
PURPOSE: The prognosis of patients with hepatocellular carcinoma (HCC) undergoing transarterial chemoembolization (TACE) is often uncertain. We aimed to utilize analytic morphomics, a high-throughput imaging analysis, to assess if body composition is predictive of post-TACE survival.

MATERIALS AND METHODS: We included patients from a single center (Ann Arbor VA) who had TACE as the primary treatment for HCC and had a pre-treatment computed tomography scan. Univariate analysis and multivariate conditional inference tree analysis were utilized to identify the morphomic characteristics predictive of 1-year survival. Results were validated in an external cohort (University of Michigan Health System) of HCC patients who underwent TACE as their primary treatment.

RESULTS: In the 75 patients in the derivation cohort, median survival was 439 (interquartile range, 377 to 685) days from receipt of TACE, with 1-year survival of 61%. Visceral fat density (VFD) was the only morphomic factor predictive of overall and 1-year survival (p < 0.001). Patients with VFD above the 56th percentile had a 1-year survival of 39% versus 78% for those below the 56th percentile. VFD also correlated with 1-year survival in the external validation cohort (44% vs. 72%, p < 0.001). In a secondary analysis, patients with higher VFD were significantly more likely to experience hepatic decompensation after TACE (p < 0.001).

CONCLUSIONS: VFD served as an objective predictor of mortality in patients undergoing TACE, possibly through its ability to predict hepatic decompensation. VFD may serve as a radiographic biomarker in predicting TACE outcomes.