

Is Liver Function Homogenous?

Correlation between CT Liver Volumes and Liver Function as Determined by Functional Hepatobiliary (HIDA) Scan

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Background

A hepatobiliary (HIDA) scan is a study historically done to evaluate for cholecystitis and more recently shown to be an effective way to measure liver function. Volumetric analysis on computed tomography (CT) is the most common way to evaluate future liver remnant prior to planned partial hepatectomy or radiation therapy. The aim of this study is to determine to what degree do lobar CT volume ratios correlate with distribution of functionality.

Experimental Design

A retrospective review and analysis of the images for 63 patients with liver cancer, imaged between 2016 and 2018, was performed. All functional HIDA scans were processed using MIM software. Total liver function, with lobar ratios, were obtained. Whole liver and lobar volume analysis on CT was also performed.

Results

The mean age was 63.6 ± 11.0 years with a male to female ratio of 1.3:1. The mean total liver volume on CT was 1611.3 ± 590.5 mL (Right lobe: 961.5 ± 405.3 mL, Left lobe: 649.8 ± 331.7 mL). The mean ratio of right to left lobar volumes was $59.5 \pm 13.5\%$ to $40.6 \pm 13.5\%$. The mean ratio of right to left lobar liver function was $60.7 \pm 20.7\%$ to $39.5 \pm 21.1\%$.

Conclusion and Potential Impact

The overall average ratio between right and left lobe liver function appears to closely relate to the volumetric ratio between the lobes. These promising results suggest that liver function is fairly homogenous, which could provide great value in planning future liver operations and radiation therapy.