Prognostic value of lymphocyte to monocyte ratio and fibrinogen in oropharyngeal squamous cell carcinoma

Stela Marković[1], Josip Vrančić[2], Drago Prgomet[3,4], Lovro Matoc[3], Dinko Leović[3,5,6]

[1]OB Virovitica, Ulica Ljudevita Gaja 21, 33000 Virovitica, Hrvatska

[2]OB Varaždin, Ul. Ivana Meštrovića 1, 42000, Varaždin, Hrvatska

[3]KBC Zagreb, Kišpatićeva 12, 10000 Zagreb, Hrvatska

[4]Medicinski fakultet Sveučilišta u Zagrebu, 10000 Zagreb, Hrvatska

[5]Sveučilište J. J. Strossmayera u Osijeku, Medicinski fakultet, 31000 Osijek, Hrvatska

[6]Sveučilište J. J. Strossmayera u Osijeku, Fakultet za dentalnu medicinu i zdravstvo, 31000 Osijek, Hrvatska

Stela_Markovich@hotmail.com

Background: TNM stage and p16 status are the key prognostic factors in oropharyngeal squamous cell carcinoma (OPSCC) but may not fully explain the outcome variability. Inflammatory biomarkers such as lymphocyte-to-monocyte ratio (LMR) and fibrinogen have shown prognostic potential but lack clinical integration. Methods: We retrospectively analyzed 113 patients with histologically confirmed OPSCC (2011 –2024). Associations between pre-treatment LMR, fibrinogen, and survival outcomes (overall survival (OS), event-free survival (EFS)) were assessed. ROC analysis defined cutoffs. A prognostic nomogram was developed using multivariable Cox regression. Results: Multivariate analysis identified initial treatment modality, LMR, and fibrinogen as independent predictors of OS. LMR >2.121 was associated with better OS (HR = 0.38; $p < 0.001$). while fibrinogen >4.2 g/L predicted worse survival ((HR = 4.43; $p < 0.001$). The nomogram showed good discrimination (C-index = 0.74). Conclusions: Incorporating LMR and fibrinogen into prognostic assessment may improve risk stratification beyond conventional staging in OPSCC. These accessible biomarkers could help guide treatment intensity and follow-up strategies.

Key words: head and neck cancer, oropharyngeal cancer, lymphocyte-to-monocyte ratio (LMR), fibrinogen, inflammation