MRI Findings for Low Back Pain Can Be Misleading

BY BRUCE K. DIXON
Chicago Bureau

SEATTLE — MRI findings within 12 weeks of serious low back pain inception are unlikely to represent new structural change, according to a study at Stanford (Calif.) University.

"We had hypothesized that serious low back pain episodes would be commonly associated with new and specific findings on MRI, and we were really thinking about such things as annular tears, fissures, disk herniation, new disk protrusion, and end plate changes. But … the data didn't support that hypothesis," said Dr. Eugene Carragee, professor of orthopedic surgery, at the annual meeting of the North American Spine Society.

The findings emerged from a 5-year, prospective, observational study with baseline and post–low back pain monitoring of 200 subjects with lifetime histories free of significant low back pain problems but who were at high risk for new low back pain episodes, Dr. Carragee said.

At baseline, patients underwent physical examinations, plain radiographs, and MRIs; they were then followed for 5 years and participated in a detailed telephone interview every 6 months. Those with a new severe low back pain episode were assessed with diagnostic tests. New MRIs, taken within 6-12 weeks of the start of a new low back pain episode, were then compared with baseline (asymptomatic) images.

Within the total cohort, 25% were evaluated with a lumbar MRI for clinically serious low back pain episodes occurring during follow-up, and 6% had a primary radicular complaint. Of those 51 patients, 43 either had an unchanged MRI or showed regression of baseline changes.

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DR. CARRAGEE

"There are relatively few new findings compared to the burden of disease at baseline. That is, when you put the scan up and you see 5 or 10 things—an annular fissure or perhaps some facet arthrosis—the overwhelming amount of those things were there years before," Dr. Carragee said.

The most common progressive findings were disk signal loss (10%), progressive facet arthrosis (10%), or increased end plate changes (4%). Only two patients, both with primary radicular complaints, had new findings of probable clinical significance.

"Both had primary leg pain and one had a new disk extrusion with root compression but no trauma. The other had some degenerative disease at the L4-5 level and, at follow-up scan, had a grade 1 spondylolisthesis with increased stenosis," Dr. Carragee said.

Subjects involved in current compensation claims were more likely to have an MRI scan to evaluate a low back pain episode but were unlikely to have significant new findings.

"In usual practice, if a patient has minor trauma from a fender bender or a fall and you get an MRI, it shows a high-intensity zone, an annular fissure, or end plate changes, and the normal thing that we think is that these findings are … attributed to an acute event and are related to the symptoms, but that's not what we found," he said, adding that fewer than 1 in 12 annular fissures and 1 in 15 disk protrusions found on scans were new.

"In acute low back pain, MRI findings within 12 weeks of events were highly unlikely to represent new structural changes to the spine, and this means [physicians] directing treatment need to be careful before saying, 'Aha! I found the cause'" of a patient's low back pain, Dr. Carragee concluded. ■

Back Problems Are Not Uncommon in Children, Adolescents

BY DOUG BRUNK
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LAS VEGAS — Not long ago, physicians were taught to believe that chronic back pain does not occur in children.

"But that just isn't true," Dr. David L. Skaggs said at meeting sponsored by the American Academy of Pediatrics' California Chapters 1, 2, 3, and 4 and the AAP.

"We did a study of kids between the ages of 11 and 14, and found that 37% of them had back pain at any given time," said Dr. Skaggs, associate director of the Children's Orthopedic Center at Children's Hospital Los Angeles. "So when a child comes in with back pain, it can be difficult to decide what's pathologic and what's not."

If a child presents with diffuse back pain that is triggered by physical activity, that comes and goes over time with periods of no pain, and that does not get worse at night, this is probably nothing to worry about. "Ask the child where it hurts," Dr. Skaggs advised. If they demonstrate region of interest distribution of pain across the back, "that's when you say, 'Welcome to adulthood.' That's chronic low back pain."

Worry when a child presents with point tenderness back pain, or what he calls the "positive finger test" on physical exam. The culprit could be spondylolysis, diskitis, or a tumor. "If the child points at one place and says, 'It hurts there,' that's when you should be concerned," he said. "Ask, 'Does it ever hurt at night, worse enough to wake you up? Is the pain getting worse?' If they say yes, you should order a MRI of the cervicothoracic lumbar spine."

