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## RSNA Press Release

### Imaging Changes Treatment for Lower Back Pain

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OAK BROOK, Ill. - A simple diagnostic imaging procedure can help identify patients with lower back pain who would benefit from spinal injections and spare those who would not, according to a study appearing in the February issue of *Radiology*.

Single photon emission computed tomography (SPECT) shows abnormal activity of cells in the spine, which can help doctors identify problems that may be causing a patient's symptoms.

According to the National Institute of Neurological Disorders and Stroke, lower back pain is the most common cause of work-related disability and a leading contributor to job-related absenteeism in the United States. Approximately 85 percent of adults suffer from back pain at some time during their lives. Chronic lower back pain is often caused by degenerative changes in the spine and is commonly treated by steroid and anesthetic injections to the small joints of the spine called the facet joints.

"Facet joint injections can be a good short-term treatment alternative in some patients, but these injections don't help all patients, are relatively expensive and can cause complications," said the study's lead author, Spiros G. Pneumaticos, M.D., assistant professor of orthopedic surgery at Baylor College of Medicine in Houston, Texas.

"Bone SPECT can help identify the patients with lower back pain who would benefit from facet joint injections. The patients with negative bone SPECT should be spared the injections," he said.

For a bone SPECT exam, the patient receives an injection into the vein with a radioactive material that travels to the bones. The patient lies underneath the camera, and pictures are taken for approximately 30 minutes. The SPECT images illuminate abnormalities in cell function.

#### At A Glance

- Bone SPECT effectively evaluates lower back pain.
- SPECT identifies abnormalities in the lumbar spine that would benefit from pain-relieving injections.
- Patients who received injections based on SPECT findings reported significantly less pain after a month than patients who were injected based on physician recommendations alone.

Dr. Pneumaticos and colleagues studied 47 patients (23 men and 24 women) with low back pain, who were scheduled for facet joint injections. The patients were randomly divided into two groups. The first group (Group A) had bone SPECT prior to injection. The second group (Group B) did not. Patients showing positive SPECT results (Group A1) received injections at the levels of the lumbar spine showing abnormalities on the scan. Patients showing no facet joint abnormality on SPECT (Group A2) along with Group B patients received injections at the levels indicated by the referring physician.

After one month, pain reduction was significantly higher in Group A1 patients than in the other two groups. In addition, only 27 facets required injection, a sizable decrease from the referring physician recommendation of 60, resulting in a \$326 reduction in overall Medicare cost per patient.

"Our study showed that patients with a positive bone SPECT have an excellent response to facet injections when injected at the abnormalities seen on SPECT, while patients with a negative SPECT have a much smaller chance of improving," Dr. Pneumaticos said.

"Until now, doctors have had no reliable way to determine which patients will actually benefit from the injections. This study shows that a relatively simple test can help identify patients who will benefit, and this helps avoid the use of facet injections in patients that would not benefit or could possibly be hurt by the procedure," he said.

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"Low Back Pain: Prediction of Short-term Outcome of Facet Joint Injection with Bone Scintigraphy."  
Collaborating with Dr. Pneumaticos on this paper were Sofia N. Chatziioannou, M.D., John A. Hipp, Ph.D., Warren H. Moore, M.D., and Stephen I. Esses, M.D.