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NEW WAY TO DIAGNOSE SCIATICA MAY POINT TO A DIFFERENT CAUSE: MANY CASES OF SCIATICA NOT RELIEVED BY CURRENT TREATMENTS MAY NOW BE SUCCESSFULLY DIAGNOSED AND TREATED USING NEW NERVE IMAGING TECHNOLOGY

LOS ANGELES (February 1, 2005) – For the last 70 years, a damaged disc in the lower back has been widely accepted as the most common cause of sciatica – a condition where the sciatic nerve is pinched, causing pain to radiate down the leg. As a result, treatment for sciatica is based on diagnosis of a damaged disc, despite the fact that nerves cannot be viewed with routine imaging tests. Consequently, over one million patients each year undergo magnetic resonance imaging scans (MRI) for sciatica and many are told there is no obvious cause for their pain.

Now, researchers at Cedars-Sinai Medical Center, the University of California, Los Angeles, and the Institute for Nerve Medicine in Los Angeles, have found that new nerve imaging technology called Magnetic Resonance neurography was effective to reveal that a pinched-nerve in the pelvis called piriformis syndrome caused sciatic leg pain in the majority of patients who had failed diagnosis with an MRI scan and/or who were not treated successfully with surgery. The study, published in the February issue of the *Journal of Neurosurgery: Spine*, may lead to a better way to diagnose and treat sciatica – a condition that affects nearly 40 percent of adults at some point during their lifetime.

“Our study not only found that we can use MR neurography to accurately image the sciatic nerve, but also shows that we can effectively diagnose and treat sciatic pain that is not caused by a herniated or damaged disc,” said Aaron Filler, M.D., Ph.D., lead author of the study and a neurosurgeon at the Cedars-Sinai Institute of Spinal Disorders. “When a damaged disc is not causing sciatica, patients should talk to their doctors about special imaging for nerves with MR neurography.”

Sciatica occurs when the sciatic nerve is pinched or irritated, causing pain to travel from the buttocks and down the back of the thigh and calf, sometimes extending into the foot. Today, when a patient experiences painful and persistent sciatica, physicians typically perform a physical exam and ultimately rely on MRI scans to show the extent to which a disc or discs may be damaged. But, of the 1.5 million MRI scans performed each year, only about 20 percent show a herniated disc serious enough to be treated with surgery. And, of those patients treated with surgery, about one-third do not experience relief from their sciatica. *(Statistics derived from the American Academy of Orthopaedic Surgeons, Radiological Society of North America and the American Association of Neurological Surgeons.)*

One possible cause of non-disc related sciatic pain is a condition called piriformis muscle syndrome. The syndrome is caused by a narrow muscle located deep in the buttocks that irritates or pinches the sciatic nerve, causing pain to radiate down the leg and into the foot. However, diagnosing piriformis syndrome is difficult, as there has been no effective means to diagnose and treat the condition. For example, MRI scans

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cannot reliably image nerves. Further, physicians usually perform a physical exam requiring patients to raise their leg straight up to determine whether a damaged disc may be causing their sciatica. But one large study found that the test was negative in up to 85 percent of patients experiencing chronic back pain and sciatica.

MR neurography, which was developed by Filler, however, uses MRI technology coupled with special software and hardware upgrades that generate detailed images of just about any nerve in the body. However, the technology is not widely used and is only available on a limited basis, despite several recent studies demonstrating its effectiveness.

To find out whether MR neurography could effectively identify the cause of sciatica, the researchers evaluated 239 patients whose symptoms had not improved after diagnosis or treatment for a herniated or damaged disc. All patients received a detailed neurological exam and had a thorough review of all previous scans and treatment history to rule out any condition that might have been missed. Patients without adequate scan information within the last 12 months underwent additional X-ray and MRI scanning. The investigators found that seven patients had torn disc related conditions (annular tears) and were subsequently treated successfully with spine surgery.

The remaining 232 patients then underwent MR neurography to evaluate the sciatic nerve. They found that 162 (69 percent) of patients had piriformis syndrome, while the remaining 31 percent had 15 other nerve, muscle or joint conditions at various locations not seen in standard MRI scans. Piriformis syndrome was also confirmed and/or treated by using Open MRI guided imaging, a procedure in which a specially designed MRI scanner guides deep injections of pain medication into the spine, muscles, or near nerves.

“For the last 70 years, sciatica has been thought to be caused by a herniated disc and treated as such,” said Dr. J. Patrick Johnson, M.D., senior author of the study and the director of the Cedars-Sinai Institute for Spinal Disorders. “But our study shows that it is time for a major reassessment of how patients will be evaluated and treated for sciatica in the future – particularly in those patients with no obvious disc damage who previously failed treatment.”

Following their diagnoses with MR neurography, all patients received treatment that included spinal surgery, nerve or muscle surgery, open MR guided injections, or non-interventional pain management that included physical therapy and exercise. Among the 62 patients who needed surgery to correct piriformis syndrome, 82 percent had a good or excellent outcome, based on patients’ responses to a standardized outcome questionnaire over a six-year period.

“Although sciatica is the most common condition treated by neurosurgeons, piriformis syndrome is not even mentioned in the majority of neurosurgery textbooks and no more than a handful of surgeons in the U.S. are trained to treat it,” said Filler. “The use of optimum diagnostic technology and formal outcomes assessment is essential to identify this large number of patients who have sciatica caused by piriformis syndrome. Although MR neurography is only available at limited locations nationwide, patients who fail diagnosis or treatment should talk to their physician about nerve imaging with MR neurography.”

One of only four hospitals in California whose nurses have been honored with the prestigious Magnet designation, Cedars-Sinai Medical Center is one of the largest non-profit academic medical centers in the Western United States. For 17 consecutive years, it has been named Los Angeles’ most preferred hospital for all health needs in an independent survey of area residents. Cedars-Sinai is internationally renowned for its diagnostic and treatment capabilities and its broad spectrum of programs and services, as well as breakthroughs in biomedical research and superlative medical education. It ranks among the top 10 non-university hospitals in the nation for its research activities and was recently fully accredited by the Association for the Accreditation of Human Research Protection Programs, Inc. (AAHRPP). Additional information is available at www.csmc.edu.