No relation between ulnar variance and scapholunate dissociation

A comparison between 42 patients and 125 controls

Luc De Smet, Lieven De Vriese, Karel D'Hoore and Guy Fabry

Department of Orthopedics, University Hospital, K.U. Leuven, Belgium. Correspondence: Dr. L. De Smet, Orthopedie, U.Z. Pellenberg, Weligerveld 1, B-3212 Pellenberg, Belgium. Tel +32 16-332211. Fax -338950
Submitted 94-03-13. Accepted 94-08-22

An association between negative ulnar variance, ulna minus, and avascular necrosis of the lunate (Hulten 1928, Person 1950, Gelberman et al. 1975, Nathan and Meadows 1987, Chen and Shih 1990) and the scaphoid (Parkinson et al. 1991) has recently been questioned by several authors (Kristensen et al. 1986, Nakamura et al. 1991, De Smet 1992, D'Hoore et al. 1994). In 1987 Czitrom et al. (1987) found a relation between negative ulnar variance and scapholunate dissociation (SLD). We analyzed the ulnar variance in wrist joints showing scapholunate dissociation without arthrotic changes.

Patients and methods

Posteroanterior radiographs of 125 normal wrists were taken and measured according to the recommendations of Palmer et al. (1982) and Epner et al. (1982). This control group was recruited from the outpatient clinic for sports medicine and consisted of 67 men and 58 women, with a mean age of 36 (17–69) years. None of them suffered from any upper limb disorder. All subjects were questioned about wrist pain, wrist injury or generalized orthopedic disease. When any doubt about one of the items existed, they were excluded from the study.

Radiographs of 42 patients with a diagnosis of scapholunate dissociation were reviewed to determine the ulnar variance. These patients had consulted the outpatient clinic for radial wrist pain and comprised 23 men and 19 women with a mean age of 36 (15–69) years.

Scapholunate dissociation was defined as a posttraumatic condition with rupture of the scapholunate ligament. The diagnostic critera were: widening of the scapholunate gap on plain radiographs (more than 3 mm, and at least 1 mm wider than the contralateral side) (Linscheid et al. 1972), instability of the scapholunate joint on midcarpal arthroscopy (Dautel and Merle 1993, Dautel et al. 1993). The dissociation was associated with rotation of the scaphoid with an increased scapholunate angle exceeding 70° on the lateral radiograph (Dautel et al. 1993).

The radiographs of the wrist were taken with the shoulder abducted 90°, the elbow flexed at 90°, neutral rotation of the forearm and the third finger in alignment with the forearm (Epner et al. 1982).

The diagnosis was confirmed on open exploration (6), arthroscopy (21), arthrography (14) and dynamic or static plain radiographs (34).

Leakage at arthrography and a tear of the scapholunate ligament on arthroscopy without the abovementioned criteria were not sufficient for the diagnosis. None of the wrists had radiographic evidence of arthrosis.

Results

There were no differences in age and sex distribution between the control and patient groups. The ulnar variance in normal wrists ranged from –4 to +2.5 mm with a mean of –0.4 mm (SD 1.5). Ulna plus was found in 48 (38%), the neutral variant in 23 (18%) and ulna minus in 54 patients (43%). The ulnar variance in SLD wrists ranged from –3 to +3 mm, with a mean of –0.6 mm (SD 1.5). Ulna plus was found in 9, ulna neutral in 15 and ulna minus in 19 wrists. The difference between ulnar variance in controls and SLD wrists (student's *t*-test) was not significant nor was the distribution (chi-square test).

Discussion

The population studied by Czitrom et al. (1987) has the same size and composition as ours; 65 controls

for 78 SLD. Their data, however, indicate a significant difference in ulnar variance: 0.4 mm for the controls and −1.4 mm for the SLD. The hypothesis that negative ulnar variance influences the pathogenesis of the SLD injury is attractive but cannot be confirmed in our study.

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