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Poster Presentation

Neutrophil to Lymphocyte Ratio as a Prognostic Marker in Glioblastoma Multiforme: a Systematic Review and Meta-Analysis

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Abstract

Introduction: Glioblastoma multiforem (GBM) is the most common primary malignant brain tumor in adults and it is important to identify biomarkers that can predict its prognosis. The aim of this study was to systematically review the prognostic value of neutrophil-to-lymphocyte ratio (NLR) in patients with GBM. **Materials and Methods:** PubMed, Scopus and EMBASE databases were searched until February 2016 using the following search strategy: neutrophil* AND lymphocyte* AND (glioma OR glioblastoma OR astrocytoma). Two authors independently screened the retrieved articles to find all the studies that evaluated the prognostic value of NLR in GBM patients. Data extraction and quality assessment for the included studies was performed independently by two authors. Studies using Cox proportional hazards model to compare overall survival (OS) in patients with low and high values of NLR were included in the meta-analysis. **Results:** Six studies and 827 patients were included in the systematic review. Progression-free survival (PFS) was the primary outcome in two studies. One study identified lower values of NLR as a significant predictor of better PFS, but the other one showed the opposite effect. Performing a meta-analysis was not possible on these two studies. The primary outcome in six studies was OS, four of which reported NLR as a significant prognostic marker. Pooled univariate hazard ratios (HRs) of two studies for predicting OS was 1.903 (95% CI: 1.420-2.551) and pooled multivariate HRs of four studies for predicting OS was 1.564 (95% CI: 1.208-2.024). Negligible heterogeneity was observed between studies. **Conclusion:** Overall survival of GBM patients can be predicted using NLR, but its application as a predictive marker of PFS is uncertain.

Keywords: Glioblastoma, Neutrophil-to-lymphocyte ratio, Prognosis, Systematic review, Meta-analysis

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