Reappraisal of the radiographic significance of the calcaneal pitch angle and calcaneal-5th metatarsal angle for young adults with flatfoot deformities

Yu-Min Lin, MD, MS¹,³
Yuan-Ya Liao, MD, MS²,³
Ming-Chih, MD, PhD²,³
Kui-Chou Huang, MD, MHA¹,³

1. Department of Orthopedic Surgery, Taichung Veterans General Hospital, Taichung, Taiwan
2. Department of Surgery, Chung Shan Medical University Hospital, Taichung, Taiwan
3. Institute of Medicine, Chung Shan Medical University, Taichung, Taiwan
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Our disclosures are in the Final AOFAS Program Book. We have no potential conflicts with this presentation.
Introduction (1)

- On the weight-bearing lateral radiograph of foot, the talar-first metatarsal (talometatarsal) angle is an accurate radiographic identifier of patients with symptomatic adult flatfoot.
- Calcaneal pitch angle also represents the height of the longitudinal arch.
- Calcaneal-5th metatarsal angle was also proposed to be a good identifier for flatfoot.
• However, the diagnostic validity of calcaneal pitch angle and calcaneal-5th metatarsal angle are not verified with modern methods.

• We reassessed the diagnostic validity of calcaneal pitch and calcaneal-5th metatarsal angle for flatfoot on the radiographs.
Material and Methods (1)

• From January 1 2003 to December 31 2005, all the conscripts with foot problems at our hospital were included.

• A total of 525 conscripts took the weight-bearing true lateral radiographs of their feet.
Material and Methods (2)

- The talometatarsal angles, calcaneal-5th metatarsal angles, and calcaneal pitch angles were measured on the PACS system.
- Using the talometatarsal angle as the gold standard, we performed receiver operator characteristic curve analyses on the calcaneal pitch angle and calcaneal-5th metatarsal angle.
Results (1)

• With the talometatarsal angle < -4 degrees as the gold standard, the area under the receiver operator characteristic curve was 0.781 and 0.837 for the calcaneal-5th metatarsal angle and calcaneal pitch angle, respectively.
Results (2)

- With the age, side of foot, calcaneal-5th metatarsal angle, and calcaneal pitch angle as the multiple regression variables to estimate the talometatarsal angle, the multiple regression model is statistically significant ($P < 0.001$).
Conclusion

• From the results of the multiple linear regression, the calcaneal pitch angle is better than the calcaneal-5th metatarsal angle for estimating the longitudinal arch height.
References