

MRI Helps Pinpoint the Line in Stress Fractures

BY HEIDI SPLETE
Senior Writer

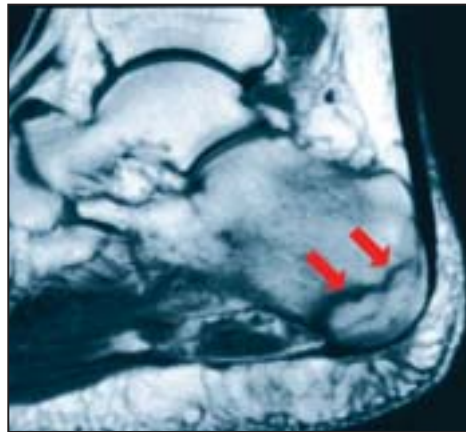
LAS VEGAS — Imaging techniques can help to confirm stress fractures and distinguish them from other conditions, Dr. Christopher Beaulieu said at a symposium on emergency medicine sponsored by Stanford University.

"I don't call it a stress fracture unless I can point to the fracture line on the image, otherwise [it is] a stress reaction or stress response," said Dr. Beaulieu of Stanford (Calif.) University. A stress reaction or response can be diagnosed if MR or other imaging shows periosteal or marrow edema without a fracture line.

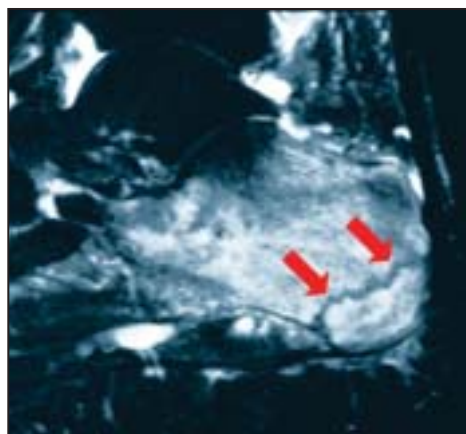
If a stress fracture is confirmed, the patient must take time off from the offending activity to allow the bone to heal, but if a fracture has not occurred, the patient may be able to continue activities with modifications to prevent a full fracture.

Stress injuries to bone occur when the skeleton is unable to withstand submaximal forces acting over time, and they fall into two categories: stress (or fatigue) fractures and insufficiency fractures. Stress fractures occur when normal bones are subjected to abnormal forces, and they are common in new athletes and in military recruits. Insufficiency fractures occur when abnormal bones can't sustain normal forces, and they occur primarily in patients with bone conditions such as osteoporosis or Paget's disease.

A clinical history of overuse is the key to a stress fracture diagnosis. Risk factors for stress fractures include increased mileage, running on a hard surface, and a poor choice of shoes. Biomechanics and bone mineral density also contribute to stress fractures, as do female gender, amenor-



MRI of a stress fracture in a runner shows a low-signal fracture line (red arrows).



MRI with fat suppression shows edema around the low-signal fracture.

PHOTOS COURTESY DR. CHRISTOPHER BEAULIEU

rhea, and poor nutrition or eating disorders.

To maximize the imaging of a possible stress fracture, use local coils and high quality T2-weighted imaging, Dr. Beaulieu said. "A high-quality localized image, a negative scan almost entirely excludes a significant bony stress injury." A fat suppression image also helps in identifying a stress fracture. ■

Compartment Test Is Moot if It Is Done Before Patients Exercise

BY KATE JOHNSON
Montreal Bureau

QUEBEC CITY — Intracompartmental pressure testing is the only way to definitively diagnose chronic compartment syndrome, but the test is useless without first exercising the affected muscle, said Dr. Preston Wiley at the joint annual meeting of the Canadian Academy of Sport Medicine and the Association Québécoise des Médecins du Sport.

"You first have to reproduce the pain in your office and then measure the intracompartmental pressure." There is no point to measuring pressure at rest before the patient exercises, he advised.

Rather than sending patients out for a half-hour run to reproduce their symptoms, he asks those with anterior and/or lateral compartment pain to perform repeat dorsiflexion/eversion and plantar-flexion exercises while seated. Posterior compartment pain can be reproduced by having the patient hop on the affected foot.

Although both anterior/lateral and superficial posterior intracompartmental pressures can be measured in the office, deep posterior compartment testing should be done under ultrasound guidance to avoid damaging the neurovascular bundle, said Dr. Wiley, a sports medicine physician at the University of Calgary (Alta.).

