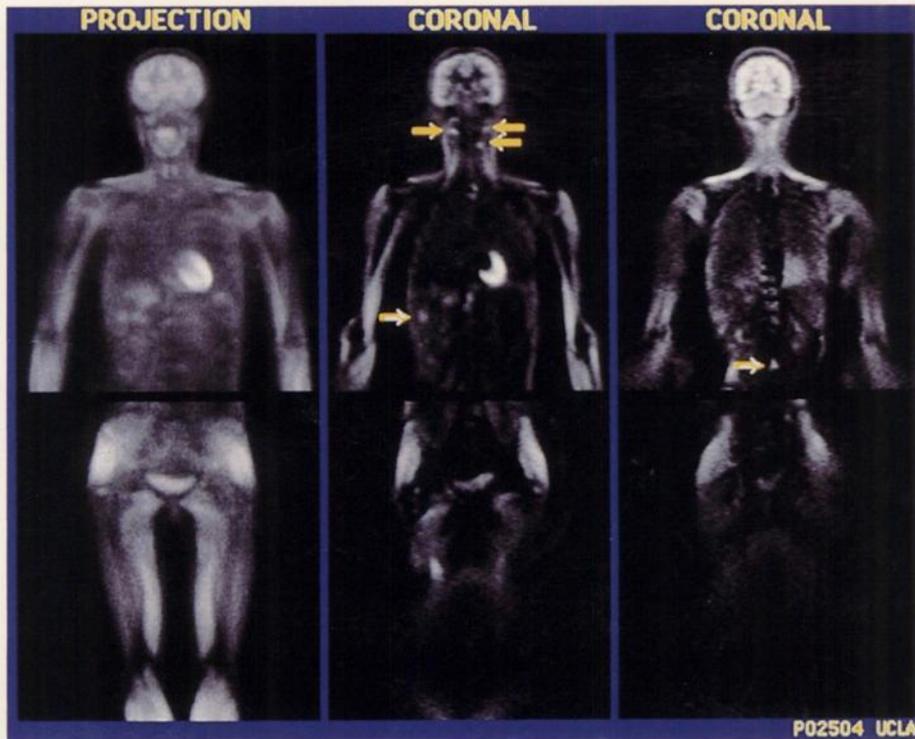

The Journal of Nuclear Medicine

JNM

Volume 32, Number 4 • April 1991



Clinical PET: Its Time Has Come

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

JNM

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The Clinical Role of Metabolic Imaging of the Heart by Positron Emission Tomography

Cardiac energy metabolism represents the link between oxygen delivery and contractile performance. Initially, these measurements provided estimates of global myocardial substrate extraction only. The introduction of metabolic tracer techniques made direct evaluation possible. Presently, PET combined with various metabolic radiopharmaceuticals allows for the unique evaluation of cardiac substrate metabolism.
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PET Perfusion Imaging and Nuclear Cardiology

Cardiac PET accurately identifies and assesses the severity of coronary artery stenosis and myocardial viability as a basis for choosing and following the effects of interventions, including risk factor management, pharmacologic agents, PTCA, thrombolysis, and bypass surgery.
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PET as a Clinical Tool in the Evaluation of Pituitary Adenomas

In over 400 examinations of patients with pituitary adenoma, PET's ability (with ¹¹C-methionine) to depict viable tumor tissue in contrast to fibrosis, cysts, and necrosis proved a valuable complement to efforts in diagnosing these tumors..... Page 610

Clinical Application of PET for the Evaluation of Brain Tumors

PET provides important information for the evaluation of brain tumor metabolism, blood flow, and blood-brain barrier permeability. Positron-emitting radionuclides can be incorporated into metabolically important

substrates, physiologically important compounds, and therapeutic agents so that many aspects of brain tumors can be characterized..... Page 616

The Applications of PET in Clinical Oncology

A summary of current clinical applications of PET in oncology is presented, with special attention to colorectal, lung, and intracranial neoplasms. A variety of radiopharmaceuticals currently included in clinical tumor imaging protocols are described..... Page 623

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Epilepsy

Methods for noninvasive localization of epileptogenic foci are becoming increasingly important. Detection of focal brain metabolic or flow abnormalities is now recognized as an essential step in presurgical patient evaluation. PET scanning, when used in concert with a total clinical evaluation, is a valuable tool. Metabolic PET studies also offer insights into the pathophysiologic mechanisms of epilepsy..... Page 651

Commentary: Hurdles to Technology Diffusion: What are Expectations for PET?

