

FDG-PET Effective in Detecting Osteomyelitis

BY DOUG BRUNK
San Diego Bureau

SAN DIEGO — Fluorodeoxyglucose PET scan results reflected a diagnosis of chronic osteomyelitis with 93% accuracy in a single-center study.

"Chronic osteomyelitis is a big area of morbidity for our society," Dr. Abass Alavi said in an interview at the annual meeting of the Society of Nuclear Medicine. "A test that can accurately detect and monitor these patients is needed" because current modalities, including structural imaging and combined nuclear medicine techniques, are either insensitive or not specific.

He and his associates at the University of Pennsylvania Medical Center, Philadelphia, studied 57 patients with suspected chronic osteomyelitis who underwent fluorodeoxyglucose (FDG) PET imaging in full-ring PET scanners. The researchers then compared the im-

ages with the final diagnosis based on surgical findings, microbiology, and clinical follow-up.

Dr. Alavi, chief of the division of nuclear medicine at the medical center, reported that FDG-PET correctly diagnosed the presence or absence of chronic osteomyelitis in 53 of the 57 patients.

Of the 57 patients, 27 had chronic osteomyelitis and 30 were free of bone infection. The procedure correctly identified 26 of the 27 patients with chronic osteomyelitis, but there were false positives in 3 patients.

FDG-PET had a sensitivity of 96.3%, a specificity of 90%, and an accuracy of 93%. The positive predictive value was 90% and the negative predictive value was 96.4%, he reported.

The potential cost advantages of FDG-PET for diagnosing osteomyelitis "are clearly there, because we have a test that has an accuracy of better than 90%," said

Dr. Alavi, who was the first clinician to apply FDG-PET technology in humans. "Before I started this technique, we had to do white cell imaging, which costs about \$2,000. Then we had to do a bone scan [and] a bone marrow scan. A patient had to do these over 2 days. The cost of FDG-PET should not be more than \$1,500."

He predicted that FDG-PET will become the diagnostic tool of choice for other common inflammatory diseases, such as rheumatoid arthritis. He described a recent case in which FDG-PET was used in a patient who was in and out of the hospital for 6 weeks with a fever of unknown origin. "One single FDG-PET showed an infection in the mediastinum," he said. "It looks like FDG-PET is going to be the way to go whenever there's infection."

The lead author of the study was Dr. Wichana Chamroonrat, a research fellow at the Hospital of the University of Pennsylvania. ■



At top, images show abnormal intense FDG uptake in the left proximal tibia consistent with osteomyelitis. At bottom left, MRI T2 image shows abnormal nonspecific high signal intensity in the proximal left tibia. At bottom right, plain radiograph of the left knee has no detectable abnormality.

COURTESY DR. WICHANA CHAMROONRAT AND DR. ABASS ALAVI

Sertraline Prevents Recurrence Of Depression in Diabetes

BY MARY ANN MOON
Contributing Writer

Maintenance therapy with sertraline prevents a recurrence of major depression in diabetic patients whose mood disorder initially responds well to the drug, reported Patrick J. Lustman, Ph.D., of Washington University, St. Louis.

Clinical depression has been reported to occur in one-fourth of people with diabetes, and recurrent episodes are common. Depression not only impairs their function and quality of life but also increases their risk of death—largely by accelerating coronary heart disease—and their risk of diabetes complications, Dr. Lustman and his associates said.

Pharmacotherapy and psychotherapy improve both mood and glycemic control in depressed diabetic patients, but the benefits appear to be short-lived, with up to 60% of such patients developing a recurrence in the year following successful treatment. Maintenance therapy is known to reduce recurrences in 15%-30% of nondiabetic depressed patients but had not been assessed in diabetic patients until this study was done.

The researchers evaluated maintenance therapy in 152 patients with either type 1 or type 2 diabetes and major depressive disorder. The study subjects had a mean of five previous episodes of depression.

