

I. Liver

Use of Computer in Scintigraphic Interpretation of Liver Disease

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Five hundred liver scintigrams were taken in our department and 150 cases of these were verified by autopsy, surgical operation, needle biopsy and laparoscopy.

For data processing, (1) standard value was determined by the controlled cases and (2) probability of abnormal scintigraphic finding were evaluated by statistical method on 150 proved cases. Among the informations of liver scintigram, area, left lobe/right lobe ratio, patchy pattern and mottled appearance of the scintigraphic findings, degree of splenic visualization, bone marrow visualization and K (^{198}Au -colloid disappearance rate constant in blood) were chosen for this study. In addition to these scintigraphic informations, data from liver function tests (serum protein, A/G ratio, icterus index, ZTT, TTT, CCLF, SGOT, SGPT, alkaline phosphatase, total cholesterol etc.) and palpability of liver were compared.

The digital computer processing by likelihood method was designed for differential diagnosis of liver disease. Computer diagnosis by likelihood method was tried as follows. After the probability and standard value of information in each disease were memorized in digital computer, data of each case were typed in computer. When the computation was finished, the likelihood of each disease was typed out. The answer of the most likelihood was chosen as a probable diagnosis.

Correct answer was obtained in 95% in the cases of normal, 50% in hepatitis, 71% in cirrhosis, 65% in hepatoma, 78% in metastatic malignant tumor, 80% in extra-hepatic obstructive jaundice.

The authors believe that the likelihood by computer technique will be able to suggest an accuracy of diagnosis.

Liver Scintigraphy Using $^{99\text{m}}\text{Tc}$ -Sulfur Colloid

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$^{99\text{m}}\text{Tc}$ - O_4 was eluted by saline from Ultratechnicow. $^{99\text{m}}\text{Tc}$ -sulfur colloid was prepared in sterilized condition and injected intravenously in 194 cases, including 18 primary liver cancer, 67 metastatic liver cancer, 18 liver cirrhosis, 33 suspected liver cirrhosis,

16 hepatitis, 2 liver abscess, 4 obstructive jaundice, one of each liver cyst, reticulosis, chronic leukemia, reticulosarcoma and hemangiosarcoma of the spleen and 31 normal cases. The scintiphotos were taken by Nuclear Chicago's scinticamera, PHO/GAMMA III, in