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**Regional Cerebral Blood Flow Imaging: A Quantitative Comparison of Technetium-99m-HMPAO SPECT with C<sup>15</sup>O<sub>2</sub> PET**

Both linearly- and Lassen-corrected HMPAO-SPECT data showed good correlation with the PET rCBF data. The relationship between normalized SPECT data and PET data was non-linear. It is not yet possible to obtain rCBF values in absolute units from HMPAO-SPECT without knowledge of true rCBF in one reference region for each patient  
.....Page 1595

**Disturbances in the Cerebral Perfusion of Human Immune Deficiency Virus-1 Seropositive Asymptomatic Subjects: A Quantitative Tomography Study of 18 Cases**

Quantitative measurements of cerebral blood flow by <sup>133</sup>Xe tomography were used to detect abnormalities of cerebral perfusion at a very early stage of HIV-1 infection. The technique appears to be superior to MRI at this stage of the disease's development and holds potential for evaluating antiviral chemotherapy.....Page 1601

**Tracer Kinetics of 15-(Ortho-<sup>123/131</sup>I-Phenyl)-Pentadecanoic Acid (oPPA) and 15-(Para-<sup>123/131</sup>I-Phenyl)-Pentadecanoic Acid (pPPA) in Animals and Man**

Turnover of oPPA was compared with that of pPPA in rat hearts and in man, the latter by using double-labeled substrates. In rats, oPPA remained mainly in the pool of free fatty acids while pPPA was metabolized by mitochondrial beta-oxidation. In man, after i.v. and intracoronary injection of the double-labeled oPPA, the two radionuclides reappeared together in an unchanged ratio but at a lower rate than with pPPA.....Page 1608

**Significance of Fill-In After Thallium-201 Rejection**

**Following Delayed Imaging: Comparison with Regional Wall Motion and Angiographic Findings**

Data from 60 patients with coronary artery lesions indicate that reinjection thallium-201 imaging often identifies new fill-in in the areas of no redistribution on delayed images  
.....Page 1617

**Editorial: Rest Reinjection of Thallium-201 After Redistribution Imaging: New Questions, Old Solutions.....Page 1623**

**Lymphocele: The Spectrum of Scintigraphic Findings in Lymphoceles Associated with Renal Transplant**

The author's study militates against the standard description of lymphocele, as photon-deficient lesions which remain "cold" with time in contradistinction to urinoma. In severe renal failure, or urinoma, there might never be enough urine for the urinoma to appear hot. Whereas the authors demonstrate lymphocele to be cold, neutral, or hot with time.....Page 1627

**Scintigraphic Evaluation of Aggressive Fibromatosis**

Eleven cases of aggressive fibromatosis were examined scintigraphically using <sup>99m</sup>Tc(V)-DMSA and <sup>67</sup>Ga-citrate. The <sup>99m</sup>Tc(V)-DMSA demonstrated all lesions, the <sup>67</sup>Ga-citrate 57%.....Page 1632

**A New Myocardium Imaging Agent: Synthesis, Characterization, and Biodistribution of Gallium-68-BAT-TECH**

This complex has a net charge of +1 and a gallium/ligand ratio of 1:1.

Biodistribution in rats shows high uptake in the heart as well as the liver. When [<sup>68</sup>Ga]BAT-TECH was injected into a monkey, the heart and liver were clearly delineated.  
.....Page 1635

**Editorial: The Potential for Generator-Based PET Perfusion Tracers**

.....Page 1641

**Effect of Mitochondrial Plasma Membrane Potentials on Accumulation of Hexakis (2-Methoxyisobutylisonitrile) Technetium(I) in Cultured Mouse Fibroblasts**

Technetium-labeled MIBI uptake and retention were studied in mouse fibroblasts to determine whether the mechanism of cellular uptake involved distribution across biologic membranes in response to membrane potential. Study results indicate that cellular uptake and retention of Tc-MIBI were determined by both mitochondrial and plasma membrane potentials.....Page 1646

**N-[<sup>18</sup>F]Fluoroacetyl-D-glucosamine: A Potential Agent for Cancer Diagnosis**

C3H/HeMsNRS mice bearing spontaneous hepatomas were used for the tissue distribution study. At 60 min after injection, high uptakes were found in tumor, liver, and kidney. The tumor uptake of <sup>18</sup>F-FAG showed the highest value in all tissues. In the PET study, VX-2 carcinoma of the rabbit was clearly visualized

