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Accuracy of Noninvasive Methods to Estimate Hepatic Steatosis in Living Liver Donors

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Introduction : In living donor liver transplantation (LDLT), steatosis of the liver graft is very important for the safety of both donors and recipients. The purpose of this study was to evaluate the accuracy of noninvasive methods to estimate hepatic steatosis and find the most reliable one.

Methods : From January 2014 to September 2018, 214 patients were performed donor hemi-hepatectomy (right lobe) in our center. Patients were divided into 4 groups by the macro-vesicular steatosis based on the pathologic report (Group 1: <5%, Group 2: $5 \le$ and <10%, Group 3: $10 \le$ and <20%, Group 4: \ge 20%). Hepatic and splenic attenuation values were measured on non-contrast CT scans by using circular region-of-interest (ROI) cursors in the liver and spleen. In MRI, steatosis was measured by MR spectroscopy.

Results : Of the 214 donors, 118 (55.1%) were in group 1, 61 (28.5%) were in group 2, 23 (10.8%) were in group 3, and 12 (5.6%) were in group 4. There were no statistical differences in age and sex among 4 groups. But, body mass index (BMI), aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were significantly different among 4 groups. Liver-to-spleen CT ROI values ratio (L/S ratio) on non-contrast CT was significantly correlated with graft steatosis with a correlation coefficient of 0.176 (p<0.001). MR spectroscopy also showed significant correlation with graft steatosis with a correlation coefficient of 0.289 (p<0.001).

Conclusions : Both L/S ratio and MR spectroscopy were able to estimate graft steatosis to some extent. And among them, MR spectroscopy was more relevant with histopathologic steatosis assessment.

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