

HEPATOBIILIARY CANCER

Changes in Tumor Enhancement on Contrast-Enhanced CT Correlate with Survival in Patients with Hepatocellular Carcinoma Treated with Sorafenib

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Background: Treatment of hepatocellular carcinoma (HCC) with sorafenib is known to decrease arterial enhancement on follow up CT, but data is limited on the prognostic significance of these changes. This study investigates whether changes in arterial enhancement of HCC on contrast-enhanced CT in patients treated with Sorafenib correlate with overall survival (OS) and explores whether this could be used as a radiologic marker of tumor response.

Methods: Thirty seven HCC patients treated with Sorafenib were identified retrospectively. Up to two target liver lesions were measured on baseline and follow-up contrast-enhanced CT scans. Correlation was assessed between OS and change in arterial enhancement on follow-up CT. Patients were then classified as progressive disease (PD), stable disease (SD), or partial response (PR) using both modified RECIST (mRECIST) criteria and a novel system of enhancement-based response criteria we modeled on mRECIST, but substituting change in arterial enhancement for longest enhancing diameter as the primary measure of tumor response. This response stratification was assessed using survival analysis.

Results: Change in arterial enhancement on follow-up CT correlated with overall survival ($r = -0.34$; $P=0.04$). Response groups created using enhancement-based criteria showed significant difference in OS ($X^2 = 18.2$, $p < .001$). All response groups were separated from each other on a pair-wise basis (SD versus PD: $P = .01$, SD versus PR: $P = .03$).

Conclusions: Change in arterial tumor enhancement on follow-up contrast-enhanced CT correlates with OS in HCC patients treated with Sorafenib and shows promise as a possible measure of tumor response in this population.