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Bleeding Time in Different Blood Groups and Genders In Hawija Technical Institute Students

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ABSTRACT

In medicine, blood groups play an active role. A noticeable relationship is observed linking ABO with the Wilbrand factor and vWF deficiency which results in hemorrhagic disorders, while increased levels are a risk factor for blood clotting. Previous investigations found that individuals in group O have long hemorrhageand blood clotting time. The aim of the current study is to evaluate the bleeding time relationship with the different blood groups and sex also. This cross-sectional study includes 95 students aged between 18 and 20 years. Permission has been takenfrom the students participated in this study before the bleeding time (the method of filter paper for Duke) was determined.The obtained results showed a longer time of bleeding among the AB group. Moreover, the bleeding time is longer in women than men. For more results, it is necessary to involve a larger research group.

Keywords: Bleeding time, Blood groups, Factor of von Wilbrand**.**

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زمن النزف في مختلف فصائل الدم و كلا الجنسين لدى طلاب معهد الحويجة التقني

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الخلاصة

في مجال الطب, تلعب فصائل الدم دورا حيويا. وجد ان هناك علاقة واضحة ما بين مختلف فصائل الدم و عامل "فون ولبراند", حيث ان نقص هذا العامل يؤدي الى اضطرابات نزفية, بينما تؤدي زيادته عن المعدلات الطبيعية الى ظهور الجلطات الدموية. اثبتت دراسات سابقة ان الافراد ذوات فصيلة الدم "ج" يكون زمني النزف و التخثر لديهم اطول من باقي الفصائل. الهدف من هذه الدراسة هو احتساب العلاقة ما بين زمن النزف و بين مختلف فصائل الدم, و اذا ما كانت هنالك اي علاقة ما بين زمن النزف والجنس. ضمت هذه الدراسة المقطعية 95 طالبا و طالبة ضمن الفئة العمرية (18-20)عاما. تم احتساب زمن النزف لديهم بطريقة "ديوك باستعمال ورق الترشيح" بعد ان تم جمع المعلومات المطلوبة من المتطوعين. اوضحت هذه الدراسة ان زمن النزف كان اطول لدى ذوات فصيلة الدم "أب" , كذلك كان زمن النزف اطول لدى الطالبات مقارنة بالطلاب.

الكلمات الدالة: زمن النزف, فصائل الدم, عامل فوم ولبراند.

I. Introduction

The people are dividedinto four major blood groups based on Mendelian Determinants which state that the antigens of blood cell are inherited. Individuals of type A contain antigen A; type B contains antigen B; type AB contains both of antigen A and antigen B, and type O which doesn't contain any of the previously mentioned antigens. A and B antigensare complex Oligosaccharides, which have different covered sugar [1]. On the other hand,

antigens of ABO seem to be important during our development, as the different blood types frequency varies in different population groups [2].

Karl Landsteiner defined the ABO blood group system in 1900 and put the milestone for the beginning of blood transfusion and banking medicine. Complex carbohydrate molecules form ABO. The glycosyl A and B, encoding alleles A and B, convert the H-antigen parameters to A and B. This is the result of the transferase enzyme in the G-group, which remains to express the antigen H [3]. These antigens are carbohydrate fragments located at the end of the carbohydrate chain in the glycoprotein on the surface of red blood cells. The location of the gene that symbolizes these antigens is on the chromosomes 9 and 19 [4].

Latest studies suggested an association of ABO blood groups and various diseases, like periodontal disease, stomach cancer and venous thrombosis [5, 6].

Diabetes, duodenal ulcer, urinary tract infection, incompatibility of the mother-child species, etc. [7, 8, 9].

The time of bleeding is defined as the period between the skin puncture and automatic stop of bleeding [10].

The phenotype and ABO level are clearlycorrelated. In clotting, there are two important proteins, factor VIII and von Wilbrand vWF. These factors are lower in plasma in the peoplewithin group O by about 25% than in other groups, which increases blood clotting time and can cause excessive bleeding [11].

The factor of von Wilbrand is a large glycoprotein produced by the endothelial cells of the blood vessels as well as produced by master cells. The lack of the vWF causes hemorrhagic disorders, and high levels of it are a risk factor for coagulation [12,13,14].

