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Relationship between fore, mid, and hindfoot radiographic findings and hallux valgus in Rheumatoid Arthritis: Evaluation grouped by existence of 2nd mtp joint dorsal dislocation

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Abstract

In rheumatoid foot, complex deformity including fore, mid, and hindfoot are often seen. Especially, dorsal dislocation of lesser toe MTP joint combined with HV is frequently observed in rheumatoid arthritis (RA) cases. Then, in this study, relationship between radiographic findings of foot and HV angle was confirmed, while grouping by existence of 2nd MTP joint dorsal dislocation. X-ray pictures of 160 RA feet were evaluated. 1st MTP Larsen grade, existence of 2nd MTP dorsal dislocation, HV・M1M2・M1M5 angle, shape of 1st mtetatarsal head and position of sesamoid which are index for pronation of 1st metatarsal, metatarsus primus varus (MPV) angle, M1M2 diastasis, angle between talus and navicular which is index for pronated foot, internal arch (IA) angle, Tibio-Calcaneal (TC) angle, distance between the axis of tibia and calcaneus (calcaneal lateral offset) were measured. M12 and HV angle correlated (R^2=0.7) in the group without 2nd MTP joint dislocation (D0), while dislocation (D2) group showed relatively weak correlation (R^2=0.3). The mean HV angle in D0 was 21±14.1°, while it was 45±16.8° in D2: significantly greater (P<0.001). Larsen grade correlated to HV angle in D2 cases (R^2=0.3). Pronated foot index correlated with IA angle (R^2=0.3) in both group, leading to progression of 1st metatarsal pronation and M1M2 angle (R^2=0.3) in D0 group. Calcaneal lateral offset correlated with M1M2 angle (R^2=0.3), and pronated foot index (R^2=0.5) in both group. In RA cases, valgus hindfoot is always involved in M1M2 angle expansion, leading HV progression. Correlation between M1M2 and HV angle was stronger in D0 cases than that of D2 cases. Especially, valgus hindfoot with flat foot deformity caused pronation of 1st metatarsal, leading to HV progression in D0 group, while 1st MTP destruction and 2nd MTP dislocation worsened HV in D2 group

Biography

Makoto Hirao has completed his Ph.D at the age of 33 years from Osaka University Graduate School of Medicine. Now, he is a rheumatoid surgeon especially majoring in lower extremity.