

## 外 人 講 演 III

### RECENT ADVANCES AND FUTURE TRENDS IN NUCLEAR MEDICINE

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In all likelihood, competing imaging modalities such as Ultrasound and Computerized Tomography will have a resolution advantage over scintigraphic images. As a result, Nuclear Medicine techniques should exploit the functional and physiological capabilities inherent in Nuclear Medicine imaging, or be able to provide a global frame of reference which may be important when combined with other competing imaging modalities which are largely tomographic. Nowhere is the functional and physiologic capability of Nuclear Medicine better exploited than in the field of cardiovascular Nuclear Medicine. At Yale University, we have evolved techniques of right ventricular first-pass ejection-fraction extending this field to the study of patients with lung disease. In addition, we have also used these techniques to study the effects of a variety of interventions, and will illustrate this concept by the use of ejection-fraction monitoring to discover which patients are at risk for doxorubicin (adriamycin) cardiac toxicity.

The ability of nuclear techniques to obtain a rapid effective global view of an organ may make them the most important initial screening test. In our experience, liver imaging remains the best first test for patients with suspected morphologic lesions of the liver. We believe, however, that close coordination with ultrasound is indicated. We will illustrate these concepts from data recently gathered in a series of 100 prospective cases of equivocal hepatic scintigraphs with follow up ultrasound.

The development of new radiopharmaceuticals is crucial to the future of Nuclear Medicine, and will be illustrated by the potential uses of labeled blood cells such as indium-111-oxine-labeled leukocytes.

Finally, the potential of newer imaging devices and their ultimate role in the future of Nuclear Medicine will be speculated about. In particular, multiplane rectilinear emission tomography, and positron tomography, and gamma singles tomography will be discussed.