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TCT CONNECT-205

Fractional Flow Reserve in Patients With End-Stage Liver Disease

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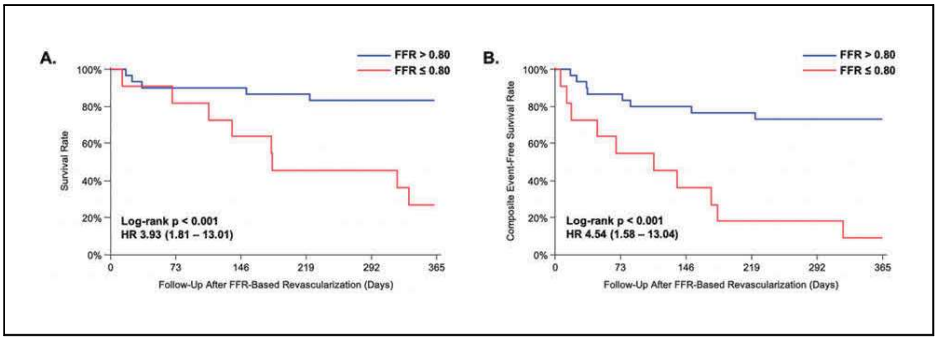
BACKGROUND Fractional flow reserve (FFR) determines the functional significance of epicardial stenosis assuming negligible venous pressure (Pv) and microvascular resistance. However, these assumptions may be inappropriate in end-stage liver disease (ESLD) due to physiology characterized by dynamic Pv and vasodilation.

METHODS All ESLD patients at UCLA who underwent FFR and right heart catheterization between 2013 and 2018 were included. Resting Pd/Pa, FFR (Pd/Pa at maximal hyperemia using intravenous adenosine), and Pv (mean right atrial pressure) were measured. We defined FFR accounting for Pv (FFR-Pv) as [Pd - Pv] / [Pa - Pv] and the hyperemic effect of adenosine as resting Pd/Pa - FFR. The primary endpoint was all-cause death at 1 year. The secondary endpoint was the composite of myocardial infarction, repeat revascularization, or all-cause death at 1 year.

RESULTS Among 42 ESLD patients, 49 stenoses were assessed by FFR, 90% of which were angiographically mild/intermediate (<70% diameter stenosis). Twelve patients had functionally significant stenoses (FFR ≤0.80); 11 underwent revascularization and 1 died before revascularization. Overall, the median Model for End-Stage Liver Disease (MELD) score was 16.5 (10.8 to 25.5), FFR was 0.87 (0.81 to 0.94), resting Pd/Pa - FFR was 0.06 (0.02 to 0.08), Pv was 8 mm Hg (4 to 14), and FFR-Pv was 0.86 (0.80 to 0.94; p = 0.28 for comparison to FFR). FFR-Pv led to reclassification of 1 lesion to functionally significant. There was no correlation between MELD score and the hyperemic effect of adenosine (R = 0.10). At 1 year, 13 patients had died. Patients with FFR ≤0.80 had significantly higher all-cause death (Figure A) and composite events at 1 year (Figure B).



CONCLUSION FFR appears viable in the ESLD population and may have prognostic value even in angiographically intermediate coronary disease. Larger, prospective studies are needed to validate these data.

CATEGORIES **IMAGING:** Physiologic Lesion Assessment