An immediate postexercise pressure of more than 30 mm Hg is the first positive reading; confirmation is a measurement of more than 15 mm Hg at 2-3 minutes post exercise. Ample local anesthetic is advised, he stressed, be-

cause the device's 16-gauge needle needs to be inserted into the richly innervated fascia.

Intracompartmental pressure testing should be undertaken with the understanding that surgery is the only treatment.

"If the test is positive, patients either have to live with it and possibly modify their activity, or have a fasciotomy. There has never been a reported case that resolved without surgery," he said.

Suspicion of chronic compartment syndrome can be based on a history of lower leg pain, tightness, and burning after activity, with symptoms subsiding at rest.

"It does not ache in the middle of the night," Dr. Wiley said in an interview. The muscle that normally swells with exercise is restricted by the tight fascia, resulting in pain, and the area of discomfort reported by the patient clearly outlines a compartment, he explained.

"By having the patient point to the affected area, the physician can have an excellent indication of the problem." ■



A test of the anterior compartment should follow dorsiflexion exercises.

COURTESY DR. PRESTON WILEY

Juvenile Arthritis Diagnosis Is Delayed When Blood Tests Are Negative

BY DAMIAN McNAMARA
Miami Bureau

BIRMINGHAM, ENGLAND — Referral of a child with inflammatory arthritis is likely to be delayed if diagnosis is based solely on blood tests and not on physical findings, according to initial study results presented at the annual meeting of the British Society for Rheumatology.

Faced with a paucity of data, researchers launched the first large-scale prospective study to assess a relationship between presenting symptoms and time to juvenile arthritis diagnosis. "Studies have not included all children with juvenile arthritis. They have been retrospective case reviews or cross-sectional studies. We decided to include all comers and look at them over 5 years," Dr. Kimme Hyrich commented in an interview during a poster session at the meeting.

The Childhood Arthritis Prospective Study (CAPS) includes children aged 16 years or younger with new inflammatory arthritis in at least one joint that persists for 2 weeks or more. Not surprisingly, results among the first 494 participants indicate that children who present with clear diagnostic signs wait the shortest time before

seeing a pediatric rheumatologist. However, children who present with joint pain or stiffness but normal erythrocyte sedimentation rate (ESR) tend to experience a long delay before reaching specialty care, even if they have a high joint count.

An unexpected finding was how long a significant minority of patients waited, Dr. Hyrich said. "It is concerning that one-fifth of children had to wait more than 1 year." Dr. Hyrich is a clinical lecturer and consultant rheumatologist, Arthritis Research Campaign Epidemiology Unit, the University of Manchester, England.

A significant minority of children—one-fifth—had to wait for more than 1 year before they received a referral to a pediatric rheumatologist.

The median age of participants is 7 years. A total of 64% are girls, 49% have oligoarthritis, and 14% have rheumatoid factor-negative polyarthritis. The remainder was equally divided among other subtypes of inflammatory arthritis.

About 30% of referrals to the CAPS study come from general practitioners, 30% from general pediatricians, and 20%-30% from orthopedists. The remainder comes from various other sources, Dr. Hyrich said.

The median overall time from symptom onset to pediatric rheumatology consult was 3.9 months. Referrals were quickest when the child experienced a related ca-

sualty (1.2 months). General practitioner referrals were a median 4.8 months after symptom onset, and referrals from other medical specialists took a median 6.5 months.

If a child presents with foot pain and no laboratory evidence of arthritis, for example, the diagnosis might not be complete, Dr. Hyrich said. "The doctor might think it is a mechanical issue."

The median total delay was longest for rheumatoid factor-positive children with polyarthritis (7.2 months) and shortest for children with systemic arthritis (1 month).

Participants who waited 4 months or more before seeing a pediatric rheumatologist were more likely to be older (median 8 years vs. 6 years), to have a higher joint count (median 2 vs. 1), and to have a lower ESR (14 mm/hour vs. 32 mm/hour), compared with children who were seen sooner. There were no significant differences between the shorter and longer delay groups on the Childhood Health Assessment Questionnaire, Physician's Global Assessment, Parent's General Evaluation of Well-Being, or pain scores.

The findings indicate that if blood tests do not indicate inflammation, the diagnosis of juvenile inflammatory arthritis might be overlooked and the initiation of appropriate therapies delayed, Dr. Hyrich said.

"The study is ongoing. Our ultimate aim is to recruit about 1,100 children, and now we have about 600." ■