

## Comparison of Bleeding Time and Clotting Time in Different Blood Groups

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**Abstract: Problem statement:** Researchers have demonstrated that epistaxis is more often encountered in patients having blood group O probably due to lower expression of von Willebrand factor. We had taken up this study to find out if there is any definite relationship between the blood groups with the bleeding time and clotting time in our population. **Approach:** This retrospective study was conducted in the department of physiology in our institution. The available detail reports of 740 students passing through 1st year of MBBS over the years from 1999-2007 were analyzed in respect of age, sex, blood groups, bleeding time and clotting time. The blood grouping was done with the standard antisera and bleeding time and clotting time were estimated by Duke method and capillary tube method respectively. Finally bleeding time and clotting time of different blood groups were compared and statistical analysis was done. **Results:** In present study population O group was found in more number of cases (37.8%) than A, B and AB. Clotting time was found to be prolonged more than 6 min in maximum number of cases in B group (12.7 cases) followed by A group (8) and O group (5.8) and AB group (4.3%). Similarly bleeding time was more than 4 min in AB group in 21.8 followed by 13.9 in group B, 10.5 in group A and 9.6% in group O. **Conclusion:** In present study population interestingly clotting time was more in blood group AB and bleeding time in blood group B than other blood groups which was statistically significant. Further study needed to correlate the association of this finding in cases of epistaxis and hemoptysis in our population.

**Key words:** Blood group, clotting time, bleeding time

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### INTRODUCTION

Earlier it has been reported that blood group O was over represented in Caucasian patients admitted with epistaxis, compared with the Caucasian population in general<sup>[1]</sup>. One study revealed that bleeding time was significantly longer in people with blood group O than people with non-O blood group and this could not be correlated with sex ratio, platelet count or hematocrit<sup>[2]</sup>. It is also suggested by authors that blood group O is associated with lower expression of Von Willebrand factor causing a relative bleeding tendency<sup>[3,4,5]</sup> but other workers<sup>[2]</sup> could not find out any association between the level of Von Willebrand factor and bleeding time. The aim of this study was to find out if there is any definite relationship between the ABO blood groups with the bleeding time and clotting time in our population.

### MATERIALS AND METHODS

This retrospective study was conducted in the department of Physiology in MKCG Medical College, Orissa, India. In our institution it is mandatory for all the medical students to do their blood grouping, bleeding time and clotting time during their 1st year of study as a part of their training program. The available detail reports of 740 students over the year from 1999-2007 were analyzed in respect of age, sex, blood group, bleeding time and clotting time. Finally bleeding time and clotting time of different blood groups were compared and statistical analysis was done.

Blood group determination was done by mixing the sample of blood with antisera A and B and looking for clumping of RBCs under the microscope. Bleeding time was estimated by Duke Method and clotting time was estimated by capillary tube method<sup>[6]</sup>.

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Table 1: Distribution of clotting time according to blood group

	<2 min (%)	2-6 min (%)	>6 min (%)	Total
O	13 (4.6)	257 (89.6)	16 (5.8)	280
A	6 (3.7)	143 (88.3)	13 (8.0)	162
B	7 (2.7)	213 (84.5)	32 (12.7)	252
AB	2 (4.3)	42 (91.4)	2 (4.3)	46
Total	28 (3.8)	649 (87.7)	63 (8.5)	740

Table 2: Distribution of bleeding time according to blood group

	<1 min (%)	1-4 min (%)	>4 min (%)	Total
O	52 (18.6)	201 (71.8)	27 (9.6)	280
A	18 (11.1)	127 (78.4)	17 (10.5)	162
B	41 (16.3)	176 (69.8)	35 (13.9)	252
AB	5 (10.9)	31 (67.3)	10 (21.8)	46
Total	116 (15.7)	535 (72.3)	89 (12.0)	740

Table 3: Distribution of clotting time according to sex

	<2 min (%)	2-6 min (%)	>6 min (%)	Total
M	20 (3.6)	486 (88.0)	46 (8.3)	552
F	8 (4.2)	163 (86.7)	17 (9.0)	188
Total	28 (3.8)	649 (87.7)	63 (8.5)	740

Table 4: Distribution of bleeding time according to sex

	<1 min (%)	1-4 min (%)	>4 min (%)	Total
M	93 (16.8)	394 (72.3)	60 (10.9)	552
F	23 (12.2)	136 (72.3)	29 (15.5)	188
Total	116 (15.6)	535 (72.3)	89 (12.1)	740

## RESULTS

The available datas of 740 students were analyzed. The age group was a homogeneous one in our study population (17-20 years) as all of them belonged to the 1st year of MBBS curriculum. Out of 740 students 552 were male and 188 were female.

O group was found in more number of students (37.8) than A (21.9), B (34) and AB (6.3%). Clotting time (Table 1) was prolonged more than 6 min among B group in 12.7 followed by A (8), O (5.8) and AB (4.3%) and the difference between B and O group was statistically significant ( $p < 0.02$ ). Bleeding time (Table 2) was prolonged >4 min in a greater number among AB group (21.8) in comparison to A (10.5), B (13.9) and O (9.6%) and again there was significant difference between AB and O group ( $p < 0.05$ ). While considering the role of sex on clotting time and bleeding time, no significant difference was found among male and female sexes (Table 3 and 4).

## DISCUSSION

Reddy *et al.*<sup>[1]</sup> found in their study that among Caucasian epistaxis patients 50.4 patients were blood group O but among control groups this was 45.10%.

Daniel *et al.*<sup>[2]</sup> pointed out in one of their study that admission for epistaxis was more common among Caucasian than Asian people. Morant AE<sup>[3]</sup> interestingly showed in their study the prevalence of blood group O was more among Caucasians than Asians (Caucasian 46 versus Asian 31%).

In present study population in India also the O group was prevalent in more number (37.8%) of cases than other group (B 34, A 21.9, AB 6.3%). In our series clotting time was prolonged in group B persons than the blood group O which was statistically significant ( $p < 0.02$ ) whereas bleeding time was significantly more in AB group persons than in persons with blood group O and there was no significant difference in clotting time and bleeding time in both the sexes.

## CONCLUSION

In present study population interestingly clotting time was prolonged in case with blood group B and bleeding time in cases with blood group AB than other groups which was statistically significant. Bigger multicentric study is suggested to verify the above mentioned findings. Further study needs to find out if there is any association of this finding in cases of epistaxis and hemoptysis in our population.

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