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EVALUATION OF POST-OPERATIVE RESIDUAL LIVER VOLUME AND FUNCTION BEFORE OPERATION BY SPECT. Y.Shiire,J.Taki,T.Aburano, N.Tonami,K.Hisada and M.Matsudaira. Kanazawa University, Kanazawa.

It is believed that the liver has large ability of compensation and recovery, and that the liver with normal function is possible to be resected approximately 80% of whole liver volume. But the functional reserve of damaged liver is indivisually in a various range. So we used the liver phantom and estimated an optimum cut off level (40%) and calculated residual liver volume, % residual liver volume (residual volume/total volume) and ICG R max of residual liver. Then we compared these values with post-operative clinical course, and considered whether evaluation of residual liver volume and function before operation by SPECT is useful for decision of resection range and prediction of post-operative clinical course.

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New functional liver imaging using 2-deoxy-2-fluoro-D-galactose (F-18 FDGal);K. Yamaguchi, T.Matsuzawa, H.Fukuda, K.Ishiwata, M.Tada, Y.Abe, M.Itoh, T.Fujiwara, and T.Ido.Tohoku university,Ins.cancer & tbc.-,and CYRIC.

Liver imaging was done using F-18 FDGal with ECAT, and liver accumulation of the liver cirrhosis patients is lower than that of normal volunteer.<methods and materials>.1. Experimental acute liver damaged rats were prepared by intra peritoneal injection of CCl4. Experimental chronic liver damaged rats were induced by oral intake of thioacetamide solution (0.03%). Experiment on F-18 FDGal tissue distribution was performed for these damaged liver rats, and their radioautogram were also made. 2. Clinical reseach was performed on 3 liver cirrhosis patient, and 2 normal controls. After injection of F-18 FDGal,ECAT imaging was performed every 5 minutes for a period of 40 minutes. <results>The accumulation of liver in the acute liver damaged group is shown to be lower than that in the normal control group. Liver accumulation of F-18 FDGal in the chronic group was found to be lower than in normal group,5 months after starting oral intake of thioacetamide. In the acute liver damaged rat, the autoradiogram image is patched, and in the chronic liver damaged rat, the image is nodular. The images of normal volunteers are monotonus, and that of liver cirrhosis is nodular.The accumulation of F-18 FDGal in liver cirrhosis patient group is lower than that in the normal group.

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Evaluation of a new method for examination of hepatic function by Tc-99mneoglycoprotein clearance in rats with hepatic disorders. H.Hazama, S.Kawa, N.Kubota, M.Kojima, T.Murase, H.Okuno, Y.Naito, Y.Shiozaki, Y.Tanaka, M.Samejima. Kansai Medical Collage.

Asialo glycoprotein (ASGP) is known to be taken up and metabolized by the liver via the receptor (HBP) that exists specifically in the hepatocytes. The clearance of Tc-99m neoglycoprotein (NGP), which has been demonstrated to be homologous to ASGP, was measured in rats with galactosamineinduced acute hepatopathy and those with CCl -induced chronic hepatopathy, and was compared with the severity of the hepatic disorder. In the animals with acute hepatopathy, the reduction in the clearance correlated significantly with the decrease in the serum E/T ratio and the elevations of the serum transaminase levels. In those with chronic hepatopathy, the decrease in the clearance occurred with the development of hepatic fibrosis and correlated significantly with the hepatic hydroxy proline level. As for the relation between the clearance and the HBP level, the values of clearance were highly consistent with the decrease in HBP in the animals with acute hepatopathy, but they showed two phase change with the decrease in HBP in those with chronic hepatopathy, and decreased rapidly when the HBP level was lese than 50% of the normal valve. Our results suggested that the measurement of the Tc-99mNGP clearance accurately reflects the severity of liver disorder, and is a useful technigue for evaluation of hepatic function.

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ESTIMATION OF HEPATIC FUNCTIONAL RESERVE BY RADIOLABELED LIGAND "Tc-99m GALACTOSYL-NEOGLYCOALBUMIN"--PRECLINICAL AND CLINICAL STUDIES--. M.Kudo,A.Todo,H.Ito,M.Hino,K. Ikekubo,K.Yamamoto,Y.Yonekura,K.Torizuka, K.Horiuchi,A.Yokoyama,D.R.Vera and R.C. Stadalnik. Kobe General Hospital,Kobe;Kyoto University,Kyoto;University of California, Davis,USA.

Tc-99m galactosyl-neoglycoalbumin(Tc-NGA) is a receptor binding radiolabeled ligand to hepatic binding protein,a receptor which resides at the plasma membrane of hepatocyte . NGA was prepared by covalently coupling IME-thiogalactose to normal human albumin at University of California,Davis. The electrolytic method of Benjamin was used to label NGA with technetium-99m. It produced Tc-NGA labels with yields also in excess of 90%. Quality control by high performance liquid chromatography showed the technetium label was stable for at least 3 hr. Biodistribution studies were performed using healthy rats(Wister,Male). The fact that liver is an only target organ of Tc-NGA was demonstrated by comparing biodistribution studies of Tc-HSA,Tc-phytate and Tc-PMT. Nine human studies(2:normal volunteer,1:chronic active hepatitis,6:liver cirrhosis) were performed. Liver and blood time activity curves of humans were sensitive to a variety of hepatic disease states and suggested this receptor-binding radiopharmaceutical has a greate potential to provide a noninvasive method for the estimation of hepatic functional reserve.