POEMs

Patient-Oriented Evidence That Matters

Ultrasonography Is Reasonably Accurate in Detecting Synovitis in Patients with Rheumatoid Arthritis

Clinical Question

Is ultrasonography accurate in detecting synovitis in patients with rheumatoid arthritis?

Bottom Line

In this systematic review of patients with rheumatoid arthritis, ultrasonography was reasonably accurate compared with magnetic resonance imaging (MRI) in detecting synovitis in fingers and wrists. The use of MRI as a reference standard is convenient, but problematic. (Level of Evidence = 2a–)

Synopsis

The presence of synovitis in patients with rheumatoid arthritis is associated with developing joint destruction, and early intervention improves outcomes. The authors systematically searched several databases for studies that evaluated the accuracy of ultrasonography compared with MRI for the detection of synovitis in patients with rheumatoid arthritis. Although MRI is a convenient tool and has become the noninvasive reference standard for many conditions, it is arguably less reliable than tissue-based diagnostic standards. Two authors independently assessed each study for inclusion and then assessed the quality of the included studies and had a discussion in the event of disagreements. The authors also graded the quality of the MRIs on the basis of the power of magnet, use of contrast, resolution, and so forth (reinforcing the idea that MRI is a problematic reference standard). Although this study was not funded, two of the authors have significant relationships with industry.

Ultimately, they included 14 studies: five studies assessed a total of 275 wrists, 12 stuides assessed more than 2,060 metacarpophalangeal joints, six studies assessed 1,073 proximal interphalangeal joints, and two studies evaluated 31 knees. Compared with MRI, the overall accuracy for ultrasonography was slightly better for finger joints than for wrists (area under the receiver operator characteristic curve = 0.91 for fingers, 0.81 for wrists) and not very accurate for knees (0.61). When the result was abnormal, the ultrasonography was fairly reliable, but when the result was normal, the ultrasonography was only modestly reliable. The positive and negative likelihood ratios (LR+ and LR–, respectively) and 95% confidence intervals for each joint are as follows:

- Wrist: LR+ = 3.3 (0.9 to 14.5); LR– = 0.3 (0.1 to 1.1)
- Metacarpophalangeal joint: LR+ = 9.1 (3.6 to 27); LR– = 0.3 (0.2 to 0.6)
- Proximal interphalangeal joint: LR+ = 11.8 (1.6 to 31); LR– = 0.3 (0.07 to 0.8)
- Knee: LR+ = 2.3 (0.7 to 10); LR– = 0.2 (0.01 to 2.2)

Just a reminder: A likelihood ratio of 1 provides no useful information; values less than 0.1 or greater than 10 provide the most useful information (see *AFP*'s evidence-based medicine glossary at https://www.aafp.org/journals/afp/authors/ebm-toolkit/glossary.html). The confidence intervals in these studies are wide enough to dampen the authors' conclusions that ultrasonography is accurate enough in detecting synovitis in the fingers.

Study design: Meta-analysis (randomized controlled trials)

Funding source: Self-funded or unfunded

Setting: Various (meta-analysis)

Reference: *Takase-Minegishi K, Horita N, Kobayashi K, et al. Diagnostic test accuracy of ultrasound for synovitis in rheumatoid arthritis: systematic review and meta-analysis.* Rheumatology (Oxford). *2018;57(1):49-58.*

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