The Journal of Nuclear Medicine

Official Publication of The Society of Nuclear Medicine

Volume 27, Number 1
January 1986

THE JOURNAL OF NUCLEAR MEDICINE (ISSN 0161-5505) is published monthly by The Society of Nuclear Medicine, Inc., 136 Madison Avenue, New York, NY 10016. Second Class Postage paid at New York, NY and additional mailing offices. Postmaster, send address changes to The Journal of Nuclear Medicine, 136 Madison Avenue, New York, NY 10016.

EDITORIAL COMMUNICATIONS should be sent to the Editor: Thomas P. Haynie, MD, The Journal of Nuclear Medicine, Office of Special Publications, The University of Texas M. D. Anderson Hospital, 6723 Bertner Avenue, Houston, TX 77030 (713)792-8016. Books and monographs covering the use of nuclear medicine and its allied disciplines will be reviewed as space is available. Send review copies to the Editor.

BUSINESS COMMUNICATIONS concerning advertising, subscriptions, change of address, and permission requests should be sent to the publisher, The Society of Nuclear Medicine, 136 Madison Avenue, New York, NY 10016 (212)869-0717. Advertisements are subject to editorial approval and are restricted to products or services pertinent to nuclear medicine. Advertising rates are available from the publisher. Closing date is the first of the month preceding the date of issue.

SUBSCRIPTION RATES for 1986 calendar year are $100 within the United States; $110 for Canada and Pan American countries; $130 elsewhere. Student subscriptions are $50 (with proof of student status). Single copies $9.00; foreign $10.00; convention issue (May) $11.00; foreign $12.00. Make checks payable, in U.S. dollars drawn on U.S. banks, to The Society of Nuclear Medicine. Notify the Society of change of address and telephone number at least 30 days before date of issue by sending both the old and new addresses.

COPYRIGHT © 1986 by The Society of Nuclear Medicine, Inc. All rights reserved. No part of this work may be reproduced or translated without permission from the copyright owner. Because the copyright on articles published in The Journal of Nuclear Medicine is held by the Society, each author of accepted manuscripts must sign a statement transferring copyright. See Information for Authors for further explanation, which appears on the second page preceding the Calendar.

SNM NEWSLINE

Nuclear Medicine Faces Bright Future When New Diagnostic Agents Reach Market; Obstacles to Clinical Advances Pose Major Challenges

Linda E. Ketchum .................................................. 1

IAEA Plays Major Role in Promoting Nuclear Medicine in Developing Nations

Audrey V. Wegst .................................................. 9

Commentary: A Look at the Future

Stanley J. Goldsmith ........................................... 13

Nuclear Medicine Technologists Face Changing Roles in Future Health Care; Allied Health Moves Toward Multicompetency Training

Virginia M. Pappas ............................................. 14

AIDS Patients May Benefit More from Whole-Body Scanning Than Lung Studies

Jillian E. Frohman ............................................... 15

News Briefs: SPECT, PET, and NMRI at SNM Winter Meeting; Congress Approves DOE Research Budget; Low-Level Compacts Pass by Vote of 378-0 .... 16

CLINICAL SCIENCES

Quantitative Analysis of Stress Thallium-201 Myocardial Scintigrams: A Multicenter Trial

Kenneth F. Van Train, Daniel S. Berman, Ernest V. Garcia, Harvey J. Berger, Milton J. Sands, John D. Friedman, Michael R. Freeman, Michael Prydzak, William L. Ashburn, Sharon L. Norris, Allan M. Green, and Jamshid Maddahi .................................................. 17

Influence of Peak Exercise Heart Rate on Normal Thallium-201 Myocardial Clearance

Sanjiv Kaul, David A. Chesler, Gerald M. Pohost, H. William Strauss, Robert D. Okada, and Charles A. Boucher ................................. 26

Thallium-201 Myocardial Imaging During Coronary Vasodilation Induced by Oral Dipyridamole

K. Lance Gould, Sherman G. Sorenson, Peter Albro, James H. Caldwell, Tuhiin Chaudhuri, and Glen W. Hamilton ........................................... 31

Metabolism of Iodine-131 Metaiodobenzylguanidine in Patients with Metastatic Pheochromocytoma

Thomas I. Mangner, Michael C. Tobes, Donald W. Wieland, James C. Sisson, and Brahm Shapiro .................................................. 37

Determination of Glomerular Filtration Rate by Single-Plasma Sampling Technique Following Injection of Radioiodinated Diatrizoate

W. Newlon Tauxe .................................................. 45

Uterine Blush in Multiphase Bone Imaging

Gerald A. Mandell, H. Theodore Harcke, Colleen Sharkey, and Kevin Brooks .................................................. 51

