

Transcript Details

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Ultrasound in Osteoarthritis: An Accessible Tool for Early Assessment

Announcer:

You're listening to *Living Rheum* on ReachMD. On this episode, Dr. Amanda Nelson will discuss how we can use ultrasound to assess osteoarthritis. Dr. Nelson is a Professor of Medicine of Rheumatology, Allergy, and Immunology and an Adjunct Professor of Epidemiology at the University of North Carolina at Chapel Hill. She presented this topic at the 2024 American College of Rheumatology Convergence. Here's Dr. Nelson now.

Dr. Nelson:

So ultrasound is really useful in the assessment of osteoarthritis, and we typically use radiographs, or x-rays. Those are going to detect late-stage changes. They're going to change very slowly over time, and they really only find permanent change, so they see changes to bone, bone spurs, and loss of joint space. Ultrasound and MRI can assess soft tissue changes, so they can see fluid or effusion in the joints and signs of inflammation. Those things can happen before any damage has occurred. Both modalities, ultrasound and MRI, can identify synovitis, or inflammation of the joint lining; effusion, or fluid in the joint; meniscal damage, and cartilage thinning directly; whereas x-ray is a very indirect measure of those things.

In contrast to MRI, ultrasound is more accessible, and by that, I mean the machine is easier, it's portable, and more people can be in the machine. So while an MRI is very limited on body size and weight, ultrasound has none of those limitations. Ultrasound is also cheaper and does not involve radiation or contrast, which can be issues with MRI. You can image multiple joints at a single visit, and you can do dynamic imaging of joints. You can move the joint and watch the imaging modality change. You can also repeat it as often as you want because of the safety of the modality. Additionally, in contrast to x-rays and really MRI as well, it can be used to perform ultrasound-guided procedures even up to doing a biopsy.

Ultrasound can see a variety of features of osteoarthritis. These are common in some cases. So osteophytes, for example, or bone spurs, can be seen on all the modalities I've just mentioned, whereas joint space narrowing on an x-ray could be cartilage loss, but it could also be, for example, meniscal damage in a knee, so it's less specific on an x-ray compared to what we can see on ultrasound, which can directly visualize those features. We can see cysts and sclerosis on x-ray and MRI, but those are not visible on ultrasound because those are under the bone surface, so for bony changes, it's less useful as far as ultrasound goes. The other cool thing about ultrasound is that those features can be seen in all joints, so we can see osteophytes, or bone spurs, effusion, and cartilage damage in the hands and all the little joints of the fingers. We can see it in the knees, the hips, and the feet. So many joints can be involved in osteoarthritis, and ultrasound can help us image almost all of those.

There are a few limitations, obviously, to any modality, but specifically for ultrasound, we can't really see bone changes. So if we think about bone marrow lesions, which are often associated with pain in osteoarthritis, those are not visualized with ultrasound. It can't see past the bony surface. And we can't really see deep structures like the ACL or PCL deep within the knee or in the spine, for example, but for a lot of peripheral, more superficial joints, it's really quite useful. And specifically with ultrasound, reproducibility is often criticized. So people will say, "Well, it's operator dependent," or "It's not reproducible enough," when in fact, if you use a standardized protocol and a standardized scoring atlas, as we do with these other image modalities, it can be just as reproducible. So it's really a matter of doing it in a standardized and protocolized way in the same sense that we do with radiographs and MRI to reduce the issues around reproducibility.

Announcer:

That was Dr. Amanda Nelson discussing the use of ultrasound to assess osteoarthritis, which she spoke about at the 2024 American College of Rheumatology Convergence. To access this and other episodes in our series, visit *Living Rheum* on ReachMD.com, where

you can Be Part of the Knowledge. Thanks for listening!