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IS RADIONUCLIDE LIVER SCAN ALREADY UNNECESSARY FOR DIAGNOSIS OF HEPATOCELLULAR CARCINOMA? M.Kudo,Y.Ibuki,K.Fujimi,S.Tomita, H.Komori,A.Orino,A.Todo,Y.Saiki,H.Yamaguchi, H.Ito,M.Hino and K.Ikekubo. Kobe General Hospital, Kobe.

Rapid progress of several imaging modalities,especially ultrasound(US),has simplified the diagnosis of hepatocellular carcinomas(HCCs). The purpose of this study is to clarify whether or not RN is truly necessary for the diagnosis of HCCs.

From 1981 to 1985,RN was performed on 383 cases out of a total of 486 of which all had HCCs. These 383 cases were studied and graded into 3 categories according to the usefulness of RN. These categories are 1)HIGHLY USEFUL,2)MODERATELY USEFUL and 3)NOT USEFUL. The results, using single photon emission computed tomography,were also evaluated separately.

Radionuclide liver scan,including SPECT, is definitely essential for the diagnosis of 2%(6/383)of HCCs[HIGHLY USEFUL GROUP]. At the same time,in 9%(25/383) of HCCs radionuclide liver scan is considered to be very important and necessary for the diagnosis of the HCCs[MODERATELY USEFUL GROUP],especially for the macroscopically infiltrative type of HCCs and the HCCs located in the subdiaphragmatic portion of the liver.

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ANATOMICAL DEFECT FOR LIVER SPECT. T.Suzuki, K.Abe, K.Ike, M.Hirose, Leu-Ming HWANG, D. Kakizaki, H.Kotake, K.Mugishima, N.Kanesaka, S.Akata, J.Ishida, Y.Wakabayashi, S.Inoue, M.Yoshimura, S.Amino and H.Murayama. Department of Radiology, Tokyo Medical College, Tokyo.

Liver SPECT contributes to improve the accuracy of diagnosis of SOL because it allows from 3 directions, transverse (T), coronal (C) and sagittal (S). But, it also makes reading of the picture difficult in many cases as it gives a clearer picture of anatomical defects which are difficult to differentiate from SOL. In this study, we performed retrospective exams in 1,506 patients who were given liver SPECT during 3 years from 1983 to 1985 for the incidence of defects in the following parts: porta hepatis, gall bladder (GB) fossa, kidney, IVC, ligamentum teres hepatis and ribs.

More than 80% of the patients were found to have defects in the porta hepatis for all T, C and S directions. The incident of defects in the ligamentum teres hepatis was more than 80% for T and C directions. The same in the GB fossa was 75% for all 3 directions, T, C and S. The defects in the kidney showed the most frequency for S direction. The incident of defects in the IVC was 70% for T direction. The same in the ribs was close to 60% for S direction.

It is expected to be useful to know the frequency of anatomical defects that often appear for each direction to improve diagnostic capacity and decrease false-positive in the liver SPECT.

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APPLICATION OF FACTOR ANALYSIS WITH RADIONUCLIDE ANGIOGRAPHY TO DIAGNOSE ON HEPATOCELLULAR CARCINOMA. S.Shiomi,N.Ikeoka, T.Kanno,S.Harihara,T.Kuroki,K.Kobayashi*, Y.Shimonishi,H.Ochi,Y.Onoyama**andT.Monna***
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Factor analysis can automatically provide specific factors which correspond to various dynamic structures in a given organ. We tried to diagnose hepatocellular carcinoma using factor analysis algorithms.

After a volus injection of 10 mCi of Tc-99m phytate,scintigrams were obtained sequentially for up to one minute using gamma camera and data system.

Factor analysis was made on sequences of 40 images taken with a dulation of one second after radionuclide bolus was arrived into hepatic artery(according to the method of Di Paola).

Four-factors analysis was obtained,each factor respectively describes the lung,the heart,the hepatic artery and the portal vein. Hepatocellular carcinoma was contained in the hepatic artery phase.

The results of the analysis could show that the volume of arterial blood flow into hepatocellular carcinoma was decreased with transcatheter arterial embolization therapy.

Our studies show that factor analysis is useful method to diagnose and follow up of hepatocellular carcinoma.

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FACTOR ANALYSIS IN INTRAHEPATIC HEMODYNAMIC STUDIES WITH FIRST PASS RADIONUCLIDE ANGIOGRAPHY

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Factor analysis can automatically provide specific factors which correspond to various dynamic structures in a given organ(Di Paola and others, 1975). Using factor analysis algorithms, we had shown result of quantitative assesment and images of portal blood flow to liver parentima in the last conference. This time, we studied effect of the length of analitical section in deta and number of factor.

Four patients were studied, tow case of partial intrahepatic portal vein obstruction due to hepatoceller carcinoma, one case of main portal obstructin with portal vein thrombosis due to liver cirrhosis and one normal control (extra hepatic hemangioma).

Our studies shows that factor analysis can be imaging to component of portal blood flow in the liver parnchima, evenwhen it has partial abnormarity. And good result was induced that first image until first image of recirculation in hepatic lesion had used. We could not solved an issue about factor number however six or four factor analysis is useful for liver dynamic study.