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ANALYSIS OF THE STRUCTURE OF ROC-CURVE REPRESENTING THE SOL-DETECTABILITY.

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The purpose of this study is to evaluate the clinical efficacy of liver SPECT (single photon emission computed tomography). The two examinations were performed in 76 cases with SOL (space occupying lesion) and the 58 normal cases. The results of the image reading by the planar image only (PS) and that of the image reading by the combination of PS and SPECT (PS+SPECT) were analyzed by ROC analysis. The ROC-curves showed that SPECT appears to reduce the number of results which were equivocal by the image reading of PS only. The detectability of SPECT for SOL in the left lobe of liver was less than that of PS without statistical significance. However, the performance of SPECT for SOL in the right lobe of liver was significantly better than that of PS.

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TL-201 PER RECTAL ADMINISTRATION: OBSERVATION OF PORTAL-SYSTEMIC CIRCULATION AFTER SCLEROSING THERAPY OF ESOPHAGEAL VARICES AND SPLENIC ARTERY EMBOLIZATION THERAPY. N.Tonami, K.Nakajima, N.Watanabe, K.Yokoyama, Y.Seki, H.Ishida, J.Taki, S.Kawabata, Y.Shiire, N.Shuke, M.Seto, T.Takayama and K.Hisada. Dept.of Nucl.Med., Kanazawa University.

The heart to liver ratio (H/L) obtained by Tl-201 per-rectal administration is a quite sensitive and reliable index for evaluating portal-to-systemic circulation. We employed this method to investigate the changes of portal systemic circulation after sclerosing therapy of esophageal varices and splenic artery embolization therapy. Each patient received an enema one or two hours before the Tl-201 examination. A dose of 1 mCi of Tl-201 chloride was given through the tube inserted 20 cm into the upper rectum. H/L and liver scintigram were obtained 60 min after Tl administration. The results are as follows:

1. In cases showing highly decreased H/L after sclerosing therapy, portal-systemic shunting greatly depended on esophageal varices. These cases have a high risk of recurrence of esophageal varices.
2. In cases showing little change or increase in H/L, the presence of other shunting routes can be expected.
3. Reduction of splenic blood flow in initial treatment decreased H/L.
4. This method seems to be useful in evaluating the pathophysiological changes of portal circulation after treatment.

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Evaluation of a new method for examination of liver function by Tc-99m-neoglycoprotein clearance: Analysis of changes in its blood concentration. S.Kawa, H.Hazama, M.Kojima, Y.Nishiyama, M.Nakazawa, T.Hasegawa, Y.Kubota, T.Sawamura, Y.Samejima, Y.Tashiro, Y.Tanaka. Kansai Medical University, Osaka. H.Washino. Nihon Medi-Physics Co., Ltd.

Tc-99m-neoglycoprotein (NGP), which is homologous to asialo glycoprotein specifically taken up by the hepatocytes, was injected into the circulation of the rat to analyze the changes in its blood concentration and the relationship with the hepatic binding protein (HBP) level. The kinetics of Tc-99m-NGP was considered in three hypothetical compartments, namely blood-borne circulation, metabolism in the liver, and release from the liver as an inactivated form. The actual measured curve was analyzed according to hypothetical equations, cardiac clearance  $C(t) = C_0(e^{-K_d t} + C_2 e^{-K_u t})$  and hepatic clearance  $C(t) = C_0(e^{-K_d t} - e^{-K_u t})$ , in which  $K_d$  is the disappearance rate of the first cardiac phase,  $K_u$  is the uptake by the liver.  $K_d$ ,  $K_u$ , as well as the peak time of the hepatic uptake ( $K_{max}$ ) were used as parameters for the analysis of Tc-99m-NGP clearance. The hypothetical clearance curves of the heart and the liver were highly correlated with the actual measured curves, suggesting the validity of the hypothesis.  $K_d$ ,  $K_u$ , and  $K_{max}$  accurately reflected the changes in the HBP level, and are considered to be useful parameters for evaluation of the severity of hepatic disorders.

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TREATMENT OF HEPATOMA WITH INTRAARTERIAL INFUSION OF I-131-LIPIODOL.

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Lipiodol, iodized oil, has the embolic property to selectively retain in the tumor vessels of hepatoma, when infused into the hepatic artery. We initiated the internal radiotherapy by transcatheter arterial infusion of I-131-Lipiodol, based on the results of the diagnostic dose study. A therapeutic dose of I-131-Lipiodol (7.6 - 18.5 mCi/2.0 - 5.0 ml) was infused into the hepatic artery or segmental artery supplying the tumor in six patients with hepatoma respectively. The estimated tumor dose ranged from 39 to 190 Gy with far smaller doses to the adjacent hepatic tissue and lungs. High levels of serum AFP decreased to 6 - 60% of the pretreatment levels in 5 patients within 6 weeks. The tumor reduced to 22 - 64% of the product of its longitudinal and transverse diameters on the initial CT image in all patients respectively within 6 months. A pathological examination of a hepatoma in a patient who died of severe liver cirrhosis revealed that it changed to a necrotic mass with no cancer cells. So far no serious side effects were observed. We conclude that this internal radiotherapy may be one of the promising methods to treat hepatoma with hypervascularity and tumor stain.