ORIGINAL ARTICLES

Ultrasonography Reliability in the Detection of Inflammatory and Structural Abnormalities

An Exercise in Multiple Joints

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Abstract

Background

Ultrasonography is an image technique that allows rheumatologists to visualize structural and inflammatory changes within a joint. The objective of this study was to assess the interobserver and intraobserver reliability of musculoskeletal ultrasound (US) in the detection of inflammatory and destructive joint changes in patients with polyarthritis.

Methods

A Delphi exercise was undertaken to standardize and adapt the EULAR-OMERACT elementary US definitions of inflammatory lesions (effusion, synovial hypertrophy, power Doppler, bone erosions, and synovitis) for each joint. Fifteen patients were analyzed, and video clips of 600 joints were collected. Each joint was scored for the presence of each elementary component, on 2 separate occasions, by 6 examiners. Interobserver and intraobserver agreement analysis was assessed through Fleiss κ coefficient (κ).

Results

Considering all patients and all joints, the interobserver values were highest for erosions and lowest for effusion (κ = 0.7314 and κ = 0.6044, respectively). When analyzing different regions, the highest interobserver agreement was for tibiotalar joint (κ = 0.8043) and the lowest for wrist (κ = 0.6767). Intraobserver reliability was excellent for each and all elementary components and anatomical region.

Conclusions

The present study showed either a good or excellent US interobserver and intraobserver reliability in elementary elements and anatomical region. This kind of US reliability exercises are important for standardization of exploration in everyday practice by reducing the variability associated with this imaging technique, and ensuring a greater degree of homogeneity and future comparability in the assessment of disease activity in polyarthritis patients.