.....Page 1654

**Editorial: The Current and Future Use of Tumor-Localizing Agents.....Page 1658**

**Investigation of Physicochemical and In Vivo Behavior of Diastereomeric Iron-59, Gallium-68, and Indium-111-EHPG Trivalent Metal Complexes**

The authors observed significant

variations between complexes of different metals with a chelator both in vitro and in vivo. In addition, stereospecific behavior was observed for the two diastereomer of the chelate when complexed with each metal. . . . . *Page 1662*

**Clinical Pathologic Conferences: Perivesicle Pheochromocytoma: The Role of Iodine-131-MIBG Imaging**  
..... *Page 1669*

**Tomography Using a Rotating Slant-Hole Collimator and a Large Number of Projections**

In studies using a gamma camera and a rotating 30-degree slant hole collimator, 64 projection images were registered. A special filtered backprojection technique was used for reconstruction of section images parallel to the camera face.  
..... *Page 1675*

**Thallium-201 Myocardial Imaging with Ectomography and a Rotating Slant-Hole Collimator**

Ten consecutive patients were imaged with the author's method and SPECT. Due to the short distance from the myocardium to the camera, resolution within reconstructed images was high, noise levels comparatively low, and mean activity in the posterior wall significantly higher than in SPECT  
..... *Page 1682*

**Editorial: Limited-Angle Tomography for the Nineties**  
..... *Page 1688*

**Maximum-Likelihood Estimation: A Model for Optimal Quantitation in Nuclear Medicine**

The trade-off between resolution and sensitivity in gamma camera collimator design was examined through the use of a maximum-likelihood estimation model.  
..... *Page 1693*

**Kinetics of the Partial Organ Distribution Volume in Mammillary Systems: A New Tool for Clinical Kinetic Studies**

Peripheral organ distribution volume (PODV) kinetics exhibit systematic time behavior depending on the mode of relation to plasma, according to the author's data. After i.v. tracer injection, total activity in any region of interest is the sum of various components which may be easily separated by PODV transformation. . . . . *Page 1702*

**Application of the Partial Organ Distribution Volume Kinetics to Background Correction in Separate Glomerular Filtration Rate Estimation**

The proposed algorithm takes advantage of the linear time dependence of the kidney distribution volume, during the renal uptake phase, to correct for the plasma residual activity which always remains after classical background correction. . . . . *Page 1710*

**The Principal Axes Transformation — A Method for Image Registration**

Based on the theory of rigid bodies, employing the principal axes transformation, this technique's procedural steps include: determination of brain contours, center of mass, inertia matrix I, and the matrix of eigen-columns of S. The eigen columns of I point in the direction of the principal axes and form an orthogonal coordinate system, whose rotation is determined by S. Knowledge of center of mass and the matrix S for the two image sets is sufficient for registration.  
..... *Page 1717*

**The Count Rate Performance of a Multiwire Gamma Camera Measured by a Decaying Source with 9.3-Minute Tantalum-178**

Data acquired dynamically were corrected for deadtime loss by a trial paralyzing deadtime and converted to their natural logarithms. The trial deadtime,  $t$ , was adjusted iteratively after curve fittings until a straight line was achieved. The paralyzing deadtime was determined to be 0.41  $\mu$ sec. . . . . *Page 1723*

**A Routine Synthesis of Oxygen-15-Labeled Butanol for Positron Tomography**

Butanol can now replace oxygen-15-labeled water, which is commonly used for routine applications. The  $^{14}\text{N}(d,n)^{15}\text{O}$  reaction is used, with 8 MeV deuterons on a nitrogen target containing 0.2% oxygen. Labeled oxygen is reacted with tri-n-butylborane by passing the gas over an alumina support which holds the reagent. Injectable labeled butanol is collected at 2.5 min after the end of the bombardment.  
..... *Page 1727*

**Design of PET Tomographs: The Effect of Slice Spacing**

The partial volume effect was analyzed theoretically for both single-slice and multi-slice imaging and was shown to vary with respect to position of slices in relation to imaged objects. The variability was shown to be closely related in multi-slice imaging to the signal processing concept of aliasing. . . . *Page 1732*

**HMPAO-SPECT Imaging Resembling Alzheimer-Type Dementia in Mitochondrial Encephalomyopathy with Lactic Acidosis and Stroke-Like Episodes (MELAS)**

SPECT of the brain using HMPAO was performed in a 37-yr-old patient suffering from mitochondrial encephalomyopathy with lactic acidosis and stroke-like episodes. Reduced blood flow (resembling Alzheimer-type dementia) was observed bilaterally in the parieto-occipital regions and in the right parietal lobe. . . . . *Page 1740*