

IS-10 Comparison of ^{18}F -FMT with ^{18}F -FDG, ^{11}C -Methionine

and $^{99\text{m}}\text{Tc}$ -Tetrofosmin in nude mice bearing colorectal carcinoma
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Biodistribution of ^{18}F -labelled alpha methyl tyrosine (FMT) was compared with ^{18}F -FDG, ^{11}C -Methionine and $^{99\text{m}}\text{Tc}$ -Tetrofosmin in colorectal carcinoma (LS-180) tumors in nude mice. One hour biodistribution data showed high tumor uptake of labelled FMT, FDG and Methionine. Tumor-to-blood ratio for labelled FMT, FDG, Methionine and Tetrofosmin in LS-180 tumors were 5.45-2.63, 2.16-0.30, 8.69-5.96 and 7.36-5.48, respectively. Tumor-to-normal organ ratio for labelled FMT was more than 2.0 in all organs except kidney, but for FDG around 1.0 and Tetrofosmin was lower. Similar biodistribution pattern was noted with FMT and Methionine. These results demonstrated better tumor visualization with FMT than FDG, Methionine and Tetrofosmin in animal tumor models.

IS-11 Tc-99m-MIBI SCINTIGRAPHY IN PATIENTS WITH MEN TYPE-1

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The aim of this study was to evaluate parathyroid scan using Tc-99m-MIBI (MIBI) in patients with multiple endocrine neoplasia type 1 (MEN-1). Ten patients associated with hyperparathyroidism were investigated. CT and MRI showed one carcinoid tumor of the lung, 5 pancreatic tumors and 4 pituitary tumors. MIBI scintigraphy was performed prior to surgical exploration of the neck. Cervico-thoracic and abdominal planar images were performed at 10 min and 2 hr post injection. MIBI SPECT of the head was performed in 1 of 4 patients with pituitary adenoma. On surgery 35 parathyroid glands were removed. MIBI imaging showed focal areas of increased uptake in at least one parathyroid gland in all patients and depicted 23 of 35 hyperplastic glands and the one carcinoid tumor of the lung. MIBI SPECT of the head showed uptake in the pituitary adenoma. However, only 1 of the 5 known pancreatic tumors was identified by MIBI scintigraphy because of physiological gastrointestinal excretion. Results of the present study show that MIBI scintigraphy has the potential to localize parathyroid and nonparathyroid endocrine tumors in patients with MEN-1.

IS-12 Liver Function using Tc-99m GSA Liver

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Tc-99m GSA is a ligand that binds specifically to asialoglycoprotein receptors in hepatocytes. We performed liver dynamic SPECT using Tc-99m GSA in 25 patients who have liver diseases. In each patients, we studied hepatic function tests at the same time. We devised an original predictive index by combining the K value (K) with liver volume (V) and effective liver volume (Fv) which were measured by liver dynamic SPECT.

The clinical stage of disease, based on the General Rules for the Clinical and Pathological Staging of Primary Liver Cancer, was stage I in 13 patients and stage II in 12 patients. Using K, Fv, V, we analyzed the correlations between the parameters and the results of liver function test, and also the correlation between the parameters and the grade in severity of liver disease. K showed good correlation with the results of liver function tests. Further, K was more sensitive to the grade in severity of liver disease than Fv and V. In conclusion, liver dynamic SPECT using Tc-99m GSA may be said to provide a novel method for the evaluation of hepatic function reserve.

IS-13 INFLUENCE FACTORS OF QUANTITATIVE MEASUREMENT WITH Tc-99m-MAG3 SCINTIGRAPHY.

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Accurate measurement of renal uptake rate (RUR) is needed for calculating ERPF in camera-based techniques with Tc-99m-MAG3 scintigraphy. In this paper, we evaluated the influences of Tc-99m linear attenuation coefficient of camera system (μ) and renal depth correction in measuring RUR. The μ of STARCAM 3000XR /T was determined 0.1385 based on phantom studies. The mean value of RUR calculated from the μ (0.1385) was underestimated 11% of that from Gate's formula(μ ;0.153) in volunteer group. If the value of μ was set at 0.110, the calculated RUR was under-estimated 30% of that from Gate's formula. Concerning renal depth correction, the value of RUR from Tønnesen's and Raynaud's formula showed 20-30% underestimation of that from the formula by X-ray CT measurement. While, the value of RUR from our proposal formula showed only 8% underestimation of that from the formula by X-ray CT. As μ and renal depth correction have a lot of influence, accurate value of μ and adequate formula for renal depth correction should be determined in measuring RUR.