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Association and Distributions of Hypertension and ABO Blood Groups in Different Castes of Biraul Block

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Hypertension is one of the major health problem in the world. The objectives of this study were to know the distribution of blood groups among the subjects and to assess the association between ABO blood groups and Hypertension. This study was carried on two groups of Subjects by personal survey. Samples were randomly selected from different communities of Biraul Block. The control group consists of normal 294 healthy subjects while the patient group consists of 206 patients. It was founded that blood group O is more predominant among hypertensive patients. There was no statistically significant association between ABO blood group and Hypertension.

Keywords: ABO blood groups; hypertension; Biraul Block.

1. INTRODUCTION

"Hypertension is a chronic medical condition and one of the most common life threatening non-communicable disease. It conributes to 7.6 million prematures deaths, 54% of stroke, 47% of ischemic heart disease and 13% of attributable deaths, worldwide" [1]. "The prevalent rate of

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hypertension is probably on the rise in developing countries the reason of which is probably adoption of western lifestyles and urbanisation" [2].

Hypertension or high blood pressure causes major health problems because as we all know that it has no clear symptoms. Many people are suffering from hypertension without knowing it. It is now well established fact that several factors like obesity, overweight which is measured by using BMI, Visceral adiposity measured by waist circumference, increasing age etc. are associated with prevalence of hypertension [3-7].

"According to most accepted opinion the systemic artial pressure is more than 140/90 mm Hg should be considered hypertensive and should get treatment. In other words, hypertension is defined as sustained increase in blood pressure exceeding 140 over 90 mm Hg"(Arid, Bental and Bingham 1956; Dickey et al 1993)

"The ABO blood group system was the first human blood group system discovered by Landsteiner in 1900.The ABO blood group system is only system in which antibodies are consistently and predictably present in the serum of normal individuals whose red cells lack the antigens" [8].

"The second type of blood group is the rhesus system. There are only two Rh phenotype such as Rh positive and Rh negative depending on whether Rh antigen is present on the red cell or not. Determination of ABO blood group is done by detecting A and B antigens" [9,10]. "In addition, known red cells are used to detect anti-A and anti-B in the serum by a process called 'reverse' grouping. ABO and Rh gene phenotypes vary widely across races and geographical boundaries" [11-13]. The present study was performed to assess the association and distribution of hypertension and ABO blood groups in different categories of subjects and its multipurpose future utilities for the health planners.

2. MATERIALS AND METHODS

This study was carried out on two groups of subjects by personal survey. Samples are randomly selected from different communities of biraul block. The age range of both group was 25-70 years of both sexes. The control group consists of normal 294 healthy subjects including 195 males and 99 females.

The patient group consists of 206 patients who are suffering from hypertension of which 130 males and 76 females. Regarding the hypertensive group a subject whose blood pressure was more than 140/90 mm Hg were included in the study group. Blood pressure was measured with sphygmomanometer and determination of ABO using antisera was done for each subject.

3. RESULTS

The data of 500 subjects (out of which 206 are hypertensive and the remaining 294 were control) were collected and analysed statistically by using chi square and SPSS. The study groups age range from 25-70 years old, who were randomly selected and examined for their ABO status. The results are shown in Tables.

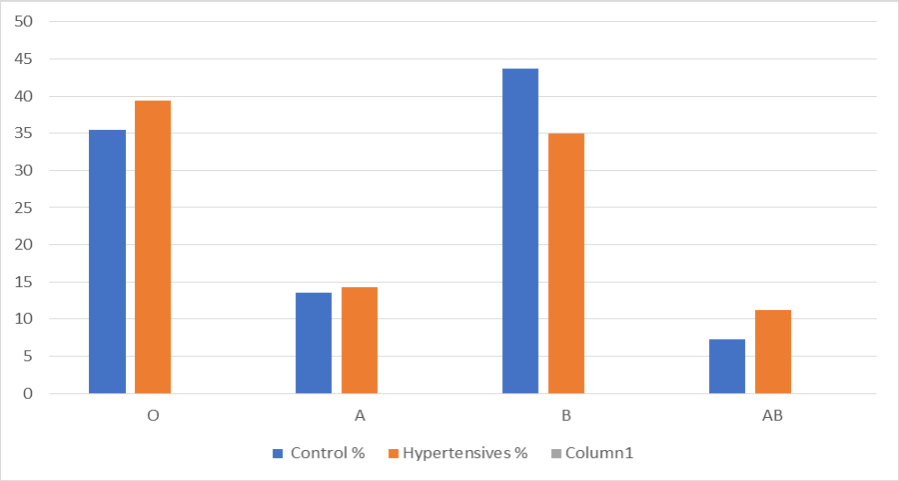

Fig. 1. Showing % distribution of blood groups in controls and in hypertensives

Table 1. Distribution of blood groups in control and hypertensives in both sex

Blood group	Number of control (%)		Number of hypertensives (%)		Total (%)
	Male	Female	Male	Female	
O	45(34.61)	28(36.84)	82(42)	34(34.34)	189
A	17(13)	11(14.47)	23(11.79)	19(19.19)	70
B	58(44.61)	32(42.1)	73(37.43)	30(30.30)	193
AB	10(7.6)	05(6.5)	17(8.71)	16(16.16)	48
Total	130	76	195	99	500

