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NEWS

RSNA Press Release

X-ray-guided Spinal Stabilization Avoids Surgery for Severe Vertebral Collapse

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OAK BROOK, Ill., March 26, 2002 -- A nonsurgical procedure using percutaneous injection of orthopedic "cement" helps stabilize collapsed vertebrae in elderly patients, enough so that they can regain lost mobility and experience significant pain relief within hours, according to a study published in the April issue of *Radiology*.

The clinical value of percutaneous vertebroplasty (PV) in vertebrae with severely compressed vertebral fractures was confirmed in a study co-authored by Louis A. Gilula, M.D., professor of radiology in the Musculoskeletal Section at Mallinckrodt Institute of Radiology in St. Louis, Missouri. Dr. Gilula points out that PV is done most often in patients who are too elderly and fragile to tolerate open spinal surgery, or whose bones are too weak to withstand surgical fixation of the spine.

Elderly persons with thinned, weakened bones from osteoporosis and fractured, collapsed spinal segments suffer severe pain and often are confined to bed. Their markedly limited lifestyle may lead them to become despondent and lose interest in living their lives. Many of them depend on large doses of pain medication, which further impairs their ability to function.

After undergoing PV, many previously immobile patients are able to get out of bed, decreasing their risk of developing pneumonia and more severe osteoporosis. Pain relief gained from PV can reduce their reliance on pain medication, and the ability to be more active promotes better muscle strength.

In the study, PV was performed in patients having one or more vertebrae collapsed to, on average, less than one-quarter of the vertebra's original height. This represents the first published study where PV has been performed on vertebrae exhibiting such severe states of collapse. All patients had intense localized spinal pain that had failed to respond to pain medication, nerve block, exercise, or drugs to combat osteoporosis. It is important to note that this procedure is not indicated for herniated disc or arthritic back pain. Nor is it the best approach to treat the average younger person having a painful but healed spinal fracture.

After the patient has been evaluated clinically and with radiographs and/or magnetic

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resonance (MR) imaging to be certain that a fractured vertebral body is the source of the pain, the patient is given intravenous sedation, and local anesthetic is injected in the region of the fractured spine. With the patient prone, a small skin incision is made, and a hollow needle, or trocar, is advanced through the spinal muscles - under fluoroscopic guidance - until its tip is precisely positioned. An exam called intraosseous venography using contrast material is then performed to make certain that the needle is in a safe location within the fractured bone. Finally, polymethylmethacrylate (PMM), a cement-like material with the consistency of toothpaste, is injected (again under fluoroscopic guidance) into the collapsed vertebral body. PMM is the same type of material used by orthopedic surgeons in joint replacement procedures. PV takes less than two hours of patient time, unless more than one site has to be stabilized.

Afterward, the patient rests in bed for an hour and then gets up to walk. Pain is self-rated on a 10-point scale before and after the procedure. In general, it is apparent within an hour after PV whether the procedure was effective, though at times a few days are needed to make this assessment. Typically, patients are more mobile within 24 hours, and most patients are able to bear weight soon afterward while taking reduced - or no - pain medication. Physical therapy will strengthen the back muscles. If necessary, PV can be performed on another vertebral body that fractures and collapses. According to Dr. Gilula, occasionally a small amount of PMM can leak out of the vertebral body. It does not appear to cause any serious complications, unless the leakage passes into undesirable locations, which rarely occurs when the procedure is performed by persons experienced in vertebroplasty.

Thirty-seven patients in the PV trial, averaging 74 years of age, underwent a total of 48 vertebroplasties for severe osteoporotic compression fractures. Cement leakage did occur but was seemingly innocuous; no major complications were noted. After nearly a year, 14 of 30 patients followed up had no pain at all, and 15 had gained partial relief. A single patient was unchanged. In no case was surgery necessary.

"Today we have performed over 600 vertebroplasties," reports Dr. Gilula, "and I do not remember a patient that has had a bad time from the procedure."

This nonsurgical procedure appears able to consistently control, and often abolish, severe pain in older osteoporotic patients with advanced vertebral collapse secondary to fractures, thereby offering them a substantially higher quality of life. Dr. Gilula believes that "vertebroplasty, when applied appropriately by persons who are trained to perform this procedure safely, can markedly diminish the morbidity associated with spine fractures in the elderly."

Radiology is a monthly scientific journal devoted to clinical radiology and allied sciences. The journal is edited by Anthony V. Proto, M.D., School of Medicine, Virginia Commonwealth University, Richmond, Virginia. Radiology is owned and published by the Radiological Society of North America, Inc.

The Radiological Society of North America (RSNA) is an association of more than 30,000 radiologists and physicists in medicine dedicated to education and research in the science of radiology. The Society's headquarters is located at 820 Jorie Boulevard, Oak Brook, Ill. 60523-2251.

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"Percutaneous Vertebroplasty for Severe Osteoporotic Vertebral Body Compression Fractures (Vertebra Plana)." Collaborating with Dr. Gilula on this report are Wilfred C.G. Peh, FRCP, FRCR, and Dallas D. Peck, M.D.

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