

Quantitative Assessment of Hepatic Tissue Perfusion by Contrast Ultrasonography

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Abstract : Objective : The purpose of this study was to evaluate the efficacy of contrast ultrasonography using the ultrasound contrast agent Levovist[®] for assessing hepatic circulation in chronic liver disease. Methods : Twenty-seven patients who had been admitted to our department for the treatment of hepatobiliary disease were investigated. The degree of liver disease was classified as normal liver (NL), chronic hepatitis (CH), or liver cirrhosis (LC). Flash echo imaging (FEI) was performed to obtain the echo from Levovist[®]. The parameters of the time-intensity curve, maximum peak intensity (Max), total cumulated intensity of the ascending segment (Total), ascending slope to the peak (Slope), and time to peak (Time), were compared between the groups. Results : Of the 27 patients, 8 had NL, 13 CH, and 6 LC. The Total and Time parameters increased with the progression in liver disease. The mean value and standard deviation of the Total were 35.9 ± 12.0 (units) for NL, 40.0 ± 34.1 (units) for CH, and 55.4 ± 43.4 (units) for LC ; and those of the Time were 43.3 ± 16.3 (sec) for NL, 55.3 ± 34.0 (sec) for CH, and 60.0 ± 30.3 (sec) for LC. In contrast, the Slope in NL was greater than that in CH and LC: 0.57 ± 0.60 (units/sec) for NL, 0.48 ± 0.29 (units/sec) for CH, and 0.47 ± 0.40 (units/sec) for LC. However, this difference did not reach statistical significance. Conclusion : The change in time intensity curve after bolus Levovist[®] administration may correlate with the progress of liver disease, although the correlation is not sufficiently reliable to make a diagnostic quantitative assessment in the small study group. Further investigations in the larger population group are prompted.

Key words : Contrast ultrasonography, Chronic liver disease, Levovist[®], Time-intensity curve