PERIPHERAL LYMPHOCYTES AND LACTATE DEHYDROGENASE CORRELATE WITH IMPROVED RESPONSE AND SURVIVAL IN HEAD AND NECK CANCER TREATED WITH IMMUNE CHECKPOINT INHIBITORS

Cassie Pan*, Qian Vicky Wu, Jenna Voutsinas, Jeffrey Houlton, Brittany Barber, Zain Rizvi, Emily Marchiano, Neal Futran, George Laramore, Jay Liao, Upendra Panvathani, Renato Martins, Jonathan Fromm, Cristina Rodriguez.

University of Washington, Seattle, WA, USA; Fred Hutchinson Cancer Research Center, Seattle, WA, USA; Virginia Commonwealth University, Richmond, VA, USA

Background: Little is known regarding peripheral blood biomarkers (PBBMs) for oncologic outcomes in recurrent/metastatic head and neck squamous cell carcinoma (R/M HNSCC) treated with immune checkpoint inhibitors (ICIs). We explored associations of PBBMs with outcomes and toxicities in R/M HNSCC treated with ICIs.

Methods: In this single-institution retrospective cohort study, records of 186 adult patients with R/M HNSCC treated with ICIs between 08/2012–03/2021 were reviewed. Pretreatment PBBMs investigated included lactate dehydrogenase (LDH), platelets, neutrophils, lymphocytes, monocytes, eosinophils, neutrophil-to-lymphocyte ratio (NLR), and prognostic nutritional index (PNI). Percent (%) and absolute (abs) values for each cell type were examined. Cox regression was performed to explore associations with time-to-event outcomes, including overall survival (OS) and progression-free survival (PFS). Logistic regression was performed for binary outcomes, including objective response (ORR) by RECIST 1.1 and grade ≥3 toxicities (G≥3AE) by CTCAEv5 within 100 days of treatment initiation. Multivariable models for each outcome were created using elastic net variable selection method.

Results: Median age was 64 (range 24–90), 145 (78%) were male, 149 (82%) had ECOG ≤1, 81 (44%) were never-smokers, and 60 (33%) had p16-positive tumors. Single-agent pembrolizumab or nivolumab was used in 140 (75%) patients. Combined positive score (CPS) was available in 33 patients, with median CPS 31 (range 0–100). Univariate analyses adjusted for ECOG, p16, and smoking revealed that baseline higher LDH (p=0.025), neutrophils (%: p=0.002, abs: p=0.001), monocytes (abs: p=0.043), and NLR (p<0.001), and lower lymphocytes (%: p<0.001, abs: p=0.005), eosinophils (%: p=0.046), and PNI (p=0.005) correlated with worse OS. Elevated platelets (p=0.010), neutrophils (%: p=0.010, abs: p<0.001), and NLR (p<0.001), and decreased lymphocytes (%: p<0.001) and PNI (p=0.007) correlated with worse PFS. No peripheral blood parameter reached significance for G≥3AEs or ORR, although % lymphocytes, absolute neutrophils, and LDH were borderline significant for ORR (p=0.066, p=0.055, p=0.069, respectively). Refitted multivariable models adjusted for ECOG, p16, and smoking confirmed that lower % lymphocytes and higher LDH and absolute neutrophils correlated with worse OS and PFS. Lower % lymphocytes and higher LDH also correlated with worse ORR.

Conclusions: In the largest cohort to date of R/M HNSCCs treated with ICIs, our variable selection method showed that baseline lower % lymphocytes and higher LDH and absolute neutrophils correlated with worse OS and PFS, and lower % lymphocytes and higher LDH correlated with worse ORR. PBBMs are promising prognostic tools for immunotherapy in HNSCC and warrant further investigation in a large, prospective study along with validation with CPS biomarker.