
The Journal of Nuclear Medicine

JNM

Volume 31, Number 4 • April 1990

Bone Scan Abnormalities and Skeletal Metastases	387
Indium-111-IGg in Bone and Joint Infections	403
Metabolic Inhibition of [^{99m} Tc]MIBI Cellular Uptake	464
Xenon-127m Applications in Nuclear Medicine	489

A Full Table of Contents Begins on Page 3A, Annotations on Pages 7A-8A



The Official Publication of
The Society of Nuclear Medicine, Inc.

Association Between Number and Sites of New Bone Scan Abnormalities and Presence of Skeletal Metastases in Patients with Breast Cancer

The results of this review of 1,441 bone scans performed on 242 breast cancer patients without known skeletal metastases indicate that the number, site, and radiologic appearance of new bone scan abnormalities can be helpful in predicting the likelihood that skeletal metastases are present. *Page 387*

Comparison of Technetium-99m and Iodine-123 for Imaging Thyroid

Three hundred and sixteen patients with solitary or dominant thyroid nodules were imaged both with [^{99m}Tc]pertechnetate and ¹²³I, and the images were independently interpreted by five readers. In 27%–58% of the cases, there was no difference in quality. The slightly better overall quality of ¹²³I scans is probably not of diagnostic significance and does not justify routine use of ¹²³I. Routine re-imaging of ^{99m}Tc hot nodules does not appear necessary. *Page 393*

Editorial: Comparison of Technetium-99m and Iodine-123 Imaging of Thyroid Nodules: Correlation with Pathologic Findings *Page 400*

Scintigraphic Detection of Bone and Joint Infections with Indium-111-Labeled Nonspecific Polyclonal Human Immunoglobulin G

Results from a study of the safety and diagnostic accuracy of indium-111-labeled immunoglobulin G in 32 patients suggest that the sensitivity of the labeled immunoglobulin G appears to be at least as high as that of labeled leukocytes. *Page 403*

Editorial: What is the Best Method for Imaging Focal Infections? *Page 413*

Immunoscintigraphy of Inflammatory Processes with a Technetium-99m-Labeled Monoclonal Antigranulocyte Antibody (MAB BW 250/183)

The clinical utility of antigranulocyte immunoscintigraphy was evaluated in 34 patients. The authors conclude that the easy labeling, optimal gamma energy of ^{99m}Tc, and the resulting high quality SPECT images offer considerable advantages compared to the in vitro labeling of leukocytes with ¹¹¹In-oxine *Page 417*

Comparison of Methods for Calculating Glomerular Filtration Rate

True glomerular filtration rates were measured in patients by iohalamate clearance, scintigraphic analysis, and whole-plasma clearance. The results suggest that scintigraphic analysis may be useful in documenting the improvement or deterioration of GFR in some patients. *Page 424*

Effect of Background Correction on Separate Technetium-99m-DTPA Renal Clearance

A double background correction method, using successively the area ratio method and a linear fit method, is shown to be possibly the most precise method of determining renal clearance and is less dependent on the choice of the background area *Page 430*

Extrahepatic Uptake of Technetium-99m-Phytate: A Prognostic Index in Patients with Cirrhosis

The hepatic function of 94 patients with biopsy-documented cirrhosis was evaluated using ^{99m}Tc-phytate scintigraphy. Extrahepatic uptake was measured and the severity of the liver disease was assessed. The authors conclude that hepatic imaging with ^{99m}Tc-phytate gives valuable diagnostic and prognostic information *Page 436*

Urine Excretion of Inhaled Technetium-99m-DTPA: An Alternative Method to Assess Lung Epithelial Transport

Requiring only inhalation of an aerosol device and a well counter to measure urine radioactivity, this method permits a quantitative assessment of tracer transfer rates at the bedside *Page 441*

Left Ventricular Volume Calculation Using a Count-Based Ratio Method Applied to Multigated Radionuclide Angiography

The accuracy of a new count-based measurement of left ventricular volume was tested in patients undergoing equilibrium blood-pool imaging *Page 450*

