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SEPARATE EVALUATION OF EFFECTIVE LIVER BLOOD FLOW AND LIVER FUNCTION BY THE USE OF Tc-99m NEOGLYCOPROTEIN CLEARANCE.

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The ICG clearance by the liver shows Michaelis-Menten type pattern,being determined by liver blood flow when the injected dose is small and by intrinstic liver clearance when the dose is large. Since the uptake of Tc-99m Neoglycoprotein (Galactose Human Serum Albumin;GHSA)by the liver is mediated by asialoglycoprotein receptor on the hepatocyte membrane,this uptake can be understood similary to that of ICG from the pharmacokinetics of the agent. (1)In portal vein incompletely ligated rats,clearance of small dose GHSA was significantly correlated with liver blood flow measured by H_2 gas clearance method(r=0.975).(2)In partially hepatectomized rats,KICG and liver weight increased in parallel during regeneration by 6 days. Clearance of large dose GHSA showed no notable increase for 3 days,but increase linearly after 4 or more days paralleled the activity of asialoglycoprotein receptor or microsomal enzyme P-450.Estimation of Tc-99m GHSA clearance was considered to be a useful method for quantitating liver blood flow and hepatocellular function separately.

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EVALUATION OF ASIALOGLYCOPROTEIN RECEPTOR-BINDING,SYNTHETIC RADIOLABELED GLYCOPROTEIN IN ESTIMATING HEPATIC FUNCTIONAL RESERVE.

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Asialoglycoprotein receptor(ASGPR) resides at the cell surface of hepatocytes, where it recognizes and binds galactose-terminated glycoproteins.

Tc-99m-Galactosyl-Neoglycoalbumin(Tc-99m-NGA) is a newly developed analog ligand of galactose-terminated glycoprotein. We evaluated clinical utility of Tc-99m-NGA in estimating hepatic functional reserve in 23 clinical cases.

NGA Receptor Index,which is given by the radioactivity of the liver divided by that of the liver plus heart at 30 min after intravenous injection of Tc-99m-NGA,was decided to be a preliminary index of liver function provided by NGA studies in this report. A positive correlation was observed between NGA Receptor Index and Cholinesterase,Hepaplastin test,Thrombotest,Prothrombin time and K-ICG. A negative correlation was observed between NGA Receptor Index and ICG R_{15} and Child-Turcotte Criteria Score.

Analysis of the NGA dynamic curve is a promising method for the estimation of the hepatic functional reserve,as the dynamic curves correlate to the Asialoglycoprotein receptor concentration.

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ANTI-TUMOR EFECT OF 131ILIPIODOL(Lp) ON VX2 CARCINOMA IN RABBITS.

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The investigation was carried out on 11 white adult rabbits, each weighting 2.0- 2.5 Kg. VX2 carcinoma was transplanted into subcapsular region of the liver. Tumor become visible about 2 cm in diameter after the inoculation on 2weeks. 131ILp was administered slowly throgh celiac artery to a total of 11 rabbits grouped into three as follows. Group A: 5 ml of normal saline; Group B: Lp 0.4-0.8 ml; Group C 131ILp 2.0-4.0mCi(0.4 -0.8 ml of Lp). Change in tumor size was observed after treatment, comparison of tumor size treated with 131ILp was made. At 14 day after injection, the liver was taken out, softe Xray was taken and after decay of 131I, histological examination was performed. In group A and B, there was no evidence of decrease of tumor size or cure in any rabbits. In group C , tumor become soft and decrease in size, and histological examination made using hematoxylon and eosin stain showed complete necrosis in hepatic tumor of those 5 rabbits except for small part of central arterial region.

Those results obtained in our study, revealed to be effective approach to selected cancer therapy.

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TREATMENT OF HEPATOCELLULAR CARCINOMA BY HEPATIC ARTERIAL INFUSION OF I-131-LABELED LIPIODOL.

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Lipiodol has been employed to detect hepatocellular carcinoma (HCC) since it remains selectively in the hypervascular area of HCC. I-131-labeled lipiodol was infused through the hepatic artery as a new treatment for HCC.

Thirteen cases, 5 with solitary tumor, 8 with multiple tumors, were treated with this therapy. An adequate dose of I-131-lipiodol, 5-30mCi, was infused through the hepatic artery to acquire 70Gy for tumor tissue. The patients were followed by CT scans, US, serum levels of AFP.

The decrease in tumor sizes was found in all cases, the diameter of tumors decreased to less than 30% in many tumors, and serum AFP levels also decreased remarkably. The case with solitary tumor was operated later and histological examination of the tumor showed complete necrosis. Since lipiodol was selectively accumulated around HCC, side effects of radiation was negligible. This new method is very useful in the treatment of HCC especially when applied to the patients who are unable to receive operation or transcatheter arterial embolization.