

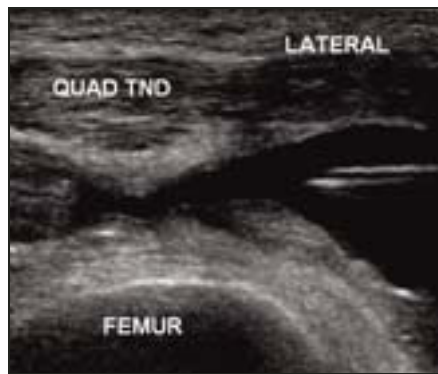
Ultrasound-Guided Injection Helps Hit the Spot

BY BRUCE JANCIN

SNOWMASS, COLO. — You may be confident that you've got great hands for performing joint injections and aspirations, but the scientific evidence shows that unless you're using sonographic needle guidance, you're not nearly as good as you think.

Numerous studies have demonstrated that even skilled physicians fail to place their needle tip in the intra-articular space 50%-60% of the time when they use palpation to guide injections, Dr. Eric L. Matteson said at a symposium sponsored by the American College of Rheumatology.

"It's a little disconcerting to read these studies showing how ineffective we are.



COURTESY DR. ERIC L. MATTESON

A transverse view shows knee aspiration under ultrasound guidance in an obese patient with indeterminate arthritis. Synovial fluid is shown (black), with the needle approaching from right.

"We think we're pretty good, but we don't hit the target as often as we think," observed Dr. Matteson, professor of medicine and chief of the division of rheumatology at the Mayo Clinic, Rochester, Minn.

To make his point, Dr. Matteson cited data from a recent multicenter randomized trial involving ultrasound- or palpation-guided intra-articular steroid injections of 148 painful joints (mostly knees, wrists, shoulders, hips, elbows, wrists, and ankles).

The ultrasound-guided group had 44% less procedural pain and a 59% greater reduction in pain at the 2-week follow-up than the palpation group. Sonographic guidance also resulted in a 337% increase in the volume of aspirated fluid (*J. Rheumatol.* 2009;36:892-902).

"There's no question that ultrasound-guided injections are more accurate in certain joints, such as the deeper joints like the hips, the small joints of the hands, and the subacromial bursa," according to the rheumatologist.

As a practical matter, he is quick to turn to ultrasound guidance in patients who are obese, have failed prior injections or aspirations, have experienced significant pain with prior injections, or have difficulty assuming the proper position for standard injections.

Since taking up musculoskeletal ultrasound half a decade ago, Dr. Matteson said he has become a huge fan. He uses it not only to guide procedures, but also

as a dynamic extension of his clinical examination. Dr. Matteson reported that in his experience, musculoskeletal ultrasound is of great assistance in the diagnosis of tendon ruptures, synovitis and tenosynovitis, bursitis, effusions, soft tissue nodules, erosions, and the assessment of disease activity.

"A good ultrasound exam often changes your impression about what's wrong with a patient," he noted.

The use of office ultrasound to assess the hip joint is particularly noteworthy. This assessment is something that otherwise would often require a referral to radiology.

Another area in which musculoskeletal ultrasound has been a real breakthrough is in assessing the cause of shoulder pain. Ultrasound can readily visualize impingement, biceps tendon dislocation, acromioclavicular and sterno-

clavicular joint pathology, synovitis, and bursitis, as well as adhesions, calcifications, and rupture of the rotator cuff.

Patients love seeing their anatomy on the ultrasound screen; it turns their office visit into an educational experience, according to Dr. Matteson. Musculoskeletal ultrasound is a great teaching tool for medical professionals, as well.

"It's something that creates excitement among the fellows and medical stu-

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- MICARDIS is indicated for the treatment of hypertension. It may be used alone or in combination with other antihypertensive agents.
- MICARDIS is indicated for reduction of the risk of myocardial infarction, stroke, or death from cardiovascular causes in patients 55 years of age or older at high risk of developing major cardiovascular events who are unable to take ACE inhibitors.
- High risk for cardiovascular events can be evidenced by a history of coronary artery disease, peripheral arterial disease, stroke, transient ischemic attack, or high-risk diabetes (insulin dependent or non-insulin dependent) with evidence of end-organ damage. MICARDIS can be used in addition to other needed treatment (such as antihypertensive, antiplatelet, lipid-lowering therapy, etc).
- Studies of telmisartan in this setting do not exclude that it may not preserve a meaningful fraction of the effect of the ACE inhibitor to which it was compared. Consider using the ACE inhibitor first, and, if it is stopped for cough only, consider retrying the ACE inhibitor after the cough resolves.

