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Synchronized Glioma Insights: Trends, Blood Group Correlations, Staging Dynamics, and the Vanguard of Liquid Biopsy Advancements

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Abstract

Background: Gliomas are the most frequent, heterogeneous group of tumors arising from glial cells, characterized by difficult monitoring, poor prognosis, and fatality. Tissue biopsy is an established procedure for tumor cell sampling that aids diagnosis, tumor grading, and prediction of prognosis.

Materials and methods: We studied and compared the levels of liquid biopsy markers in patients with different grades of glioma. Also, we tried to prove the potential association between glioma and specific blood group antigens.

Results: 78 patients were found, among whom the maximum percentage with glioblastoma had blood group O+ (53.8%). The second highest frequency had blood group A+ (20.4%), followed by B+ (9.0%) and A- (5.1%), and the least with O-. Liquid biopsy biomarkers included Alanine Aminotransferase (ALT), Lactate Dehydrogenase (LDH), lymphocytes, Urea, Alkaline phosphatase (AST), Neutrophils, and C-Reactive Protein (CRP). The levels of all the components increased significantly with the severity of the glioma, with maximum levels seen in glioblastoma (grade IV), followed by grade III and grade II, respectively.

Conclusion: Gliomas have significant clinical challenges due to their progression with heterogeneous nature and aggressive behavior. A liquid biopsy is a non-invasive approach that aids in setting up the status of the patient and figuring out the tumor grade; therefore, it may show diagnostic and prognostic utility. Additionally, our study provides evidence to prove the role of ABO blood group antigens in the development of glioma. However, future clinical research on liquid biopsy will improve the sensitivity and specificity of these tests and confirm their clinical usefulness to guide treatment approaches. </p>.

Keywords: CRP; LFT.; Liquid biopsy; glioma; stages.