Case Reports

Bilateral Urinothorax Identified by Technetium-99m DTPA Renal Imaging

Matthew D. Ralston and Robert H. Wilkinson, Jr. .................................................. 56
Positive Indium-III Leukocyte Scan in Nocardia Brain Abscess

John M. Bauman, Richard Osenbach, Michael F. Hartshorne, Lloyd Youngblood, Lida Crooks, Alfred J. Landry, and Michael A. Cawthon .................................................. 60

Parathyroid Carcinoma Visualized by Gallium-67 Citrate Scintigraphy

Mitsunori Iwase, Yoshirou Shimizu, Hidemi Kitahara, Norihiro Tobioka, and Kensuke Takatsuki .................................................. 63

**BASIC SCIENCES**

Separate Effects of Ischemia, Hypoxia, and Contractibility on Thallium-201 Kinetics in Rabbit Myocardium

Jeffrey A. Leppo, Philip B. Macneil, Andrew F. Moring, and Carl S. Apstein ................................................................. 66

Thallium-201 Scintigraphic Quantitation of Regional Flow Disparity and Subsequent Redistribution in Dogs

Richard M. Steingart and Michael V. Cohen .................................................. 75

Iodine-131 Metaiodobenzylguanidine Intra- and Extravascular Accumulation in the Rat Heart

Masayuki Nakajo, Kunisada Shimabukuro, Hiroshi Yoshimura, Ryui Yonekura, Yoshiaki Nakabeppu, Patricio Tanoue, and Shinji Shinohara .................................................. 84

A Positron Camera Using Position-Sensitive Detectors: PENN-PET

Gerd Muehllehner and Joel S. Karp .................................................. 90

Wedge-Shaped Scintillation Crystals for Positron Emission Tomography

D. Schmitt, R. Lecomte, and E. LeBel .................................................. 99

Technetium-99m-Labeled Lymphocytes: A Radioxicity Study

Timothy Merz, James Tatum, and Jerry Hirsch .................................................. 105

Synthesis and Biological Evaluation of Technetium-99m MAG3 as a Hippuran Replacement

Alan R. Fritzberg, Sudhakar Kasina, Dennis Eshima, and Dennis L. Johnson .................................................. 111

**Technical Notes**

Quantitative Evaluation of Iodine-123 Hippuran Gamma Camera Renography in Normal Children

Ove Carlsen, Birgit Kvinesdal, and Erling Nathan .................................................. 117

Variation of Gamma Camera Photographic Image Density with Count Rate

Robert L. Richardson and Charles E. Duxbury .................................................. 128

**SPECIAL CONTRIBUTION**

Clinical Decision Making: Dipyridamole Thallium Imaging

John B. Gill, D. Douglas Miller, Charles A. Boucher, and H. William Strauss .................................................. 132

**EDITORIALS**

The Changing Climate in Graduate Medical Education: Will It Affect Nuclear Medicine?

B. Leonard Holman .................................................. 138
Thanks to Our Reviewers

Thomas P. Haynie ........................................................... 141

DEPARTMENTS

Letters to the Editor

Localization of Technetium-99m DTPA in Neurofibroma
Aslam R. Siddiqui ........................................................... 143

SPECT Imaging: A Question of Ethics and Economics
Nizar A. Mullanii ............................................................. 145

Clinical Evaluation of 360° and 180° Data Sampling
Techniques for Transaxial SPECT Thallium-201
Myocardial Perfusion Imaging
Javad Rahimian, Howard F. Corbus, and Juan J. Touya .................. 146
Ismael G. Mena, Laurent Philippe, and Jacques Darcourt .............. 147

Reply
Raymundo T. Go, William J. Maclntyre, Thomas S. Houser,
Mauricio Pantoja, James K. O'Donnell, David H. Feiglin,
Bruno J. Sufra, Donald A. Underwood, and Thomas F. Meaney ........ 148

Radioactive Iodine Uptake by Breasts
George R. Baeumler and Kwang G. Joo .................................. 149

Reply
Angelita Ramos-Gabatin and Harold T. Pretorius ......................... 150

Error in Table
Lahrs Ahlgren ................................................................. 151

Book Reviews

Pediatric Nuclear Medicine
Reviewed by Joe C. Leonard .................................................. 152

Sensitivity and Specificity of Common Scintigraphic Procedures
Reviewed by Warren H. Moore .............................................. 152

NMR Tomography and Spectroscopy in Medicine:
An Introduction
Reviewed by James W. Frazer ............................................. 153

Information for Authors .................................................... 154

Calendar ........................................................................... 25A

Classified Advertising ......................................................... 28A

Residency Programs in Nuclear Medicine .................................. 31A

Index to Advertisers ............................................................ 38A