According to a study conducted by Gill J. C. et al. [15], lowest plasma vWF levels found in individuals in group O, while, elevatedplasma vWF levels found in the other groups (A, B and AB). Claim that there is a potential risk of stroke among people outside the group O. This indicates an increase in the time of bleeding and the time of a blood clotting between the

group O individuals compared to members of non O group. On the other hand, Daniel M. and others were unable to find any relationship in their studies between ABO Group and the factor of von Wilbrand [16].

The aim of the current investigation is to evaluate the bleeding time relationship with the different blood groups among students of the Technical Institute of Hawija.

II. Materials and methods

This study was conducted on students of the first and second stages of the Department of Medical Laboratories Techniques at Hawija Technical Institute in Kirkuk city. The study included 95 students aged 18 to 20 years. The study excludes students with any history of bleeding disorders and non-use of (NSAIDs). Data collection was age-related after getting informedconsent.

Procedures: Collection of blood was performedby adding antisera A and B to the blood sampleand wasconfirmed by the clumping appearance between the erythrocytes. Bleeding time estimation was conducted using the filter paper method for Duke [17].

III. Results

In the current study, data collected from ahomogeneous study group of 95 students aged between 18 to 20 years old. Of the 95 students, 47 were women,and 48 were men. The bleeding time was found between 1-4 minutes in group AB (88.23%) compared to group A (84.61%), group B (75%) and group O (63.88%) as presented in Table 1. There was a clear difference between ABO groups with bleeding time less than 1 min and between 1-4 min but not statistically significant ($p > 0.05$).

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Table 1 Students distribution according to Bleeding time (BT) and Blood groups

Blood group	Bleeding time (BT)	
	<1	1-4
A (n=26)	4(15.38%)	22(84.61%)
B (n=16)	4(25%)	12(75%)
AB (n=17)	2(11.76%)	15(88.23%)
O (n=36)	13(36.11%)	23(63.88%)
Total	23	72

Furthermore, insignificant difference observed among blood groups in bleeding time (p>0.5) as listed in Table 2.

Table 2 BT Comparison in between blood groups

Comparison	Bleeding time (BT)		
	X2-value	p-value	Significance
A and B	0.594	0.441	NS
A and AB	0.112	0.738	NS
A and O	3.26	0.071	NS
B and AB	0.971	0.325	NS
B and O	0.621	0.43	NS
AB and O	3037	0.066	NS

The difference in genders regarding bleeding time showed that 8.51% of women had bleeding time longer than 4 minutes compared to 6.25% for men. The t-test of student's bleeding time revealsinsignificant statistical difference between men and women (p>0.5) as presented in Table 3.

Table 3 Comparison of bleeding time between males & females

GENDER	< 4 mins (%)	> 4 mins (%)
FEMALE	43(91.48%)	4(8.51%)
MALE	45(93.75%)	3(6.25%)

IV. Discussion

So far, much research has been done to establish a relationship between blood groups and bleeding time and blood clotting time. Massimo et al.surveyed the relevant literature and reported that, compared to O group; members of group O may not have a potential risk of coagulation due to the vWF low levels [18]. In addition, the ABO group variation can influence the vWF undermining, which indicates that the levels of plasma for the vWF may depend on the human blood type.Another study by Jenkins et al. [19], stated that, compared to O group, vWF is largest 25% in the other non O groups of individuals, means that the time of hemorrhage and blood coagulation time will increase between O group compared to other groups. Although according to a study conducted by Mahpatraet al. [20], bleeding time in group AB increased compared with other groups. This result was consistent with our results.

Furthermore, no significant difference in the bleeding time and the time of coagulation observed between men and women in the Mahapatra study [20] and other studies, which were also consistent with the results of our study. Another study found that 44.4% of women had more than 4 minutes bleeding time compared to 13 % of men, this result agreed with a study conducted by Roy et al.[21], who noted that bleeding time was longer in women compared to men. The fact that the females have longer bleeding and coagulation time is related withthe presence of estrogen hormone and a decrease in fibrinogen in plasma as reported by Ercan et al. [22].

V. Conclusions

O group was the most common type, and B was the less common group among the study students. Bleeding time was longer 1-4 minutes in AB individuals, followed by A members, B and O. As well as, there was no statistical association between the blood groups in regard bleeding time. Also in regard bleeding time and sex, we found longer bleeding time in females than males, although the difference is statistically insignificant. Values werestatistically unimportant; this may be because of the small size sample. Further studies with large size samples of study are needed to confirm the findings and correlate it with the level of von wilbrand factor and factor VIII to take prophylaxes before any troubles.

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