The current episode had resolved with

sertraline therapy, at a mean dose of 118 mg per day (range of 50-200 mg per day). Subjects were then randomly assigned to either continue with the same dosage of sertraline that had induced recovery (79 subjects) or to switch to placebo (73 subjects), and were followed for 12 months or until depression recurred.

Depression symptoms and glycemic control were monitored in monthly office visits and via telephone interviews at every midpoint between office visits, to permit rapid detection of recurrences. Both the Beck Depression Inventory and the Hamilton Depression Rating scale were used to measure depression symptoms.

Sertraline was significantly more effective than placebo at prolonging the depression-free interval. At 1 year, the calculated rate of nonrecurrence was 66% in patients treated with sertraline, compared with 48% for those who received placebo, the investigators wrote (*Arch. Gen. Psychiatry* 2006;63:521-9).

The interval until one-third of the subjects developed a recurrence was 226 days in those taking sertraline, compared with 57 days in those taking placebo. The median time to recurrence exceeded 365 days, the maximum duration of follow-up, for subjects taking sertraline, compared with 251 days for those taking placebo.

This study was supported in part by Pfizer Inc., which provided the sertraline for study subjects. ■



DR. LUSTMAN

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If 80% Met Treatment Goals, \$150 Billion Could Be Saved

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — If 80% of Americans with type 2 diabetes met treatment goals, over \$150 billion in medical costs would be saved over the next 30 years, Dr. Robert A. Rizza said in his presidential address at the annual scientific sessions of the American Diabetes Association.

If 80% of patients achieved just five goals—a hemoglobin A_{1c} less than 7%, blood pressure less than 130/80 mm Hg, LDL cholesterol below 100 mg/dL, HDL greater than 40 mg/dL for men and greater than 50 mg/dL for women, and use of a daily baby aspirin—there would be 5 million fewer heart attacks, 600,000 fewer strokes, 1.2 million fewer cases of renal failure, 1.8 million fewer cases of blindness/eye surgery, and 1.8 million fewer premature deaths. The increased costs of achieving the goals would be offset by the savings that result from prevention of the complications, explained Dr. Rizza, of the Mayo Clinic, Rochester, Minn., who just completed his term as ADA's president, medicine & science.

Investigators used a large-scale mathematical model with equations that simulate metabolic pathway and processes leading to complications, called Archimedes (www.archimedesmodel.com). By creating detailed virtual patients and modeling what happens to them over time, Archimedes can evaluate the effects of an intervention on disease prevalence and progression. The model—which was originally developed by Kaiser Permanente and is supported by an unrestricted grant from Novo Nordisk—has accurately predicted the results of several large-scale clinical trials prior to their completion.

Archimedes also predicted that if 80% of type 2 diabetics took a daily generic "poly-pill" consisting of 1,000 mg metformin, 75 mg aspirin, 40 mg statin, and 10 mg of an ACE inhibitor, the number of heart attacks over the next 30 years would drop by 50%, renal failure by 4%, and blindness and eye surgery by 33%. Such a pill—with an all-generic formulation—would cost \$100 per year while saving about \$400 per year. And even if the treatments cost \$500, the health care system would still see a savings within 5 years.

"It costs less to properly treat diabetes than it does to treat the complications that you get if you don't properly treat diabetes. It's a wise investment no matter how you look at it," he said.

A cure for diabetes would go much farther, saving 8.4 million lives and preventing 41 million serious diabetes-related complications over 30 years. In the absence of a cure, the U.S. health care system will spend \$6.6 trillion on diabetes complications over the next 30 years. A cure would save over \$700 billion, suggesting there is a powerful financial incentive for a cure.

Dr. Rizza outlined a four-point proposal that the ADA plans to issue:

► America must invest heavily in diabetes research aimed at finding a cure.

► The size of the investment must be commensurate with the risk that diabetes represents to the country.

► Financial support must be established to sustain systems that ensure every person with diabetes the best possible care.

► And a message for physicians: "We must all renew our commitment to our patients, acknowledge that the current level of care for people with diabetes is simply not acceptable, and do everything in our power to make it better." ■