

J. Liver and Bile Duct

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AUTOMATED COMPUTERIZED PATTERN CHARACTERIZATION OF THE LIVER SCINTIGRAM. M. Matsuo Department of Radiology, Hyogo Prefectural Nishinomiya Hospital. S. Fujii and Y. Kaneda Faculty of Technology, Kobe University. R. Ohnishi, K. Sugimura, K. Nabeshima, C. Sugimura, I. Narabayashi and S. Nishiyama Department of Radiology, Kobe University Hospital.

The computer processing algorithm for extracting the hepatic and splenic contour in the liver scintigram of Tc-99m-phytate, has been developed by our study group. Among 171 cases, which are tested, 164 cases (96%) of the hepatic and the splenic contour are correctly extracted. And the extracted contour is satisfactory for calculating the characteristic index for the differential diagnosis of diffuse liver diseases. In addition to this algorithm, we have also developed the program for extracting contour of the space occupying lesion. 10 cases with no space occupying lesion are tested by the program and the computer processing successfully showed that all of them have no space occupying lesion. 10 cases with space occupying lesion are also tested and 7 of them are successfully processed.

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AN ATTEMPT AT AUTOMATIC COMPUTER DIAGNOSIS OF HEPATIC DISEASES. A. Asahara, Y. Honma, Y. Oasa, S. Tacibana and H. Ueda Dept. of radiology, Central Hospital of J.N.R., S. Wakabayashi Shimazu Co.

In this report we studied a method for conducting a computerized automatic analysis of information relating to the non-uniformity of the intrahepatic RI distribution and expression of SOL which had not been possible at the time of previous report.

Using one or several pixels as a unit, the radiation rate of several mutually approaching pixels was corrected by the radiation gradient based on the thickness of the liver and an image was made of the scatter pattern. Evaluation was based on the presence or absence of a scatter pattern above a certain fixed ratio and at the same time this area of pattern was delineated. Based on this it was possible to diagnose non-uniformity in the hepatic blood flow distribution. The area in which the partial radiation distribution gradient is concentrated and the area which differs greatly from this indicate the presence of SOL and we studied a method for automatically delineating and indicating such area.

Experimentally it was possible to evaluate SOLs of 2 cm diameter but judgment is difficult if this area appears near the border of the image and judgment of the SOL is also difficult in the intralobular region or the portal fissure of the liver.

1604

JUDGMENT OF SPLENOMEGALY IN LIVER SCINTIGRAM INTERPRETATION. K.UNO, T.HOTTA, N. ARIMIZU* G.UCHIYAMA** T.MATSUMOTO and T. IINUMA***. *Department of Radiology, Chiba University Hospital. **Dept. of Radiol. Yamanashi University School of Med.***National Institute of Radiological Sciences. Chiba and Yamanashi.

Clinical trials on "how observers interpret liver scintigrams" were performed by members of the efficacy I committee of Japan radioisotope association. Liver scintigrams of 406 cases from 8 hospitals were interpreted by 11 nuclear medicine specialists. All cases were proved by autopsy, surgery, biopsy, angiography, etc. Of these 34 cases had proved of having highly enlarged spleens, 64 moderately enlarged and 217 not enlarged. Most of splenomegaly were accompanied by the liver cirrhosis. Analysis of how splenomegaly has influence on interpretation of scintigrams with liver cirrhosis was made using receiver operating characteristic (ROC) curves. While splenomegaly alone did not increase the true positive rate of interpreting liver cirrhosis. The addition of information on bone marrow density to splenomegaly did increase the true positive rate. The interpreted spleen sizes in the anterior view of liver scintigram, were analysed using the ratio of spleen length (long axis) to body width. Interpreter tended to judge splenomegaly when the ratio was more than 40%.

1606

DETECTION OF HEPATOCELLULAR CARCINOMA K.Yatomi, H.Orii, K.Suzuki & C.Ishibashi Tokyo Metropol. Ebara, Komagome Hospital and Inst. Med. Sci.

From April 1975 through December 1980 (five years and eight months) 86 cases of hepatocellular carcinomas was diagnosed at Komagome Hospital. Of 68 males and 16 females, almost all patients had the disease advanced too far to inoperable, except 8 patients to which operation was performed. The mean diameter of the tumor is 6.2 cm. Thirty-nine cases had metastasized at the time of final diagnosis. The mean survival of non-operated group was only 122 days. These results indicate that the early diagnosis of this cancer is not yet attained.

We studied these 86 cases with respect to AFP values, scintigraphic findings and other clinical data to investigate what kind of combination of clinical investigation and tests should be performed at early stage, and also, what kind of check will be most necessary to the "high risk" group patients.

We also collected from 79 hospitals the methods being performed for the detection of hepatocellular carcinoma and, how the smallest cancer was detected has been summarized.