

BASELINE LIVER RELATED BIOMARKERS AND CLINICAL EVENTS IN A SMALL PROSPECTIVE REDUCED EJECTION FRACTION COHORT

Rajabova Z.R.

Bukhara state medical institute, Bukhara, Uzbekistan

A significant biochemical difference between heart failure phenotypes does not necessarily translate into prediction of subsequent events within a phenotype. Exploratory outcome analyses should therefore account for multiple comparisons.

This distinction is particularly important when several biomarkers and several outcomes are assessed in the same small cohort. Reporting all comparisons, including those that do not support the expected direction, provides a more balanced estimate of the evidence than selecting only nominally significant results.

Objective. To examine associations of albumin, gamma-glutamyltransferase (GGT), alkaline phosphatase (ALP) and source-recorded ALBI with clinical events in patients recorded as having reduced EF.

Methods. Sixty-five patients admitted to Bukhara Regional Multidisciplinary Medical Centre in 2023–2024 were enrolled on admission and followed for 12 months, using telephone contact after discharge. The database recorded rehospitalization within six months, decompensation within 12 months and death within 12 months. Baseline biomarkers were compared between patients with and without each event using two-sided Mann–Whitney tests. Benjamini–Hochberg correction was applied across all 12 biomarker–outcome comparisons. Event dates and independent document-based adjudication were unavailable for this analysis; no time-to-event or adjusted prognostic model was fitted.

The four biomarkers were available for all 65 patients. Recorded ALBI values were rounded to two decimal places and checked against numeric albumin and bilirubin inputs. Outcome groups were formed separately for each event, so the same patient could contribute to more than one event category. Event counts were not summed into a composite endpoint. The exploratory analysis was not a prespecified confirmatory biomarker trial.

Results. Rehospitalization, decompensation and death were recorded in 21/65 (32.3%), 20/65 (30.8%) and 7/65 (10.8%) patients, respectively. Decompensation was associated nominally with lower albumin (median 34.9 vs 37.4 g/L; $p=0.0366$), higher GGT (60.5 vs 47.0 U/L; $p=0.0150$) and less negative ALBI (-2.17 vs -2.38 ; $p=0.00582$). Corresponding FDR q values were 0.110, 0.090 and 0.070. None of the 12 comparisons met $q<0.05$. No biomarker was nominally associated with six-month rehospitalization. GGT was paradoxically lower among the seven patients who died (median 32.0 vs 51.0 U/L; $p=0.0262$; $q=0.105$), highlighting the instability of analyses with few events.

The decompensation and non-decompensation groups included 20 and 45 patients. Albumin interquartile ranges were 33.98–37.90 and 35.9–39.3 g/L; GGT ranges were 48.5–70.0 and 31.0–59.0 U/L. ALBI interquartile ranges were -2.385 to -2.000 and -2.55 to -2.26 . ALP did not reach nominal significance for decompensation ($p=0.0677$; $q=0.162$). These distribution summaries complement the p values and show appreciable between-patient variation.

The smallest adjusted q value was 0.070 for ALBI and decompensation. This does not establish the absence of an association, but it falls short of the specified false-discovery threshold.

Sparse mortality events, uncertain independent event verification and the lack of adjustment for competing clinical characteristics further limit interpretation. No protective effect of low GGT, ALBI cut-off, or treatment recommendation was inferred.

Conclusion. Baseline albumin, GGT and ALBI showed exploratory signals for decompensation, but no association survived correction across 12 comparisons.