

# Feared spinal X-ray found to be safe, study shows

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Medical imaging experts at Johns Hopkins have reviewed the patient records of 302 men and women who had a much-needed X-ray of the blood vessels near the spinal cord and found that the procedure, often feared for possible complications of stroke and kidney damage, is safe and effective.

Reporting in the journal *Neurology* online Sept. 14, the Johns Hopkins researchers found that none of the [study participants](#), all of whom underwent a spinal digital subtraction angiography, or SpDSA, at The Johns Hopkins Hospital between 2000 and 2010, had suffered either a stroke or any [kidney damage](#) as a result of the procedure, considered the "gold standard" test for distinguishing among many types of vascular disorders near the spine. These include strokes, hematomas, aneurysms, [fistulas](#) and tumors.

"Patients and their physicians can now look with confidence to our study and see for themselves the real as opposed to perceived risks and complications from spinal angiography," says study senior investigator and interventional neuroradiologist Philippe Gailloud, M.D. "Advances in the procedure have made it much safer today than before, and [neurologists](#) and patients really should consider this valuable [diagnostic tool](#) based on the actual medical evidence and not on whatever unsubstantiated rumors they might hear secondhand or read on the Internet," adds Gailloud, an associate professor at the Johns Hopkins University School of Medicine.

Gailloud says reports of stroke and kidney damage had been rather high, in as many as 3 percent of people, in the 1970s when the procedure was first introduced. Then, preparing patients for testing and injecting a dye to make the blood vessels more visible often took hours instead of the routine half-hour it takes today, raising the chances that a clot could dislodge in the blood vessels and cause a stroke. The earlier process also used up more than twice as much of the potentially toxic contrast agent than is needed today.

Another key finding in the latest study was that spinal angiography could accurately rule out suspected cases of spinal inflammation, a condition known as transverse myelitis. Fourteen of 45 patients diagnosed and treated with steroids or other immune-suppressing drugs for transverse myelitis were later confirmed by SpDSA to have a vascular malformation instead. All of these patients were successfully treated for their actual spinal problem, and none of them suffered any complications as a result.

According to Gailloud, who is also director of interventional neuroradiology at Johns Hopkins, this shows physicians that anyone who is diagnosed with transverse myelitis and who does not show improvement after drug treatment but is still likely suffering from a spinal problem should consider having a SpDSA to either verify the original diagnosis or determine if it is actually a vascular malformation. Both conditions have similar symptoms, he says, with people often complaining of a weakening in the legs, even temporary paralysis, sudden and uncontrolled urination, and back pain.

Lead study investigator and Hopkins medical student James Chen, M.Sc., began the study with encouragement from experts at the Johns Hopkins Transverse Myelitis Center after noticing continued reluctance by other specialists and patients to use spinal angiography. They believed the procedure to be too dangerous, despite growing acceptance of its

efficacy. "To counter medical rumor and historical perception, we simply had to put some current numbers on its safety and risk," says Chen, who is also a Doris Duke Charitable Foundation research fellow in interventional neuroradiology at Johns Hopkins.

Gailloud and Chen have already begun the next phase of their research, a prospective study to monitor people after they have had a SpDSA for any possible complications months or even years after the procedure. Initial results are expected in 2012.

In the SpDSA procedure, a catheter tube is inserted into the larger [blood vessels](#) near the groin and gently threaded, one by one, into each of the major arteries branching from the aorta to the spine. Dye is released into each artery to help form multiple images of each artery, as taken by X-ray. The test is usually performed to specifically identify the source of the vascular problem after an MRI has ruled out any other physical disorders to the spine.

Provided by Johns Hopkins Medical Institutions

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