Joint space widening may be a paradoxical pathologic feature of early ankle arthritis
Ji-Beom Kim, MD, Woo-Chun Lee, MD, Young Yi, MD, Seung-Myung Choi, MD

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Introduction/Purpose: Joint space narrowing and bony spur are typical pathologic feature of early ankle osteoarthritis. The meaning of joint space widening has never been discussed in previous literature. However, we found some osteoarthritic ankles which showed joint widening with diffuse spur change. (Fig.1) We hypothesized that joint space widening may be caused by malpositioning of the talus which may lead to degenerative arthritis. The purpose of this study were to investigate the radiological abnormalities in ankles with joint space widening.

Methods: In order to define joint space widening and anterior subluxation of the talus, we included 72 ankles (66 people) with no abnormalities on plain radiographs into control group. We measured joint space and lateral talar station (LTS) on plain weight-bearing radiographs. (Fig.2) The 95% prediction interval of joint space (2.4mm to 4.2mm) and the LTS (-0.9mm to 3.8mm) in the control group were regarded as a normal range. The joint space widening was defined when the joint space was wider than 4.2mm, and the anterior subluxation of talus was defined when the LTS was larger than 3.8mm.
Thirty-two ankles (29 people) with the joint space widening which underwent operation in our clinic between 2009 and 2014 were included in patient group. Ankle instability was determined on stress radiographs (Fig.2). In the patient group, we investigated the anterior subluxation of talus and the ankle instability, and the sites of spur in conventional CT.

Results: The average age was 26 years (range: 18 - 35) in the control group and 33 years (range: 16 - 71) in the patient group. The mean joint space of the patient group was 4.7mm (range: 4.3mm to 6.0 mm). In the patient group, the LTS showed a mean of 6.4mm (range: 3.9mm to 10.7mm). Because all the LTS in the patient group was over the 3.8mm, the anterior subluxation of talus was showed in all ankles of the patient group. In the patient group, 31 ankles (97%) showed instability on anterior stress radiograph and 24 ankles (75%) showed instability on varus stress radiograph. All ankles in the patient group showed spurs on 4 sides of ankle, anterior, posterior, medial and lateral side.

Conclusion: This study showed that paradoxical joint space widening may be a pathologic feature of early ankle arthritis which had diffuse spur change, anterior displacement of the talus and ankle instability.

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