Using Ultrasound Can Help Diagnose Stress Fracture in Foot

Physical Therapy in Merrimack Valley for Foot

A stress fracture is a broken bone, an overuse injury. It can happen in just about any bone, but is most common in the feet or the tibia, the shin bone. Diagnosing stress fractures can be difficult because early fractures don't always show up on regular x-rays. In fact, it can take up to 10 weeks from the initial injury and beginning of the symptoms to when the fracture is visible. The problem is the delay in diagnosis may lead to other problems, such as chronic pain.

In order to earlier diagnosis stress fractures, doctors must use more advanced procedures, such as magnetic resonance imaging (MRI) or bone scans, say the authors of this article. Ultrasound is a technique that has been used, but there have been varying reports of its usefulness for diagnosing stress fractures. The way ultrasound works it should, theoretically, make a good option for looking at bone and revealing any imperfections or breaks. The authors state that ultrasounds should be a good backup for diagnosis if x-rays don't show any fractures, but symptoms still indicate that there may be a break. They describe three case studies of patients with stress fractures.

In the first case, a 22-year-old male athlete complained of anterior (front) pain of the tibia in the right leg. He had originally thought the injury was a soft-tissue injury and he treated it with ice, nonsteroidal anti-inflammatory drugs (NSAIDs), changing his shoes, and decreasing his activity level. However, the pain continued to worsen.

There was no obvious swelling or bruising of the area and the doctor suspected a stress fracture. An ultrasound of the tibia found an irregularity. The ultrasound was followed by a bone scan, which confirmed the stress fracture. The patient was advised to rest his leg significantly more than he had been and the injury healed without any problems.

The second case was a 16-year-old female who came in with complaints of five weeks of mid-foot pain, near the third and fourth metatarsals (toes). Despite the pain, the patient continued with her regular activities, including playing netball and tennis, and rock climbing. Earlier x-rays had not shown any specific injury, but the pain was getting increasingly worse during activities, as well as after.

An ultrasound was performed on the painful area of the foot, which showed a fracture and callus formation. Four weeks later, x-rays also showed the callus formation. The patient was instructed to modify her activity, change her shoes, use orthosis (foot supports), and the pain resolved, allowing her to return to her previous level of activity.

A 21-year-old female is presented as the third case. A long-distance runner, she was experiencing increasing pain under her foot, at the base of the fifth metatarsal. She had not experienced any trauma or done anything different that could be the cause of the pain. On examination, a red area was clearly visible around the area that the patient said was painful, which could mean a soft tissue injury, rather than a fracture. Since the symptoms were not in line with a soft tissue injury, the physician ordered an ultrasound, which showed a clear break through the bone.

To manage the stress fracture, the patient was told to stop all sporting activities and change her shoes. After six weeks, the fracture healed and the patient was able to resume running.

The authors concluded that the ultrasound is an underutilized tool that can be valuable in helping diagnose injuries of the foot. Earlier studies looked at the use of therapeutic ultrasounds, rather than imaging, but they use

different frequencies. The higher frequencies of the therapeutic ultrasound would cause pain if a fracture is present, but this pain does not occur if the ultrasound is set for imaging. Therefore, it would be useful for physicians to consider using the less costly and noninvasive ultrasound to investigate for stress fractures of the foot before suggesting MRIs and bone scans.

Reference: Sara L. Jones, PhD, and Maureen Phillips, MSc. Early Identification of Foot and Lower Limb Stress Fractures Using Diagnostic Ultrasonography: A review of three cases. In The Foot and Ankle Online Journal. April 2010. Vol. 3. No. 4.