Austin Hematology

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Editorial

Association between ABO Blood Groups and Cancer

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Received: May 28, 2017; **Accepted:** May 30, 2017; **Published:** June 06, 2017

Editorial

Phenotypic and genotypic frequencies of ABO blood groups vary in the world according to different geographic and ethnic groups. The ABO system of blood groups is the first genetic polymorphism discovered in human [1].

In 1945, the geneticist Ford E.B has stated 'It is reasonable to conclude, from what we know of polymorphisms, that individuals belonging to the different blood groups are not equally viable…' [2]. ABO system has thus been studied in several sinfectious and chronic diseases. Since 1950, several studies have reported a reletionship between ABO blood groups and cancer risk and bad prognosis [3-5].

Many studies have indicated the association between blood groups in particulary, A and B and cancers such as breast, pancreatic and bladder cancer [6-8].

A meta-analysis« Nurses Health Study (NHS) » has revealed a strong association between blood group B and ovary, esophageal and gastric cancer [9,10].

Other studies have suggested that individuals with blood type A have a significant high risk to develop cancer [11-19], and individuals with non-O blood group (A, B et AB) show a significant increase of cancer risk with lower survival rates [20-26].

A systematic review including 89 studies conducted in 30 countries, have suggested that blood group A is associated with a significant high risk of cancer compared to blood groups non-A (OR = 1,12 ; IC 95%: 1,09-1,16) [27].

However, the most studies show the decreased risk of cancer and good prognosis in blood O group patients [28]. We have demonstrated by a multi variate analysis that blood group O is associated with mammary tumors expressing Estrogen receptors which are mostly low grade and good prognosis tumors [29].

The biological mechanism remains enigmatic, however, many authors have suggested that those associations are due to SNP variations in ABO locus which are related to serum levels of several molecules that promote angiogenesis such as von Willebrand Factor (vWF) and Tumor Necrosis Factor-alpha (TNF-α) [30-34]. The genotype O/O characterized by a glycosyl transferases function has a protective effect againt cancers [35].

On the other hand, the expression of H antigen in the tumor has been described in many studies as related to angiogenic activity, aggressiveness of cancer cells and an unfavorable prognosis for carcinomas [36-42].

Therefore, ABH antigens expression loss should be studied and particularly H antigen in Blood O type patients and the biological role of H antigen in carcinogenesis should be more investigated which may explain the protective effect of O blood group in cancer.

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