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Pretreatment neutrophile lymphocyte ratio (NLR) may have a prognostic role in patients receiving pemetrexed treatment for advanced stage non small cell lung adenocarcinoma

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Objective: We aimed to investigate the prognostic effect of Neutrophil/Lymphocyte ratio (NLR) on overall survival (OS) and progression time (PFS) as an inflammatory marker in patients diagnosed with lung adenocarcinoma who started pemetrexed treatment after primary level platinum-based chemotherapy.

Methodology: Laboratory data before initiation of treatment was retrospectively analyzed in 63 patients who were admitted to our outpatient clinic with a diagnosis of lung adenocarcinoma between 2017 and 2020, and who were deemed appropriate to start pemetrexed treatment. NLR was calculated as "Neutrophil/Lymphocyte". The pre determined cut-off value for NLR was derived from meta-analysis results from the literature. The analysis of the relationship between NLR and survival and progression times was assessed. The normal distribution was evaluated by the Kolmogorov–Smirnov test. Continuous variables were expressed as mean and standard deviation displaying normal distribution, and as median and 95% confidence intervals if not displaying normal distribution. Statistical difference was considered as $p < 0.05$.

Results: The median age of diagnosis of patients included in the study was 60.62 (34–78) years; 63.5% (40) consisted of denovo metastatic patients. 50.8% of the patients consisted of patients who received radiotherapy before (32). Median pemetrexed duration of use was 4.01 months (95% CI 4.89–8.45). 68.3% (43) of the patients who received pemetrexed treatment progressed. Median PFS was 4.22 months (95% CI 3.51–8.35). At the end of the study follow up period, 68.3% (43) of the patients have died. Median OS was 5.49 months (95% CI 5.75–11.56). Clinical benefit rate was not significantly different between two study groups ($p = 0.09$. The death rate of those with NLR above 5 before receiving pemetrexed treatment was significantly higher (p: 0.012) while the median PFS and OS times were significantly shorter compared to patients with NLR lower than 5[PFS (median ± IQR): 2.07 ± 3.02 vs. 5.32 months ± 6.54; $p = 0.018$ and OS (median ± IQR): 2.79 months ± 3.52 vs. 6.29 months ± 8.32; $p < 0.004$; respectively].

Conclusion: In our study, we found that high NLR was an independent poor prognostic factors in patients receiving pemetrexed treatment as second line therapy for advanced stage lung adenocarcinoma. This simple parameter which is an established surrogate marker for systemic inflammatory response can prove to be useful in identifying high-risk patients and making individual treatment decisions.

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Systemic inflammatory markers as predictors of response to chemoradiotherapy in rectal cancer

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Objective: Both Neutrophil to Lymphocyte (NLR) and C-reactive protein to albumin (CAR) ratio are surrogate markers of host immune system's reaction against systemic inflammation generated by tumor microenvironment. Recent studies have reported the efficacy of host's reaction to systemic inflammation as a prognostic marker in various cancers. However, its association with tumor response to neoadjuvant chemoradiotheraoy treatment in rectal cancer has not been fully elucidated.

Methodology: Pretreatment NLR and CAR along with other clinical and serological markers were evaluated in 54 patients undergoing chemoradiotheray for rectal cancer from February 2019 to February 2020. The predictive significance of these markers were then determined by both univariate and multivariate logistical analysis. Predetermined cutoff values for NLR and CAR and serum CEA levels were used for response prediction

Results: Pretreatment low NLR (<2, $p < 0.01$), pretreatment low CAR (<0.025, $p = 0.01$) and lower CEA levels were significantly associated with both good pathological response and complete pathological response to chemoradiotherapy in univariate analysis. However, in multivariate Cox analysis although both NLR and CAR levels were found to be independent predictors for complete response to neoadjuvant therapy, NLR seemed to be a better predictor in terms of hazard ratio(HR) than the CAR (HR = 2.870 versus HR = 1.784). Patients with NLR < 2 had significantly better response to chemoradiotherapy and NLR was superior to other serum inflammatory markers for predicting response to neoadjuvant therapy.

Conclusion: Pretreatment NLR and CAR were significant predictors of complete pathological response to neoadjuvant chemoradiotherapy in rectal cancer patients. However, NLR is found to be a better discriminator for complete response to neoadjuvant chemoradşotherapy in patients with rectal cancer.

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