Introduction

- The carpal tunnel is an open compartment containing nine flexor tendons and the median nerve.
- Ulnar impaction syndrome (UIS) is recognized as a degenerative condition causing ulnar-sided wrist pain.
- We evaluated the relationship between the area around the distal radioulnar joint (DRUJ) according to the ulnar variances and the cross sectional area (CSA) using magnetic resonance images (MRI) in this prospective study of patients with carpal tunnel syndrome (CTS).

Methods

- From among a total of 243 patients who had been diagnosed with CTS between March 2012 and February 2017 at our hospital, 41 patients with positive ulnar variance were enrolled in group 1.
- As control groups, 39 healthy volunteers who underwent MRI evaluations were included in group 2 (neutral ulnar variance) and group 3 (negative variance). Basic demographic data, including age, gender, and body mass index (BMI) were recorded for all three groups.
- An area encompassing the contents of carpal tunnel (nerves/tendons) was designated as area “A,” and the area just beneath the subcutaneous fat was designated as area “B” at the levels of the lunate (L) and pisiform (P) on axial MRI. Ratios of these areas (“A/B at L” and “A/B at P”) were evaluated in terms of their correlations with ulnar variance.

Results

- Mean age, gender, and BMI were not statistically different among the groups, respectively.
- Within each group, there was no difference between “A/B at L” and “A/B at P”, respectively.
- When comparing the three groups, “A/B at L” and “A/B at P” were all significantly decreased in group 1 than in other groups.
- Regardless of the group, ulnar length negatively correlated with both “A/B at L” and “A/B at P” ratios.

Conclusion

- We found a positive relationship between decreased CSA around the DRUJ and positive ulnar variance on radiologic investigation. These findings show the importance of variance in the positive ulna variance to the development of CTS.