Background Tislelizumab, an anti-PD-1 monoclonal antibody, demonstrated clinical activity and was well-tolerated in patients with previously treated advanced hepatocellular carcinoma (HCC) in the Phase 2 RATIONALE-208 study (NCT03419897). We explored whether baseline neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) or their post-treatment change correlated with clinical efficacy of tislelizumab treatment.

Methods Eligible patients (>18 years) who had received ≥1 prior line of systemic therapy for advanced HCC were administered open-label tislelizumab (200 mg) intravenously every 3 weeks until no further clinical benefit was observed. NLR and PLR were assessed using peripheral blood samples collected at baseline, Cycle 2 Day 1 (C2D1), C3D1, and C4D1. Survival analysis (progression free survival [PFS] and overall survival [OS]) was conducted by Kaplan-Meier method and survival rate at risk was compared by log rank test. Logistic regression was used to analyze association of post-treatment change of NLR or PLR with objective response rate (ORR). In the baseline analysis, median NLR or PLR (3.2) as cut-off, demonstrated higher OS (p=0.0024) and PFS (p=0.071) in NLR-low versus NLR-high groups (median OS [mOS]: 17.4 versus 9.9 months; median PFS [mPFS]: 2.8 versus 1.5 months). Analysis of PLR at baseline, using median PLR (141.4) as cut-off, showed higher OS (p=0.0085) and PFS (p<0.0001) in PLR-low versus PLR-high groups (mOS: 16.2 versus 10.8 months; mPFS: 2.8 versus 1.4 months). In post-treatment analysis, patients with decreased NLR or PLR at C2D1, C3D1 or C4D1 had higher ORR (table 1) and longer OS (figure 1) compared with patients with increased NLR or PLR at each timepoint.

Conclusions In patients with previously treated advanced HCC that received tislelizumab monotherapy, lower baseline NLR or PLR was associated with longer OS and PFS, and post-treatment decreases of NLR or PLR were associated with higher ORR and longer OS. These observations support NLR and PLR as potential prognostic biomarkers in patients with advanced HCC treated with tislelizumab and will be further investigated in an on-going Phase 3 study (NCT03412773).