

Value of ultrasound in meniscal tear imaging

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Abstract:

Introduction and aim: There are controversies about accuracy of ultrasound in detecting meniscal lesions. The aim of the study was to assess the value of high-resolution ultrasound in diagnosis of meniscal tears with arthroscopy as a gold standard.

Material and methods: With ultrasound, 55 patients with knee trauma and clinical diagnosis of internal knee derangement were retrospectively evaluated, 40 male and 15 female, with mean age of 34 (16-58 years). High frequency linear transducer with variable frequency (7-13 MHz) was used. Ultrasound exams were done by experienced musculoskeletal radiologist. Both menisci were evaluated in all patients. Patients underwent arthroscopy following ultrasound.

Results: Arthroscopy revealed 44 meniscal tears (27 medial and 17 lateral), 66 menisci were normal (28 medial and 38 lateral). 36 meniscal lesions were correctly diagnosed by ultrasound (23 medial and 13 lateral). True negative finding was present in 57 menisci (24 medial and 33 lateral). The overall sensitivity of US was 81.8%, and was higher for medial than lateral meniscus (85.2% and 76.5%). Specificity was 86.4%, similar for both menisci (85.7% and 86.8%). Overall positive and negative predictive value was 80% and 87.7%, 85.2% and 85.7% for medial meniscus, 72.2% and 89.2% for lateral meniscus. Accuracy was 84.5%, higher for medial meniscus 85.5% than lateral meniscus 83.6%.

Conclusion. High-resolution ultrasound has many advantages as availability, ease of use, price, and possibility of comparison with contralateral knee. Results confirm it can be used effectively as first diagnostic tool for quick and accurate evaluation of both medial and lateral meniscal lesions, although sensitivity and positive predictive value are higher for medial meniscus. Sonographer should be aware of its limitations and disadvantages.

Keywords: knee, meniscus, high-resolution ultrasound, arthroscopy