Deterioration in liver function after liver-directed therapy for hepatocellular carcinoma measured by cholate clearance *

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Background: Liver-directed therapy (LDT) for hepatocellular carcinoma (HCC) carries a risk of serious liver toxicity, but the risk is not accurately predicted. Our aim is to evaluate the baseline and change in liver function after LDT measured by a potentially more sensitive test than the usual clinical assessment.

Methods: We conducted a prospective cohort study of patients undergoing LDT for HCC. We evaluated cholate clearance at baseline (T0) and 4-10 weeks after (T1) LDT in 11 patients. Hepatotoxicity was defined as the development of a new complication of cirrhosis or an increase in Child score by ≥2 points.

Results: Four patients (36.4%) were Child A and the remainder (63.6%) Child B. Patients were BCLC stage A (63.6%) or BCLC stage B (36.4%). LDT modalities were Transarterial Chemoembolization (TACE) (45.5%) or external beam radiotherapy (EBRT) (54.5%). From T0 to T1, there was a reduction in oral cholate clearance (4.29[2.43 – 15.89] mL/kg/min to 3.58[2.21 – 15.68] mL/kg/min, p= 0.05) and a trend towards a worsening Disease Severity Index (32.01[17.11 – 39.07] vs 33.01[18.64-40.20], p=0.06); however, there was no significant change in MELD (12 [9-13]vs 11 [10-12], p=0.72), or Child score (7[5-8] vs 7[6-8], p=0.15). Hepatotoxicity was observed in 42.9% Child B patients and none of the Child A patients; and in 60.0% patients with a baseline DSI>35, and none of the patients with DSI<35.

Conclusions: The dual cholate clearance assay may better define baseline disease severity and may be more sensitive to change in liver function induced by LDT than traditional measures.

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