Relationship Between ABO and RH Blood Groups and the Risk of Gastric Adenocarcinoma Occurrence and its Progression

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ABSTRACT

Introduction: One of the risk factors associated with gastric cancer (GC) that has received considerable attention is blood type. In various populations, significant differences have been reported in both the prevalence and severity of different types of cancer related to blood groups. Therefore, we aimed to evaluate the relationship between blood groups and the incidence of gastric adenocarcinoma, the most prevalent form of GC.

Methods and Materials: This study was a case-control study. Two groups were included in the study: one group consisting of 200 patients with gastric adenocarcinoma, which was confirmed through histopathological evaluation, and a control group comprised of 200 healthy individuals without GC. After obtaining ethical approval and reviewing the files of GC patients hospitalized at Firoozgar and Rasoul Akram Hospitals in Tehran over a five-year period (2015-2020), information such as tumor grade, tumor progression, and lymph node metastasis were extracted from their hospital records. The frequency of ABO-RH blood group genotypes was compared between the two groups. Qualitative data were analyzed using the Chi-Square test, and continuous variables with normal distribution were analyzed using student's t-test. Continuous variables with non-normal distribution were assessed using the Mann-Whitney test.

Results: The average ages of patients in the cancer and control groups were 63.28 ± 8.75 and 58.22 ± 13.72 years, respectively, showing a significant difference ($p = 0.001$). There was no statistically significant difference between the two study groups regarding the distribution of blood groups. Similarly, there was no statistically significant difference between the occurrence of gastric *Helicobacter pylori* infection and blood groups. However, there was a considerable difference between different blood groups based on tumor grade ($p = 0.022$), with the lowest and highest grade of adenocarcinoma in the case group belonging to blood groups O^+ and A^+, respectively. Also, there was a significant difference in the subgroups with and without lymph node metastasis regarding blood groups ($p = 0.005$). The highest and lowest rates of lymph node metastasis were associated with blood group A^+ (43%) and AB^- (0.0%), respectively.

Conclusion and Discussion: No significant association was observed between blood groups and the risk of GC or *H. pylori* infection in the stomach. However, blood groups were associated with tumor progression and metastasis. It appears that while blood group is not a risk factor for the occurrence of GC, it plays a significant role in tumor grade and metastatic progression.

Keywords: Adenocarcinoma, *Helicobacter pylori*, Neoplasms

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