A STUDY ON COMPUTERIZED DIFFERENTIAL DIAGNOSIS OF DIFFUSE LIVER DISEASES BY PATTERN CHARACTERIZATION OF HEPATIC SCINTIGRAM


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The clinical importance of the hepatic scintigram for the differential diagnosis of diffuse liver diseases has been reported in various studies together with the diagnostic criteria. However, most of the criteria proposed are based on manual measurements and/or visual inspection, and thus, the personal subjective deviation of criteria is inevitable.

In this study, the characterization of patterns of right lateral view of the liver obtained by the computerized processing of the hepatic scintigrams is investigated as a basis of automated differential diagnosis of diffuse liver diseases, such as acute hepatitis, inactive chronic hepatitis, active chronic hepatitis, liver cirrhosis in early stage and liver cirrhosis.

Several methods are examined to extract the region of interest from the digitized image, finding that intensity methods with threshold levels based on the variance and gradient criteria can be effectively applied. Two methods, named the rectangular method and the circular method, are also proposed in this study for the characterization of the hepatic patterns. The diagnostic effectiveness of each combination of methods for the region extraction and the pattern characterization was evaluated by applying multiple discriminant analysis. Based on the results of the reclassification of all sample cases, the rectangular method with the intensity method based on the variance criterion for the region extraction was found to be promising for the automated differential diagnosis of diffuse liver diseases.