The Evaluation of a New Method and Clinical Significance of Estimated Liver Weight by Scintigram

C. SUGIYAMA, Y. ITAGAKI,
Department of Radiology
Y. SASAKI
The 3rd Department of Internal Medicine, St. Marianna University Sshool of Medicine
T. HAYASE
Department of Radiology, Chigasaki Municipal Hospital

Evaluation of size of the liver is one of the important aims of the liver scintigram.

De Land's method has been widely used in routine nuclear medicine procedure because tedious calculation is required. On the basis of De Land's method we have studied simpler way to calculate the estimated liver weight. The clinical usefullness of the method was investigated in retrospective comparison with the evaluation of liver size when the scan was reported.

In preliminary study, good linear correlation was obtained between anterior liver area and estimated liver volume by De Land's method. Estimated liver weight (W_I) was obtained by using anterior liver area (S_L) and the regression equation;

$$W_I = 0.01\ S_L - 0.30,\ r = 0.93$$

Normal range of estimated liver weight was obtained by correlating liver weight (W_2) of control subjects to thier body surface areas (S_b) using the following regression equation;

$$W_2 = 2.31\ S_b - 2.26,\ r = 0.84,\ \pm 2sd = 0.28$$

The 113 patients studied were classified on the base of clinical and laboratory findings into groups. The estimated liver weight was compared among 8 groups. In all cases of alcoholic liver diseases, primary and metastatic hepatic tumor liver weight was abnormally increased. In 67.2% of 131 scans evaluation of estimated liver weight agreed with nonquantitative scan reading. Hundred percentage agreement was observed in liver cirrhosis, alcoholic liver disease, primary and metastatic hepatic tumors.

Possible reasons for the disagreement of the two methods were analyzed in each of 43 cases. Large or small stature, prominent left lobe and downward displacement of the liver appears to mislead the judgement of nonquantitative scan reading. On the other hand extraordinary obesity or emaciation causes calculation of inadequate normal range.

Our method for the quantitative evaluation of liver size taking patient's stature as a parameter is simple and suitable for routine procedure and add usefull information to the scan reading.