

招待講演

(1) A TECHNIQUE FOR DYNAMIC ISOTOPE FLOW STUDIES:

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In the search for a diagnostic methodology which is atraumatic and without morbidity and mortality, dynamic isotope studies or "motion" scanning is probably the procedure of choice in the diagnosis of, and in the delineation of the extent of, most diseases due to, or reflected by, the absence of vascular space; for example, delineating thrombotic or embolic phenomena involving the vasculature of the brain.

I shall then discuss the rationale for my particular methodology, the equipment utilized, and illustrate the technique with movies of some examples taken from patient studies.

(2) Internal Dosimetry

E. M. Smith univ. of Miami

(3) THE EVALUATION OF BRONCHOPULMONARY DISEASE WITH $^{133}\text{XENON}$ GAS AND A SCINTILLATION CAMERA

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Professor of Radiology

Director, Division of Nuclear Medicine

A scintillation (Anger) camera has been used to evaluate pulmonary function in more than 200 patients in our clinic. These patients have received $^{133}\text{xenon}$ by both intravenous injection and by inhalation. Conventional pulmonary function tests, including maximum breathing capacity, vital capacity and forced expiratory volume have been carried out on the majority of these patients at the same sitting.

The camera is fitted either with a high resolution or diverging type collimator and is directed toward the posterior thorax with the patient either seated or supine. At the initiation of the study, the patient is attached to a spirometer system but breathing room air. As the patient slowly inhales, 20 mc of $^{133}\text{xenon}$

in saline is administered intravenously as a bolus. The patient is instructed to hold his breath to determine the distribution of blood flow. The patient then exhales the radioactive gas into the spirometer system and continues to breathe to equilibrium for the ventilation portion of the study. This is followed by clearance of the radioactive gas from the patient. Serial scintiphotograms are obtained throughout the entire study. Data are also transmitted through our interface equipment onto high speed magnetic tape for computer processing. The computer is programmed to print out indices related to perfusion and ventilation and ventilation-perfusion ratio and clearance times for all regions of the lung which have been selected. As many as forty areas of the lung have been evaluated in some of our patient studies. Isointensity plots of the distribution of xenon in the lungs during the perfusion and ventilation studies are also obtained from the computer.

A summary of our clinical experience in these studies will be presented.

(4) LUNG SCINTIGRAPHY AND PULMONARY FUNCTION STUDIES IN OBSTRUCTIVE AIRWAYS DISEASE.

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In the management of obstructive airways disease it is important to distinguish emphysematous from bronchitic types because the latter are far more responsive to treatment. This paper is presented to demonstrate the capacity of radioaerosol inhalation scanning for making this separation. Eleven normal volunteers and 65 respiratory disease patients were studied by three types of lung scintigraphy - radioaerosol and radioxenon gas inhalation and perfusion scan procedures.