

Is there any difference between the loading of the lateral and medial foot in the different types of the Charcot arthropathy of the midfoot? V.Bregovskiy¹, T.Tsvetkova², A.Demina³. ¹Almazov Federal Medical and Research Centre, ²Novel SPb LLC, ³City Diabetes Centre, Saint-Petersburg, Russia

Objective: To study plantar pressure distribution parameters in diabetic patients with the unilateral Charcot arthropathy of the midfoot without a history of amputations. **Methods:** 22 patients with unilateral rocker-bottom (Gr.1) and 18 patients with medial convexity (Gr.2) were examined. Pressure distribution measurements were performed with emeda50 system. Maximum force (MF), peak (PP) and mean pressure (MP), force- (FTI) and pressure time integrals (PTI), contact area (CA), contact time (CT), center of pressure (COP) parameters as well as geometric parameters were calculated and compared for lateral and medial foot areas (with the bisection of the long plantar angle): hindfoot (MHF/LHF), midfoot (MMF/LMF), forefoot (MFF/LFF), toes (MT/LT). ANOVA was used for the intergroup comparison ($p < 0,001$). **Results:** Gr1. vs. Gr.2: the loading of MHF and LHF was significantly less (e.g. MF in % body weight: MHF - $16,1 \pm 7,2$ vs. $22,7 \pm 8,2$; LHF - $17,1 \pm 7,3$ vs. $21,3 \pm 7,3$) while the loading of both MMF and LMF was significantly greater (e.g. PTI in kPa*s MMF - $178,3 \pm 183,9$ vs. $98,0 \pm 100,5$; LMF - $265,6 \pm 209,7$ vs. $70,4 \pm 39,4$); MFF and MT were loaded less (e.g. MF in % of the body weight: MFF - $31,6 \pm 14,4$ vs. $43,6 \pm 14,4$; PP in kPa: MT - 163 ± 167 vs. 311 ± 178); no significant difference was found in loading of LFF and LT. Gr.1 vs. Gr.2 velocity of the COP (maximum and mean) is significantly greater in LHF and less in MMF; center of pressure excursion index (CPEI) in % is significantly greater ($15,2 \pm 11,9$ vs. $8,0 \pm 10,8$). Lateral vs. medial comparison showed the significant increase of the loading in LMF vs MMF in Gr.1 (e.g. PP in kPa: 524 ± 368 vs. 380 ± 373). In Gr.2 MMF loading was higher vs LFF: (e.g. PP in kPa: 218 ± 188 vs. 135 ± 65). In both groups loading of the medial toes was higher vs lateral ones, but in Gr.2. these differences were more pronounced. Lateral/medial loading of FF did not differ in Gr.1. In Gr.2. loading of MFF was higher than in LFF. **Conclusion:** The loading of the lateral and medial parts of the affected feet is different not only between Gr.1 and Gr.2., but also on affected foot itself. This can explain the different pattern of the lesions in patients with different types of Charcot foot.