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And, about 30-40% of liver cirrhosis could be diagnosed by radionuclide imaging alone. However, ultrasound and computed tomography could provide different informations, such as vascular changes associated with the extent of liver disease. Moreover, computed tomography could diagnose the moderate and severe changes of fatty liver or hemosiderosis accurately.

In the evaluation of cholestasis, hepatobiliary imaging was the least accurate. However, if ultrasound or computed tomography showed no evidence of obstruction, Tc-99m IDA study could separate patients with totally obstructed biliary flow, who require additional testing to define the correct therapy, from those with patent biliary flow whom medical management was indicated initially.

In the evaluation of spleen disease, radionuclide imaging was also more useful because of the evaluation of functional as well as anatomical situations of spleen.

The future of nuclear medicine in body imaging would be a radionuclide tomography. In the deep seated lesion, the resolution of radionuclide tomographic camera or scanner was much better than that of conventional high resolution gamma camera.

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NUCLEAR CARDIOLOGY: 3-DIMENSIONAL CARDIAC IMAGING BY RADIONUCLIDES. Y. Yonekura and Y. Ishii. Dept. of Radiology and Nuclear Medicine, Kyoto University Medical School, Kyoto.

Recently, the development of nuclear cardiology has succeeded in visualizing beating cardiac images utilizing a scintillation camera and a minicomputer. Although many useful parameters concerning cardiac performance are obtained through these images, these 2-dimensional images have some limitations. Then, we developed new methods to reconstruct 3-dimensional cardiac images. The purpose of present study is to demonstrate these 3-dimensional images as ECG gated moving images.

3-dimensional reconstruction of the left ventricular cavity (LV) from bidirectional multigated LV images: ECG gated LV images were obtained in RAO 30° and in LAO 30° simultaneously utilizing a bidirectional collimator by first-pass method. After detecting boundaries of LV on the consecutive frames of the ECG gated images manually, 3-dimensional image was reconstructed, assuming it as an ellipsoid.

Myocardial tomographic imaging by 7 pinhole collimator: Myocardial tomographic scintigraphy not only for static imaging but also for ECG gated imaging was accomplished using a 7 pinhole collimator, following the conventional Tl-201 myocardial perfusion imaging with or without exercise loading. 6 frame per cardiac cycle imaging was accomplished during 500 cardiac cycles.

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Each frame is then processed individually into 10 tomographic images, and these 6 frames of a cardiac cycle were interpolated to give 12 frames within a cycle in each of the 10 tomographic depth. The tomographic imaging of ECG gated cardiac pool was also performed using Tc-99m in vivo labeled red blood cells in the same position as the myocardial perfusion study to be compared.

ECG gated emission tomography of cardiac pool: Single photon emission tomography was reconstructed from multigated cardiac pool images (6 frames within a cardiac cycle) using a scintillation camera. Each image of a cardiac cycle was obtained during 100 cardiac cycles, and 36 different angle images around the chest were obtained by rotating a patient in a sitting position as the original data to be processed.

We can get many informations from these 3-dimensional cardiac imaging, and it enables us to recognize the cardiac contraction visually. Moreover, ECG gated myocardial tomographic imaging has succeeded in visualizing the myocardial perfusion and the wall motion simultaneously, which improved the detectability of the small ischemia compared with the conventional myocardial perfusion imaging.

To accomplish the complete 3-dimensional quantification, positron emission tomography should be neccessary, hoever, these image reconstructions also give us many useful informations concerning 3-dimensional radionuclide distribution.

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(6) KIDNEY AND UROGENITAL DISEASES. M.MIKI. JIKEI UNIVERSITY SCHOOL OF MEDICINE. TOKYO.

The proliferation of imaging modalities has resulted in new and often overlapping approaches to the evaluation of renal disease. So a logical and systematic approach to renal problems is important for the best patients care at the least expense.

Flow charts that describe an approach to unilateral abdominal mass are proposed by way of example. IVP should be performed first. It provides enough information to decide whether the mass is intrarenal or extrarenal. Radioisotopic imaging can provide almost same information. Especially in the allergic patient and in patients with renal failure, renal scans offer an important alternative to IVP for detecting structural disease. Functional measurements by renal imaging complement the high structural resolution provided by roentgenographic and ultrasound procedures. Ultrasound should be performed to determine whether the mass is cystic or solid. If ultrasonography or CT or both are not technically adequate or demonstrate questionable findings, a more aggressive procedure such as arteriography or venography are necessary. It is fact that widespread use of grey-scale ultrasonography and CT have reduced the need for renal angiography. But a normal ultrasonogram or CT scan does not obviate the need for angiography in a patient with clinical suspicion of renal tumor.