Pes Planovarus – The Description of a New Foot Form

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Introduction/Purpose: In classic anatomy textbooks probably based on dissections of European executed convicts it is written, that according to the direction of the subtalar joint, a deformity of the foot is generally going either into supination (cavovarus foot) or pronation (planovalgus foot). However today we live in a multiethnic society and the author has encountered feet with hindfoot varus and flat mid- and forefoot, without mueller-weiss-syndrome. This deformity should theoretically not exist and has not been described in the literature yet. Its treatment is unclear.

Methods: From 8/2012 to 8/2015 984 new patients were seen in the clinic and included in the study if they showed clinically a hindfoot varus and flat mid-/forefoot on exam. 29 patients (2.9%) with 38 feet were identified (44.6+/−16.2 years, 12 male/17 female). Their main complaints and therapy were retrospectively analyzed. Two independent observers (intraobserver variability ICC 0.998) measured on a DICOM/PACS-monitor the following radiographic parameters (Fig. 1): (1) position in the Saltzman-view, (2) talus-metatarsal-1 angle dorso-plantar (dp) and lateral, (3) talus-calcaneus angle dp and lateral, (4) calcaneal pitch angle. Standard values were taken from the literature.

Results: Main complaints were chronic ankle instability (n=22), pain in sports (n= 18), achillestendon-tendinitis (n=14), heel pain (n=14), hallux valgus (n=10), metatarsalgia (n=8), midfoot pain (n=6), posterior tibial tendon tendinitis (n=3), midfoot osteoarthritis (n=3). There was no mueller-weiss disease. 25 feet were treated conservatively, 13 with operation. Radiological results: The hindfoot alignment view was significantly in varus 6.57+/−3.74mm (standard 1.6+/−7.2mm, P < 0.001), the talus-MT1 angel lateral was significantly flat with 5.97+/−8.3° towards a negative arch (standard 8.4+/−5.85° positive arch, P < 0.001), the talus-MT1-angle dp was 2.4+/−8.2° in abduction (standard 7.7+/−8.2°, P=0.2), the calcaneus pitch angle was 18.63+/−6.45° (standard 24.5+/− 3.0, P < 0.001), the talus-calcaneus angle lateral was 48.13+/−6.76° (standard 43.4+/−7.1°, P < 0.001), the talus calcaneus angle dp and lateral, (4) calcaneal pitch angle. Standard values were taken from the literature.
Conclusion: We found in 2.9% of our patients this new foot form, which is significantly different from standard feet characterized by a simultaneous hindfoot varus and flatfoot with negative arch. This seems paradox, as this is not in line with the axis of the subtalar joint. These feet pose a difficulty in treatment as for example a correction of the hindfoot varus in chronic ankle instability would increase the flatfoot and the correction of flatfoot in midfoot pain/metatarsalgia/heel pain would increase the hindfoot varus. Therefore conservative treatment was the primary choice because surgery would include a simultaneous correction of both deformities. Further research is necessary.