Table 2. Distribution of blood groups in controls and in hypertensives

Blood group	Number of control (%)	Number of hypertensives (%)	Total
O	73(35.43)	116(39.45)	189
A	28(13.59)	42(14.28)	70
B	90(43.68)	103(35.03)	193
AB	15(7.28)	33(11.22)	48
Total	206	294	500

Chi-square=4.8716; df=3; P value=0.181443 (alpha<0.05) Not significant

Table 3. Distribution of Blood groups in control group in both sex

Number of control (%)	Blood group (%)				
	A	B	AB	O	Total
Male	17(13.07)	58(44.61)	10(7.69)	45(34.61)	130
Female	11(14.47)	32(42.10)	05(6.5)	28(36.84)	76
Total	28	90	15	73	206

Chi-square= 0.2868, df=3; P value= 0.962499(alpha<0.05) Not significant

Table 4. Distribution of blood groups in hypertensive group in both sex

Number of Hypertensives (%)	Blood group (%)				
	A	B	AB	O	Total
Male	23(11.79)	73(37.43)	17(8.71)	82(42.05)	195
Female	19(19.19)	30(30.3)	16(16.16)	34(34.34)	99
Total	42	103	33	116	294

Chi Square = 7.6987, P value = 0.52667 Data not significant

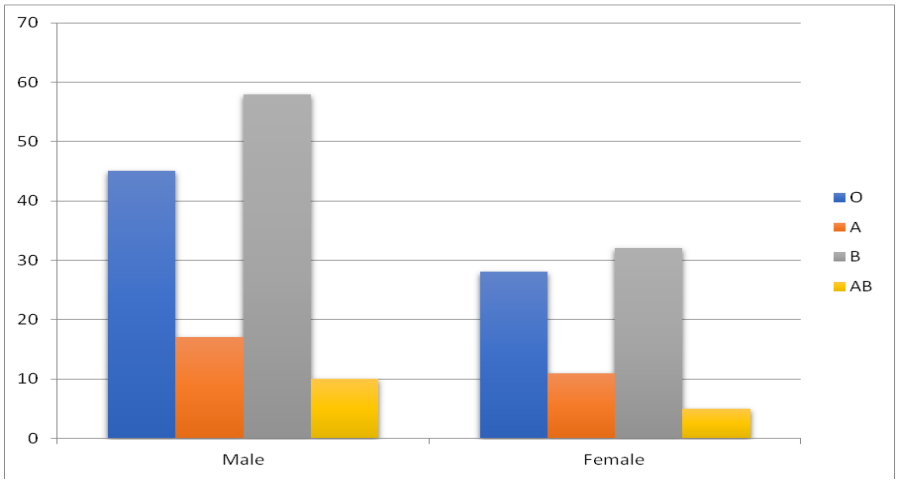

Fig. 2. Distribution of blood groups in control group in both sex

4. DISCUSSION

In our study, we found that the B blood group seen more in the hypertension followed by blood group O, A and AB. In our study, we found that the B blood group was more susceptible to hypertension as compared to blood group O and A; whereas AB blood group had less chance of getting hypertension. Although this is preliminary study, a clear trend is seen which is in agreement with some studies that has done by Barbara et al. [14], Supratik et al. [15], and Nemesure et al. [16].These figures are similar to other study carried out in Iran [17].

In the present study, the blood group B is more prevalent among control group than the others (43.68%) as shown in Tables 1, 2.

The distribution of ABO group varies in different geographical, ethnic groups and Socio-economic groups [18]. In Egypt blood group O is most prevalent [19], Blood group A in Russian federation [20] the commonest in Australians are O and A, while in African B is commonest [21].

Tables 3, 4, Fig. 2 shows that in both control and in hypertensives groups, there is statistically no significant difference of various blood groups in both sexes. This agreed with Ambareesha K, et al. [22] who reported that sex distribution had no significant association with blood group.

5. CONCLUSION

Blood group B is most common blood group in our study which is followed by O, A, AB respectively. There was no statistically significant association between ABO blood groups and Hypertension in the present study.

CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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