

Effect of diabetes duration on plantar pressure distribution patterns

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Objective: Abnormal pattern of feet loading in patients with diabetes is changing with time; thus leading to various complications of the foot, ulcerations. The need of effective pressure distribution with adequate footwear is vital for preventing ulcerations and re-ulcerations that is caused by high plantar pressures. It is important to note that re-ulceration is common in patients with diabetic neuropathy even with adequate footwear use (Reiber et al 2002). The purpose of this study was to reveal the effect of duration of diabetes on plantar pressure patterns. **Methods:** 125 patients (58m/67f) having diabetes for 10 years or less (Gr.1) and 136 pts (74m/62f) having diabetes more than 10 years (Gr.2) were examined using emed-at/25 measurement system (novel GmbH, Munich). Peak pressure (PP in kPa), mean pressure (MP, in kPa), maximum force (MF, in N), force-time integral (FTI, in N*c), pressure-time integral (PTI, kPa*c), and contact time (CT, in ms) were compared for Gr.2 versus Gr.1 with one-factor ANOVA. **Results:** Foot: CT (1347±568>1147±420, p<0.001). Hindfoot: MF (449±129<473±134, p<0.001), MP (155±39<161±39, p<0.001), PTI (146±100>126±134, p<0.001), CT (926±552>770±391, p<0.001), FTI (224±140>203±159, p<0.005). Midfoot: MF (148±123<166±112, p<0.001), PTI (95±134>78±65, p<0.001), CT (963±560>814±392, p<0.001). Forefoot: PTI (308±227>252±188, p<0.001), FTI (425±196>353±143, p<0.001), CT (1203±561<1003±402, p<0.001). Toes: FTI (76±56>68±54, p<0.001), CT (1036±541>883±415, p<0.001). **Conclusion:** Reduction of hind foot loading and increase of forefoot loading in patients having diabetes more than 10 years confirm the findings of the other researchers. Lavery (2003) reported a trend toward increased pressure with increasing numbers of foot deformities which are significantly associated with plantar pressure distribution and ulceration (Bus et al 2005). Increase of contact time influences on time dependent parameters (pressure-time and force-time integrals).