He also recommends asking if the child has ever had a lumbar puncture, because sometimes a little skin gets into the spinal canal and can cause an epidermoid cyst.

Heavy backpacks also can be associated with back pain. Dr. Skaggs and his associates studied the risk of back pain in adolescents who carry backpacks. "We found that the heavier the backpack, the more likely you are to have some back pain," he said. "It's a linear relationship."

Kids don't keep up physical therapy. 'It's better to get them involved with something like yoga and Pilates.'

DR. SKAGGS

While some experts advocate physical therapy for kids with generalized back pain, "I don't think that's in the kid's best interest, because most kids don't keep up physical therapy," Dr. Skaggs said. "I think it's better to get them involved with something like yoga and Pilates, and go to the gym to get personal strength training. If you get them involved with something fun, it's going to strengthen their back and they're likely to keep it up."

Exercise that involves core strengthening with an emphasis on back extensor training is best. Dr. Skaggs also discussed the following spinal problems that can occur in children:

► **Congenital muscular torticollis.** In this condition, the child's head tilts laterally with the ear toward one shoulder while the chin is rotated toward the opposite shoulder. The cause is thought to be fibrosis or compartment syndrome of the sternocleidomastoid muscle.

"Oftentimes, when the kids are born they may not have this position, but within a few weeks, it develops. … That's because it takes a while for the sternocleidomastoid muscle to fibrose or develop compartment sydrome after the trauma of birth," he said.

If picked up early and physical therapy is begun in a timely fashion, the condition remits more than 95% of the time within the first year of life. However, most case series report about a 5% association with developmental dysplasia of the hip, "so I recommend getting a screening ultrasound in an infant who has congenital muscular torticollis. There are not enough studies to make recommendations, but I think it makes common sense," he said.

► **Plagiocephaly.** This is secondary to congenital muscular torticollis most of the time. The best treatment for this is to treat the torticollis. "Encourage the child to sleep with the head tilted in the opposite position of normal, and eventually the plagiocephaly will resolve spontaneously," he said.

If the plagiocephaly doesn't resolve in 6-8 months, referral to a neurosurgeon or an expert in bracing is warranted. "I'm generally not the biggest fan of bracing for most things in orthopedics, but [using a brace for] this really seems to work," said Dr. Skaggs, who is also a professor of orthopedics at the University of Southern California, Los Angeles.

► **Late-onset torticollis.** In this condition, which is most commonly due to C1-C2 rotatory subluxation, the sternocleidomastoid muscle is tight on the opposite side to where the ear is toward the chin. It's in spasm from being stretched to accommodate the head position. "Most of the time, it resolves spontaneously in a few days," he said. "If it doesn't resolve in a week, that means an instant referral to a specialist in pediatric spine disorders."

A CT scan of C1-C2 with the head turned to the right and left makes the diagnosis in most cases. If detected within 1 week, treatment involves placement of a soft cervical collar. If detected within 1 month, treatment involves traction for reduction followed by placement of a cervical collar. Detection after 1 month of onset usually requires surgical fusion. ■

The 60-Second Exam for Back Pain

Here are tips to quickly assess children for back pain:

► Have the child jump up and down on one foot, then jump up and down on the other.

► Have the child walk on his or her heels with the toes pointed upward. That covers L4 for ankle dorsiflexion. With these first two tests, almost all of the strength and balance of the lower extremities have been covered.

► Test the reflexes, including the umbilicus. If you lightly stroke the umbilicus on either side, the belly button should move to one side or the other. If it doesn't move, that's normal. "But if it's asymmetrical, there's a great chance there's syrinx."

► Test for ankle clonus. Push up on the ball of the foot and forcibly dorsiflex the ankle. "If it beats once or twice that's normal," he said. "Three or four beats of clonus and I'd consider a neurological work-up and/or an MRI."

► Assess hamstring tightness. A popliteal angle up to 30-40 degrees is normal.

► Check the feet. "If you have claw toes or a cavus foot, that's a sign that something neurological is going on in the spine," he said.