Ultrasound Slowly Redefining Gout

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Although studies of ultrasound diagnosis for gout are scarce, the authors of two reviews maintain the evidence is good that it is a useful option— and may be leading to some revisions in the way the condition is detected.

Source: Rheumatology Network


The traditional method to diagnose gout is to examine the tissue or synovial fluid for evidence of urate crystals, but could ultrasonography replace this invasive diagnostic method and be just as effective?

As yet, few studies have investigated the usefulness of ultrasound to diagnose gout. Most studies that do exist are small, say the authors of these two articles. But they assert that the existing evidence does point to ultrasound imaging as an ideal tool to diagnose and monitor crystalline diseases, including gout, in clinical practice.

The authors of the first review above searched Medline for articles about ultrasound and gout or calcium pyrophosphate dihydrate crystal deposition disease (CPPD). They found only 38 for gout and 20 for CPPD; the majority included fewer than 20 subjects.

Besides ease of use, patient comfort, noninvasiveness, and low cost, the authors found many advantages for rheumatology practices, including:
• Real-time assessment
• High sensitivity
• Easy comparison with the asymptomatic limb
• Reliability for guiding aspiration of fluid, and
• Ability to monitor short-term therapy for gouty arthritis, including crystal dissolution and reduction of tophi.

There are a few drawbacks to ultrasound. Aside from the upfront issues of the investment of finances, time, and effort to acquire and learn how to use the equipment, monitoring parameters are not yet standardized and it can be difficult to identify the best tophi to follow up for analysis.

Nonetheless, ultrasonography is changing how gout is diagnosed in rheumatology practices, and has also allowed early identification of disease subsets.

Its new diagnostic glossary for gout includes:
• Double contour sign (DCS)
• Uric acid sand
• Intracartilaginous deposits
• Intratendinous crystal clouds
• Multiple shining dots

The inclusion of DCS among accepted diagnostic signs of gout in 2014 joint EULAR/ACR revised criteria for gout is an “essential step forward in advancing the research agenda for gout management,” say the authors of the second article, adding that the inclusion of imaging measures significantly improves the performance of the criteria. Not only are ultrasound images useful in diagnosis, the reviewers add, but they are helping to redefine the way gout is classified. Monosodium urate (MSU) crystal aggregates are highly reflective, which means ultrasound images can show evidence of gout as early as the first event. Ultrasound can detect clinical signs such as fluid collection, joint cavity widening, periarticular and intraarticular deposition, and soft tissue...
edema. The images can also show evidence of bone erosion as well as tophi in unaffected first metatarsal joints of patients who have gout.

An unrelated study has helped to confirm that higher urate levels may also protect against bone density loss. Reporting in Osteoporosis International, the researchers from the University of Cantabria in Santander, Spain, analyzed the association between heel qualitative ultrasound parameters (QUS) and serum acid level among 868 Caucasian men, aged over 50 years.\(^1\) Lumbar, femoral neck, and total hip bone mass density (BMD) was significantly higher in men with higher levels of serum uric acid, perhaps implying better bone quality.

Beyond assessing gout, ultrasonography is also useful in detecting CPPD crystal aggregates, ranging from tiny circumscribed hyperchoic spots to extended deposits, with or without acoustic shadow. Using ultrasound on patients with familial CPPD crystal deposition disease also allows clinicians to detect the maximal extent of crystalline aggregates at both fibrocartilage and hyaline cartilage, even in the small joints of the hands and feet.

The study’s key takeaway points:
1. Ultrasound is sensitive enough to diagnose gout and CPPD, and can identify microcrystal aggregates;
2. MSU crystal deposits are detectable in patients with gout in asymptomatic joints, so ultrasonography of the first metatarsal joint should be a first-line examination in suspected gout; and
3. Ultrasonography is useful for monitoring the effectiveness of urate-lowering therapy.

References:

Source URL: http://www.physicianspractice.com/gout/ultrasound-slowly-redefining-gout

Links: