

Original Article**Correlation between Blood Group with Cause of Death and Manner of Death in Medico Legal Autopsies in Jamnagar Region**

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ABSTRACT

Background: Since discovery of blood groups by Landsteiner they have fascinated scientist in more than one way. Patterns of various types of blood groups in various diseases have been studied by many workers. Now we know that in some diseases there is statistically correlation between particular types of blood group.

Aims: Aim was to evaluate correlation between blood group and cause of death and manner of death.

Material and Method: This study was conducted on 500 medico-legal autopsies which were brought out at Forensic medicine Department, M. P. Shah Govt. Medical College, Jamnagar, Gujarat.

Result: Out of 500 cases, blood groups for both ABO and Rh system could be detected in 457 cases (91.4%) and in 43 cases (8.6%) could not be detected. Out of 212 cases of accidental deaths majority were of blood group B⁺ ve, 70 cases (33.01%). Of 128 cases of suicidal death, 41 (36.71%) were O+ve. Deaths from cardiovascular system were 62 cases (72.9%) in that blood group B+ve was maximum 24 cases. In case of unnatural deaths, 99 cases (27.42%) were of burns followed by vehicular accident cases, 87cases (24.09%). Out of 99 cases of burns, majority were A+ve, 29 cases followed by O+ve, 23cases.

Conclusion: Present study shows correlation between causes of death, manner of death and blood group like death due to CVS and vehicular accident is more common in B+ blood group whereas suicidal deaths and poisoning cases were more common in O+ blood group.

Key words: Blood group, Cause of death, Manner of death.

INTRODUCTION

Since discovery of blood groups by Landsteiner [1] they have fascinated scientist in more than one way. We know that blood groups have changed therapeutics and surgeries because blood loss could be compensated by blood transfusion.

Patterns of various types of blood groups in various diseases have been studied by many workers [2]. Now we know that in some diseases there is statistically correlation between particular type of blood group and particular disease such as carcinoma stomach [3-6], peptic ulcer [7], alcoholism [8], cirrhosis of liver [9], schizophrenia [10], depression [11] and tuberculosis [12], etc.

In view of the above, we thought that could there be any correlation between blood groups on one hand and unnatural deaths on other? We also thought that this field of science remained so far unexplored and therefore fit for present study.

MATERIAL AND METHODS

The blood sample were studied in 500 cases which were brought to Department of Forensic Medicine, M.P. Shah Govt. Medical College, Jamnagar, Gujarat for medico legal postmortem examination (PME). The duration of study was from November-2006 to May-2007.

For this study, blood was collected from heart cavity without anticoagulant and any sterile precautions.

However in some cases capillary blood was used as in living. Blood grouping was done by slide method by using standard anti sera (Monoclonal Anti A, Anti B and Anti D).

The results of blood grouping were then analyzed in relation to cause of death, manner of death, age, sex and other relevant information, filled up in proforma.

OBSERVATIONS

Out of the total 500 cases, the male sex outnumbered the females. The total numbers of male were 340 cases (68%) and that of female were 160 cases (32%). The maximum number of cases occurred in the age group of 21-30 years, 153 cases (30.6%). The age group of 31-40 years followed it with 98 cases (19.6%). The least affected age group is >80 years, with 5 cases (1%) (Table-1). Hindu was predominately affected in both sexes. The numbers of Hindu male and female were 285 cases and 132 cases respectively. Total numbers of Hindus were 417 cases (83.4%). Muslim male and female followed them with the figures of 28 cases and 21 cases. Total numbers of Muslims were 49 cases (9.8%). There was no any Christian religion person found.

Table 1: Distribution of cases according to age group and sex

Age (years)	Male	Female	Total
0-10	9(1.8%)	12 (2.4%)	21 (4.2%)
11-20	33(6.6%)	26(5.2%)	59 (11.8%)
21-30	98(19.6%)	55(11.0%)	153(30.6%)
31-40	71(14.2%)	27(5.4%)	98 (19.6%)
41-50	53(10.6%)	22(4.4%)	75 (15.0%)
51-60	36(7.2%)	05(1.0%)	41 (8.2%)
61-70	26(5.2%)	06(1.2%)	32 (6.4%)
71-80	10(2.0%)	06(1.2%)	16 (3.2%)
>80	4(0.8%)	1(0.2%)	05 (1.0%)
Total	340(68.0%)	160(32.0%)	500 (100%)

In the present study, the maximum number, 338 cases (67.6%) of persons were married. In the unmarried group, the numbers of male were 83 and female were 33. Total numbers of unmarried cases were 116 (23.2%). There was no case found in the group of divorced/widow. Marital status of 46 cases (9.2%) was not known. Uneducated persons predominate with 277 cases (55.4%) over the educated persons with cases 177 (35.4%).

Educational status of 46 cases (9.2%) was not known. From above table, it is clear that maximum number of cases were labourer, 138 cases (27.6%) closely followed by housewives and house dwellers, 121 cases (24.2%). The least affected profession was business with 20 cases (4%). Persons who were retired from their work and those who were not engaged in any work were included in not applicable cases, which were 39 cases (7.8%). In 55 cases (11%), the profession of the victim was not known.

Table 2: Distribution of cases according to manner of death and sex

Manner of death	Male	Female	Total
Natural	78(15.6%)	7(1.4%)	85(17.0%)
Suicide	67(13.4%)	61(12.2%)	128(25.6%)
Homicide	16(3.2%)	05(1.0%)	21(4.2%)
Accidental	140(28.0%)	72(14.4%)	212(42.4%)
Manner not known	39(7.8%)	15(3.0%)	54(10.8%)
Total	340(68.0%)	160(32.0%)	500(100%)

Out of 500 cases, 212 cases (42.4%) were accidental which was followed by suicidal cases 128 cases (25.6%). Cases of Homicide were 21 cases (4.2%). Natural death cases were 85 cases (17%). (Table – 2) Out of 500 cases blood groups for both ABO and Rh system could be detected in 457 cases (91.4%) and in 43 cases (8.6%) could not be detected. Most of the cases were from blood group B+ve, 157 cases (31.4%), followed by A+ve, 127cases (25.4%). Least number of cases found in B-ve, 2 cases (0.4%) and in 43 cases (8.6%) blood group was not detected for both blood grouping systems.

Out of 212 cases of accidental deaths, most of the cases were of blood group B+ ve, 70 cases (33.01%), followed by blood group A+ ve, 63 cases (29.71%). Blood group was not detected for both ABO and Rh system in 10 cases (4.71%). Out of 128 cases of suicidal death, maximum number of cases found in O+ve they were 41(36.71%) followed by B+ve 35 cases (9.69%), A+ve 26 cases (7.2%), AB+ve 17 cases (4.71%), and O-ve only 1 case (0.28%). In 8(6.25%) cases blood grouping was not possible. Out of 21 cases of homicidal deaths, most of cases were from blood group B+ ve and AB+ ve, 6 cases each. And in 3 cases blood group was not found for both ABO and Rh system. Any case for Rh-ve was not detected (Table-3).

Table 3: Distribution of cases according to blood group and manner of death in case of unnatural death

Blood group	Accidental		Suicidal		Homicidal		Total
	M	F	M	F	M	F	
A+	41(11.36%)	22(6.09%)	14(3.88%)	12(3.32%)	1(0.28%)	2(0.55%)	92(25.48%)
B+	52(14.4%)	18(4.99%)	12(3.32%)	23(6.37%)	6(1.66%)	0(0.0%)	111(30.75%)
AB+	22(6.09%)	11(3.06%)	13(3.60%)	4(1.11%)	4(1.11%)	2(0.55%)	56(15.51%)
O+	18(4.99%)	14(3.88%)	25(6.93%)	16(4.43%)	3(0.83%)	0(0.0%)	76(21.05%)
A-	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
B-	2(0.55%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	2(0.55%)
AB-	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
O-	2(0.55%)	0(0.0%)	0(0.0%)	1(0.28%)	0(0.0%)	0(0.0%)	3(0.83%)
ND	3(0.83%)	7(1.94%)	3(0.83%)	5(1.39%)	2(0.55%)	1(0.28%)	21(5.81%)
TOTAL	140(38.78%)	72(19.94%)	67(18.56%)	61(16.9%)	16(4.32%)	5(1.39%)	361(100%)

ND:- Blood group not detected

Table 4: Distribution of cases according to blood groups and Cause of death in natural deaths

COD	A ⁺	A ⁺	B ⁺	B ⁺	AB ⁺	AB ⁺	O ⁺	O ⁺	Total
	M	F	M	F	M	F	M	F	
CNS	0	0	1	0	0	0	0	0	1(1.2%)
CVS	19	0	22	3	8	0	7	3	62(72.9%)
RS	4	0	7	1	4	0	1	0	17(20.0%)
URO.	2	0	0	0	0	0	0	0	2(2.3%)
GIT	1	0	0	0	0	0	0	0	1(1.3%)
HEPAT.	1	0	0	0	1	0	0	0	2(2.3%)
TOTAL	27	0	30	4	13	0	8	3	85(100%)

COD:- Cause of Death

Out of 85 cases of natural death, only 1 case (1.2%) of intracerebral haemorrhage (CNS) was noted of blood group B+ve. Death from cardiovascular system were maximum, they were 62 cases (72.9%) in that blood group B+ve was maximum 22 cases. Male was predominately involved in CVS cases with 56 out of 62 cases. Total 17 cases (20%) of natural deaths were due to respiratory diseases. In that B+ve group was predominate with 8 cases. Out of 17 cases, 16 cases were of male. No negative blood group was noted in this group. In Urogenital system- only 2 cases (2.3%) were found in this group. Both were having A+ve and male. Only 1case (1.2%) of rupture esophageal varices was found. It was found in male and blood group was A+ve. One case each of jaundice (1.2%) and hepato-cellular carcinoma (HCC) (1.2%) was noted. Both are noted in male and person with jaundice was having A+ve and person with HCC was having AB+ve. There was no any case

regarding pregnancy related death. Blood grouping was possible in every case (Table-4).

In case of unnatural deaths, most of the cases were of burns, those were 99 cases (27.42%), followed by vehicular accident cases, 87cases (24.09%). Least affected group was strangulation with 2 cases (0.55%). Out of 99 cases of burns, maximum blood group found in this group was A+ve, 29 cases followed by O+ve, 23cases. Rh-ve blood group was not found in this group. In 11 cases blood group was not able to detect by conventional method of blood grouping for ABO and Rh system. Out of 21 cases of drowning, maximum blood group found in this group was O+ve and A+ve, 5 cases each. In 4 cases blood group was not able to detect by conventional method of blood grouping for ABO and Rh system. Out of 24 cases of hanging, maximum blood group found in this group was B+ve with 15 cases. Rh-ve blood group was not found in this group. Blood grouping was possible in every case for both blood group systems. Out of 2 cases of strangulation, one A+ve and one B+ve blood group is found. Out of 87 cases of vehicular accidents, maximum blood group found in this group was B+ve, 36 cases, followed by A+ve. Two cases of B-ve and one case O-ve found in this group. Out of 20 cases of fall from height, maximum blood group found in this group was B+ve, 8cases. One case of O-ve was also found in this group. Out of 15 cases of railway accident, maximum blood group found in this group was A+ve, 6 cases followed by B+ve, 5 cases. Out of 17 cases of assault, maximum blood group found in this group was B+ve, 5 cases. Blood group was not able to detect for both blood group system in 3 cases by conventional method of blood grouping. In both case of snake bite blood

Table 5: Distribution of cases according to blood groups and Cause of death in unnatural deaths

COD	A+	A+	B+	B+	AB+	AB+	O+	O+	A-	A-	B-	B-	AB-	AB-	O-	O-	N.D	N.D	Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Burns	10	20	3	18	6	8	9	14	0	0	0	0	0	0	0	0	1	10	99(27.42%)
Drowning	4	1	3	0	3	0	5	0	0	0	0	0	0	0	0	0	3	1	21(5.81%)
Hanging	0	0	6	9	4	1	3	1	0	0	0	0	0	0	0	0	0	0	24(6.64%)
Strangulation	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2(0.55%)
Veh. Acc.	23	5	34	2	9	1	8	3	0	0	2	0	0	0	1	0	0	0	87 (24.09%)
Railway Acc.	5	1	4	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	15(4.16%)
Fall from Height	3	0	5	3	5	1	2	0	0	0	0	0	0	0	1	0	0	0	20(5.54%)
Assault	1	1	5	0	4	0	3	0	0	0	0	0	0	0	0	0	2	1	17(4.7%)
Snake bite	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3(0.83%)
Poisoning	9	8	7	8	6	2	16	10	0	0	0	0	0	0	0	1	1	1	70(19.39%)
Electrocution	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3(0.83%)
Total	56	38	69	41	39	16	48	28	0	0	2	0	0	0	2	1	7	13	361(100%)