Regulatory and economic hurdles to the introduction and the diffusion of expensive new medical instrumentation have changed substantially over the past decade. PET is not an exception. The mechanics of these hurdles and their impact on the availability of PET are examined..... Page 660

Use of the Metabolic Tracer Carbon-11-Acetate for Evaluation of Regional Myocardial Perfusion

A good correlation was observed between the regional uptake of ¹¹C-acetate and perfusion determined with ¹³N-ammonia in 15 patients.
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Metabolic Activity in the Areas of New Fill-in After Thallium-201 Reinjection: Comparison with Positron Emission Tomography Using Fluorine-18-Deoxyglucose

Changes seen on stress/redistribution/reinjection thallium SPECT scans of 18 patients were compared with PET using [¹⁸F]FDG..... Page 673

Regional Wall Thickening of the Left Ventricle Evaluated by Gated Positron Emission Tomography in Relation to Myocardial Perfusion and Glucose Metabolism

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The Use of FDG-PET in the Detection and Management of Malignant Lymphoma: Correlation of Uptake with Prognosis

Twenty-one patients with untreated malignant lymphoma of the head and neck were evaluated with PET using [¹⁸F]FDG. In patients with poor prognosis, higher TCRs and glucose utilization rates were observed than in a patient with low-grade malignancy.
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Measurements of Glucose Phosphorylation with FDG and PET Are Not Affected by Dephosphorylation of FDG-6-Phosphate

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Estimation of Absorbed Doses in Humans Due to Intravenous Administration of Fluorine-18-Fluorodeoxyglucose in PET Studies

Time-activity curves obtained from dynamic PET scans were used to calculate cumulative activity by the MIRD method. *Page 699*

Radiation Dose to the Bladder Wall from 2-[¹⁸F]Fluoro-2-deoxy-D-glucose in Adult Humans

Radiation dose to the bladder wall from injected 2-[¹⁸F]FDG was estimated from data on 302 adult subjects using both a dynamic bladder model and the conventional MIRD model. *Page 707*

D2 Dopamine Receptor-Specific Measurement of Carbon-11-^{YM-09151-2} Binding in the Canine Brain by PET: Importance of Partial Volume Correction

After administering various doses of the ligand in nine experiments, regional uptake was followed by repeated PET scanning for up to 80 min. D2 dopamine receptor density (B_{max}) and affinity (K_d) in canine striatum were estimated by Scatchard analysis. *Page 713*

Regional Lung Water Measurements with PET: Accuracy, Sensitivity, Linearity, and Reproducibility

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Innovative Approach in the Diagnosis of Gliomatosis Cerebri Using Carbon-11-L-Methionine Positron Emission Tomography

Carbon-11-L-methionine accumulation in the diffusely infiltrative tumorous area defined the lesion extent more precisely than conventional x-ray computed tomography or magnetic resonance imaging. *Page 726*

Noninvasive Measurement of Lung Carbon-11-Serotonin Extraction in Man

Utilizing the double-indicator diffusion principle, a positron camera, ¹¹C-serotonin as the substrate, and ¹¹C-erythrocytes as the vascular

marker, a noninvasive technique to measure lung serotonin uptake in man was developed. *Page 729*

Parametric Images of Myocardial Metabolic Rate of Glucose Generated from Dynamic Cardiac PET and 2-[¹⁸F]Fluoro-2-deoxy-D-glucose Studies

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Cardiac Beta-Adrenergic Receptor Density Measured In Vivo Using PET, CGP 12177, and a Graphical Method

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