A Novel Radiographic Index for the Diagnosis of Posterior Acromioclavicular Joint Dislocations.

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Abstract

BACKGROUND: Posterior acromioclavicular (AC) joint dislocations are frequently misclassified because posterior translation of the clavicle is difficult to evaluate in Zanca radiograph views. A novel radiographic index was used in this study to accurately diagnose posterior dislocations of the AC joint.

HYPOTHESIS: This novel index has a high degree of accuracy for the diagnosis of posterior AC joint dislocations.

STUDY DESIGN: Cohort study (diagnosis); Level of evidence, 2.

METHODS: This was an analytic, descriptive study of 150 patients with different grades of AC injuries according to the Rockwood classification (30 patients for each grade of injury: I, II, III, IV, and V). The diagnosis of an AC injury was made both clinically and radiographically by using comparative Zanca and axillary views. Two measurements were performed in Zanca views: the coracoclavicular distance and the AC width distance. A width index was calculated for each patient. The Student t test, Bonferroni test, logistic regression, linear regression, and receiver operating characteristic (ROC) curves were used for statistical analysis. Forty cases were impartially selected to obtain a \( \kappa \) concordance value.

RESULTS: The average value of the AC width index per group (according to the Rockwood classification) was as follows: type I, 2.1% (range, -12% to 25%); type II, 4.2% (range, -19% to 29%); type III, 19.1% (range, -59% to 91%); type IV, 110.3% (range, 47% to 181%); and type V, -3.8% (range, -71% to 62%). There was a significant difference between the average width index in the patients with type IV injuries and those in the remaining groups (\( P < .05 \)). The ROC curve showed that a width index of 60% has a sensitivity of 95.7% and specificity of 97.5%, with a positive predictive value of 96.7% and negative predictive value of 95.6% to predict a type IV injury. Intraobserver reliability was rated as substantial agreement for each of 3 observers; the interobserver reliability of the 3 independent raters was almost perfect.

CONCLUSION: An AC width index of \( \geq 60\% \) is highly accurate for the diagnosis of a posterior AC joint dislocation, with high intraobserver and interobserver concordance.