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The role of Peripheral Inflammatory Markers and Coagulation factors in patients with CNS immune disease and glioma

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Abstract

Objective: Gliomas are associated with high rates of disability and mortality, and currently, there is a lack of specific and sensitive biomarkers for diagnosis. The ideal biomarkers should be detected early through non-invasive methods. Our research aims to develop a rapid, convenient non-invasive diagnostic method for gliomas, as well as for grading and differentiation.

Method: We retrospectively collected data from patients who underwent surgery for glioma, Trigeminal neuralgia/Hemifacial spasm, schwannoma, and those diagnosed with multiple sclerosis at our institution from January 2018 to December 2020. Inflammatory markers and coagulation factor levels were collected on admission, and NLR, dNLR, PLR, LMR, and PNI were calculated for patients. Analyze the significance of biomarkers in the diagnosis and grading of gliomas, the diagnosis of MS, and the differential diagnosis of them.

Results: We evaluated 155 healthy individuals, 64 TN/HS patients, 47 MS patients, 316 schwannoma patients, and 814 with gliomas patients. Compared with healthy controls and MS group, the preoperative levels of NLR, dNLR, D-dimer, Fibrinogen, Antithrobin and Factor VIII of glioma patients were significantly higher in glioma patients and positively correlated with the grade of glioma. Conversely,0020LMR and PNI were significantly lower and negatively correlated with glioma grading. ROC curves confirmed that for the diagnosis of glioma, NLR showed a maximum AUC value of 0.8616 (0.8322-0.8910), followed by D-dimer and Antithrombin, with AUC values of 0.8205 (0.7601-0.8809) and 0.8455 (0.8153-0.8758), respectively. NLR and d-dimer also showed great sensitivity in the diagnosis of MS and differential diagnosis with gliomas.

Conclusions: Our study demonstrated that multiple inflammatory markers and coagulation factors could be utilized as biomarkers for the glioma diagnosis, grading, and differential diagnosis of MS. Furthermore, the combination of these markers exhibited high sensitivity and specificity.

Keywords: coagulation factors; diagnosis; glioma; inflammation markers; multiple sclerosis.