Simultaneous Assessment of Left Ventricular Wall Motion and Myocardial Perfusion with Technetium-99m-Methoxy Isobutyl Isonitrile at Stress and Rest in Patients with Angina: Comparison with Thallium-201 SPECT

Twenty-eight coronary patients were studied; 25 had a previous infarction. Agreement between [^{99m}Tc]MIBI and ²⁰¹Tl SPECT myocardial perfusion was seen in 93% of segments. The authors conclude that [^{99m}Tc]MIBI is ideal for

simultaneous evaluation of ventricular function and myocardial perfusion during stress and at rest. *Page 457*

Effect of Metabolic Inhibition on Technetium-99m-MIBI Kinetics in Cultured Chick Myocardial Cells

Although [^{99m}Tc]MIBI has been shown to be a flow-dependent tracer, myocellular net accumulation and uptake kinetics can be affected by pharmacologic alterations in membrane transport and metabolic status. *Page 464*

Yttrium-90-Labeled Monoclonal Antibody for Therapy: Labeling by a New Macrocyclic Bifunctional Chelating Agent

Plasma stability studies and mouse distribution of the ⁸⁹Y-labeled Mab Lym-1 using a new chelating agent, demonstrated stability of the yttrium label with no measurable loss of Y(III) over 25 days *Page 473*

A New Radiochemical Method to Determine the Stability Constants of Metal Chelates Attached to a Protein

The authors developed a method of determining the stability constants of bifunctional chelates of indium coupled to a protein. Their results demonstrate that the indium in both protein-conjugated and free chelates is susceptible to replacement by ferric ions *Page 480*

Xenon-127m: A New Radionuclide for Applications in Nuclear Medicine

The authors describe the properties of xenon-127m and offer a convenient method for continuous generation with a cyclotron. The ra-

dionuclide was tested in normal volunteers *Page 489*

Attenuation Correction in SPECT Based on Transmission Studies and Monte Carlo Simulations of Build-Up Functions

The authors describe a method based on correcting pixel by pixel, using density charts, and buildup functions. Results indicate that measurements of activity within $\pm 10\%$, in nonhomogeneous areas, can be accomplished for this method. *Page 493*

Enalaprilat-Enhanced Renography in a Rat Model of Renovascular Hypertension

The authors outline the potential advantage of enalaprilat over oral converting enzyme inhibitors for the detection of renovascular hypertension *Page 501*

Evaluation of a Remote Radioiodination System for Radioimmunotherapy

A remote radioiodination system that is inexpensive, easy to assemble, disposable, and capable of radioiodinating curie levels of activity safely. *Page 508*

Clinical Pathologic Conference: Gallium-67-Citrate Imaging in the Detection of Focal Lesions for Anemia, Proteinuria, and Prolonged Fever *Page 512*

Lymphoscintigraphy for Cystic Hygroma

The source of the lymph flow in to the hygroma was identified, as were some ectatic lymphatics feeding it. The implications for therapy are discussed *Page 516*

Iodine-131 Treatment of Graves' Disease Using Modified Early Iodine-131 Measurements in Therapy Dose Calculations

The authors retrospectively studied a new method for calculating the dose for ¹³¹I therapy in 27 patients with untreated thyrotoxic Graves' disease. Using this technique, same day diagnosis and treatment of Graves' is possible *Page 519*

Influence of pH Adjustment Agents on the Biologic Behavior of Osmium-191 Impurity in Iridium-191m Generator Eluates

Preliminary calculations of the influence of four buffering agents suggests that there is a significant decrease in the estimated patient radiation dose when lysine buffered ¹⁹¹Os/^{191m}Ir generator eluates are used for radionuclide angiography. *Page 523*

Diagnostic Accuracy and Pitfalls of ¹³¹I-6-Beta-Iodomethyl-19-Norcholesterol (NP59) Imaging

Studying 108 consecutive cases from 1982 to 1985 and using clinical, biochemical, radiographic and pathologic data, an assessment of the accuracy and pitfalls of NP-59 scintigraphy was performed. *Page 526*