

[P47] EVALUATION OF THE USAGE SPECIAL CUSTOMISED PROTECTIVE FOOTWEAR IN PREVENTING ULCERATIONS AND AMPUTATIONS OF THE LOWER EXTREMITIES IN PATIENTS WITH NEUROPATHY

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Background and aims: Diabetic neuropathy is the most common complication of diabetes mellitus (DM) as it affects a significant number of patients. Increased mechanical pressure, in combination with the lack of protective sensory feedback of the heel due to diabetic neuropathy, are the reasons for skin lesions capable of developing ulcerations. The purpose of the present study is to evaluate if the application of specially designed footwear improves the heel pressure parameters, thus preventing ulcerations in the lower extremities of diabetic patients and whether it should be recommended for inclusion into the early diagnosis and prevention of amputations.

Materials and methods: The study population included 20 volunteers without DM and without any neuropathies (control group) and 60 patients with DM divided into 2 groups each of 30 patients (one group was provided with the special customised protective footwear and the other without special footwear). All participants underwent the following examinations and measurements: Measurement of Nerve Conduction Test, Electromyography, CAN evaluation tests, plantar pressure parameter measurement using a pressure platform and specialised software, Doppler of the arteries and veins of the lower extremities, Glucose tolerance test, MNSI test (Michigan neuropathy screening Instrument). Anthropometric and biochemical parameters, including traditional cardiometabolic risk factors as well plasma levels of iron, B12 and ferritin were obtained. According to recent studies and the possible association of anaemia with diabetic foot ulceration all participants with anaemia were treated accordingly. Assembly of specially formed sole and footwear (Anesii Frontis Medical) for each patient based on present circumstances and dynamic plantar pressure value correction, according to the measurements of the plantar measuring device. Statistical analysis was performed using SPSS 17.0 statistics software.

Results: A statistically significant positive correlation ($p < 0.05$) was found between the degree of neuropathy and the decline and deviation from the physiological plantar pressure parameters. A positive correlation ($p < 0.05$) was also observed between the aforementioned parameters and diabetes duration. As for the two groups of patients, from those who were not provided with the special diabetic footwear with correctional soles, 8 revealed ulcerations on the lateral surface of the sole, 4 revealed ulcerations on different areas of the sole and 2 were forced to undergo amputation of the hallux and the third distal phalanx respectively. From the patients provided with the corrective footwear, only 2 revealed ulcerations, but those were not localized on the surface of the foot sole.

Conclusion: The use of footwear with specially formed soles appear to correct the alterations of the plantar pressure parameters, which are caused by subclinical neuropathy in early diabetic patients and contributes to the prevention of ulceration formations and amputations of the lower extremities.