group found was AB+ve. Out of 70 case of poisoning maximum blood group found in this group was O+ve, 26 cases, followed by A+ve, 17 cases. O-ve blood group found in one case and in 2 cases blood group was not detected by conventional method of blood grouping for ABO and Rh system. One case of A+ve, B+ve and AB+ve was found in electrocution cases (Table-5).

DISCUSSION

It was observed that most of the cases were of male, (68%). The male predominance may be explained by the fact that male by nature indulge in various day to day outdoor activities and other social activities and customs as compared to female. It was observed that most of the cases were between age group 21-30 years (30.6%). This can be explained by the facts that by nature they are more active, violent and arrogant. They are more vulnerable to the fast changing social trend and cultures as they are mentally a bit immature with little experience of life. They are mostly married during this period and so they are exposed to a new married life full of family and social adjustment. They are main breadwinners of the family indulging lavishly in various social activities. In our study victims of Hindu religion were more both categories Male and female. This was because Jamnagar region has a predominantly Hindu population. It was observed that most of the deceased were married in our study because by the age of 20 or most of the Indian population both sexes included get married and marriage demands a lot of mutual understanding, adjustment and sacrifices. It also

involves a lot of family and social responsibilities. It was observed that most of the deceased were illiterate (55.4%), due to the fact that Jamnagar being predominantly rural with small urban area, having a low literacy rate. It was observed that most of the deceased were laborers (27.6%), due to the fact that Jamnagar is growing as industrial city and it attracts many laborers from other places for job and good future.

Blood group patterns which we have found are more or less inconsistency with the blood group pattern seen in Indian population with minor variations [13].

Region	O (%)	A (%)	B (%)	AB (%)
India	37	23	33	07
Present study	19	25.4	31.4	14.4

Many diseases have been linked with various blood groups [2]. Among these two are peptic ulcer and it's linked with O blood group [7] and carcinoma of stomach and it's linked with blood group A [4-6].

In first instance, that is, in cases of peptic ulcer O group is found or reversely O group persons have more tendencies to develop peptic ulcer, is statistically well established. There is no reasonable scientific basis for this association. But in second case, that is, cases of carcinoma of stomach and its association with blood group A, some immunological explanation comes forward. This explanation is that in person with blood group A, the A allele itself is contributing to the genetic mutations in the stomach.

In carcinoma of stomach malignant cells develops a tumor marker called Thomsen-Friedenreich (T) antigen. This T antigen is suppressed in normal healthy cells. This T antigen shows some structural similarity with an antigen that is why persons with blood group A carry the least amount of the anti-T antibody and thus they have more tendencies to develop carcinoma of stomach.

We have tried extensively to search any such previous studies which correlate blood groups and causes of deaths. But our search in print as well as in electronic form did not reveal any previous study. Therefore presumably we want to say that this study is the first study of this kind. But we found one study which was conducted by school of psychology, University of Vienna, Austria [14] which was conducted across 29 European and 10 non-European nations. In that study they negatively correlated suicide rate and people with blood group O. But that study was conducted on living persons and blood was taken from living subjects and not on postmortem blood. Therefore we are not in a position to compare our results with any other study and findings similarly or dissimilarly.

CONCLUSION

Correlation between palmistry and diseases is now well establish and know to us. But after present study we can say that there is also some correlation between cause of death, manner of death and blood group like death due to CVS and vehicular accident is more common in B+ blood group, poisoning case is more common in O+ blood group, and suicide is more common in blood group O+ etc. So we hope full that more study like this will done in various demographic patterns of population and more clear correlation can be established between cause of death, manner of death and blood grouping.

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