic patients report improvement in sensory perception in the feet although feet were not directly exposed to MIRE.

PURPOSE: We instituted a prospective study of 49 diabetics (Type I, n=25; Type II, n=24) each of whom received treatment with the ATS to determine if there was an improvement of sensation.

METHODS: At baseline, all patients had absent or impaired protective sensation as measured by the Semmes-Weinstein (SW) monofilament test (range 4.56-6.45). 42 of 49 patients had clinically-determined SW values exceeding 5.07, reported to be the single most predictive diagnosis of diabetic foot ulceration. The ATS diode array was placed in contact with the skin on the lower leg/foot for 30 min./day, 3X/week for one month and SW tests were repeated at two and four weeks.

RESULTS: After two weeks, 48/49 patients exhibited improved sensation. After 12 treatments, all 49 patients had improved sensation and 65% of the patients demonstrated a restoration of protective sensation (SW at 4.17 or below). No patient had a SW value above 4.93.

CONCLUSION: The ATS may be a safe, non-invasive therapy for the consistent and predictable improvement of foot sensation in diabetic patients with PN.