- Use of telmisartan with an ACE inhibitor is not recommended.
- Volume depletion and/or salt depletion should be corrected in patients before initiation of therapy or start treatment under close medical supervision with a reduced dose, otherwise symptomatic hypotension may occur.
- In patients with impaired hepatic function, initiate telmisartan at low doses and titrate slowly.
- Monitor carefully in patients with impaired renal function, especially in patients whose renal function may depend on the activity of the renin-angiotensin-aldosterone system (eg, patients with severe congestive heart failure or renal dysfunction); treatment of these patients with ACE inhibitors and ARBs has been associated with oliguria and/or progressive azotemia and, rarely, with acute renal failure and/or death. In patients with unilateral or bilateral renal artery stenosis, increases in serum creatinine or blood urea nitrogen may occur.
- Dual blockade of the renin-angiotensin-aldosterone system (eg, by adding an ACE-inhibitor to an ARB) should include close monitoring of renal function. Use of MICARDIS with ramipril is not recommended.

Please see Brief Summary of Prescribing Information on following pages.

dents and residents who rotate through,” Dr. Matteson said.

Musculoskeletal ultrasound is rather well reimbursed under CPT billing codes 76880 and 76942, which were set by radiologists. Although it's possible to spend \$100,000-\$200,000 on an ultrasound machine, a very good machine can be purchased for \$40,000. The major equipment manufacturers typically sell demonstration models after a year's light use for considerably less.

A single ultrasound probe or probes that cover 5-13 MHz is best for musculoskeletal applications. It provides the re-

quired balance between penetration and resolution that permits the imaging of both deep structures like the hip and superficial ones like fingers and toes.

Studies have shown that musculoskeletal ultrasound has an interobserver reliability of 85%-91% in expert hands, depending upon the joint. It's as good as or better than MRI

or x-rays in the assessment of erosions. In fact, it's now being used for that purpose in some clinical trials.

“I want to leave you with the message that you can get very good at this. It's like learning to ride a bike or drive a car: You just have to spend a lot of time practicing it. Bring in your wife or husband and kids and just

'You can get very good at this. It's like learning to ride a bike or drive a car: You just have to spend a lot of time practicing it. Bring in your wife or husband and kids and just use it.'

use it. Get familiar with all of the knobs and what they do. You'll find it very gratifying,” Dr. Matteson concluded.

Useful resources in getting started include an intensive, 2-day ACR course to be held Aug. 14-15 in Rosemont, Ill. The European League Against Rheumatism also holds hands-on courses, as do the Mayo Clinic and numerous other medical centers. The U.S. rheumatologist ultrasound interest group is reachable at www.msk-uss.org. ■

Disclosures: Dr. Matteson indicated he has no relevant financial interests.



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ACE-I: Angiotensin-converting enzyme inhibitor. MI: Myocardial infarction. CV: Cardiovascular. ARB: Angiotensin receptor blocker.

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*High risk is evidenced by a history of coronary artery disease, peripheral arterial disease, stroke, transient ischemic attack, or high-risk diabetes (insulin dependent or non-insulin dependent) with evidence of end-organ damage.

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References: 1. Micardis Pl. Ridgefield, CT: Boehringer Ingelheim Pharmaceuticals, Inc.; 2009. 2. Teo K, Yusuf S, Sleight P, et al; and the ONTARGET/TRANSCEND Investigators. Rationale, design, and baseline characteristics of 2 large, simple, randomized trials evaluating telmisartan, ramipril, and their combination in high-risk patients: the Ongoing Telmisartan Alone and in Combination with Ramipril Global Endpoint Trial/Telmisartan Randomized Assessment Study in ACE Intolerant Subjects with Cardiovascular Disease (ONTARGET/TRANSCEND) trials. *Am Heart J*. 2004;148:52-61. 3. Yusuf S, Sleight P, Pogue J, Bosch J, Davies R, Dagenais G; and the HOPE Study Investigators. Effects of an angiotensin-converting-enzyme inhibitor, ramipril, on cardiovascular events in high-risk patients. *N Engl J Med*. 2000;342:145-153.

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