

Nuclear Medicine Comes of Age

State-Of-The-Art Diagnostics At South Valley Hospital

By Sheila Rooney

John Smith had experienced stiffness in his leg for several months; however a battery of tests and x-rays was unable to reveal a clinical diagnosis for the pain. As an exploratory measure, his doctor recommended he undergo a nuclear medicine bone scan to further explore the leg.

The bone scan was positive, revealing the presence of a small tumor imperceptible on an x-ray. Because of this early diagnosis, prompt treatment enabled doctors to save his leg.

Technical advancements in the area of nuclear medicine are helping doctors diagnose disease earlier and treat it more effectively than ever before. Nuclear medicine, which involves injecting patients with radioactive substances, provides specialists with unparalleled views of the human body. It is used to detect hidden fractures or infection in the bone (not seen in x-rays); aids in the evaluation and diagnosis of cancer; and can confirm the presence of a heart attack.

Easy And More Accurate

South Valley Hospital in Gilroy, which has used nuclear medicine scanning technology since its opening in 1989, is adding a new state-of-the-art nuclear medicine scanner to its diagnostic imaging department by late summer. According to Robert B. Skor, M.D., medical director of diagnostic imaging, the SPECT (single photon emission computed tomography) scanner allows for improvements in spatial resolution or clarity and increases accuracy when evaluating patient data.

The new SPECT scanner is able to do full body imaging. Instead of taking separate, cross-sectional images the scanner passes over or under the body and an entire image is recorded. "It saves time for the patient, is more comfortable and provides for an easier evaluation," says

Skor.

Nuclear medicine scans have been used for over a quarter of a century to diagnose diseases of the thyroid, bone, lung, liver, gallbladder or heart. A small, safe amount of radioactive materi-

al is injected or swallowed, it then travels to the organ under exploration. The area is then scanned by a large camera to examine the anatomy and look for disease.

Safe Procedure

Although the "nuclear" often conjures up dire images associated with radioactive energy and weapons, nuclear medicine poses no significant danger to humans, assures Skor. Patients receive a very low dosage of radioactive material, which then either completely disintegrates or is eliminated from the body in one to two days. "Rather than radioactivity coming in or through the body (such as with an x-ray), the radioactive materials are coming out from within the body. Extensive studies have been conducted over the years to determine appropriate dosages and safe levels for nuclear medicine scans. There are no risks believed to be there," says Skor.

Earlier Detection

Unlike computed tomography (CT) scans or magnetic resonance imaging (MRI), which take only photographs of the body, nuclear medicine scans can highlight areas and study a target organ in detail. The scans are more sensitive, enabling earlier detection of images not evident on x-rays.

The majority of nuclear medicine involves bone scans to determine the presence of metastatic disease in the bone. Metastasis (the transfer of malignant cells from one part of the body to another through the bloodstream) in the bone can be seen six months earlier on a bone scan than in an x-ray, which may mean a difference in early treatment or cure, explains Skor.

What's the future hold for nuclear medicine? According to Skor, if we can use the power of the body's natural immune system, then radioactive tracers introduced into the body could go directly to a cancer location. Nuclear medicine could be a major form of diagnosing cancer, believes Skor. ●

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The Many Uses of Nuclear Scans

Nuclear scanning is commonly used to:

- Observe and evaluate the spread of various types of cancer

- Discover and diagnose diseases of the liver, gall bladder, thyroid, lung and bone

- More accurately reveal the presence—or confirm the shrinkage—of tumors

- Discover the presence of blood clots in the lungs.
- Determine if a heart attack has occurred, enabling earlier treatment

- Investigate long-term symptoms which may be skeletal in nature, such as a limp or backache

