

Gait speed modification and plantar pressure changes on the contralateral foot of patients with offloaded Charcot neuroosteoarthropathy

Motawea, Mohamed Specialized medical hospital-Mansoura faculty of medicine

Foot care for the contralateral foot (CF) of patients with Charcot neuroosteoarthropathy (CN) is of utmost importance. We found that 8 out of 140 patients with unilateral CN (5.7%) offloaded by removable cast walkers (RCWs) developed CN in the CF within 1 year follow up period. CN could have deleterious effect on gait due to neuropathy, deformity and leg length discrepancy (LLD) induced by offloading devices. We previously reported that peak pressure will be greater in the shorter leg. But it is unknown whether modification of gait speed will affect these changes. The Aim of this work was to study the effect of walking speed on plantar pressure (PP) of the CF of patients with CN offloaded by RCW under 2 walking conditions: 1- LLD was corrected 2- LLD was neglected (patient own shoe). **Subjects and Method:** The study included 16 diabetic patients (59 ± 8.8 yrs; 8 males) with CN offloaded by RCWs. In-shoe PP distribution was measured using F-scan (Tekscan Inc.) while patients walk with their normal gait (53 ± 4 steps/min) versus short slow steps (SSS) (24 ± 3 /min) under the 2 walking conditions with exclusion of the 1st and the last stances. **Results:** Peak pressure significantly increased beneath hallux, heel, 1st, 3rd, 4th and 5th metatarsal heads (MTHs), when LLD was neglected with the patient normal gait (173 ± 211 , 346 ± 93 , 265 ± 105 , 269 ± 71 , 215 ± 79 , 187 ± 75 kPa·s, respectively), compared with SSS (109 ± 165 , 272 ± 88 , 185 ± 87 , 194 ± 51 , 156 ± 54 , 140 ± 46 kPa·s, respectively) with pressure transfer to midfoot (86 ± 62 vs 99 ± 44 kPa·s, respectively) and beneath hallux, heel, 1st, 3rd, 4th MTHs when LLD was corrected with patients normal gait (192 ± 14 , 313 ± 102 , 205 ± 93 , 182 ± 61 , 129 ± 57 kPa·s, respectively) versus SSS (158 ± 143 , 293 ± 89 , 159 ± 74 , 140 ± 31 , 114 ± 61 kPa·s, respectively) with pressure transfer to midfoot, 5th MTH (127 ± 67 , 104 ± 37 VS 132 ± 72 , 107 ± 60 kPa·s, respectively) and non-significant changes over 2nd MTH was found in both conditions. **Conclusion:** The CF of CN is subjected to high pressure load beneath the hallux, heel, 1st, 3rd and 4th MTHs. As such, care should be taken not only to avoid minor LLD but in addition the patient should be advised to have SSS while walking.