Research Paper

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The Distribution Of ABO and RH (D) Blood Groups in Local Residents of Ahmedabad

Medical Science

KEYWORDS : blood groups, ABO System, Rh System

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ABSTRACT

Introduction: Landsteiner's discover in 1901 of the existence of blood groups, ABO and Rh system have very great significance in blood transfusion. Before blood transfusion one should know blood group. Blood groups also associated with tissue grafts, haemolytic diseases of new born and certain other diseases like peptic ulcer, diabetes and malignancy.

Material and method: The present study was done on 400 subjects attending blood bank of L.G General Hospital and also First M.B.B.S. students of AMC met medical college, Ahmedabad for blood typing. The test was performed using rapid slide test technique for blood groups. All the subject underwent a through general physical examination to rule out the presence of various diseases like blood pressure, anaemia, diabetes, tuberculosis, peptic ulcer, thalassaemia and carcinoma.

Result: Frequency distribution of ABO Blood Groups

Statically analysis of the data revealed that most predominant blood group in the subject of present study was B showing a frequency of 36.5%, followed by O group with frequency of 30.5% and than A group with frequency 21%. The AB group was infrequent only with a frequency of 12%.

Rh System - Out of 400 subjects 357(89.2%) were Rh+ve while 43 (10.7%) were Rh–ve.

INTRODUCTION:

Since Landsteiner's discovery in 1901 of the existence of blood groups, 15 well defined systems of antigens have been demonstrated in European people. In order of discovery these are ABO, MNS, P, Rah, Lutheran, Kill, Lewis, Duffy, Kidd, Diego, Yet, Li, Xg, Drombrock and Colton. (Bhattacharya et al 1991)

Rh system bears a very great importance and it is being determined before blood transfusion, chiefly in women of child bearing age. This system of blood groups was discovered by Landsteiner and weiner in 1940. They are also important for studying the inheritance of genes to establish parentage (Gyton 1991). Also in cases of disputed paternity and in forensic science.

Mourant (1983) has examined wider implication of blood groups such as relations between genetic characteristics, susceptibility to particular diseases and exposure to various environmental factors.

Blood groups also associated with tissue grafts, haemolytic diseases of new born and certain other diseases like peptic ulcer, diabetes and malignancy.

Though finding out the blood groups needs very easy and quick procedure, no one cares for knowing one's blood groups in country like India. They go for this test only when blood transfusion is needed. It should be done as early as possible in life so that no problem arrives if blood transfusion needed in emergency and also after marriage due to Rh incompatibility.

An extensive review of available literature has been revealed that there has been no study conducted on ABO and Rh(D) blood groups in local resident of Ahmedabad. The present study is an attempt to fill these lacunae.

Material and methods: The present study was done on 400 subjects attending blood bank of L.G General Hospital and also First M.B.B.S. students of AMC met medical college, Ahmedabad for blood typing.

All the persons were asked detailed history regarding any diseases in past and present. The following details regarding blood groups were studied.

- ABO Typing
- Rh System

The test was performed using rapid slide test technique for blood groups as described by Mollison (1972). Two areas were marked out on a glass slide labeled A and B. then one drop of corresponding antiserum was added to the above areas. One drop of blood was added to each of the labeled areas with separate application sticks, the cell-antiserum mixture was mixed well. Tests that did not show agglutination within two minutes were considered negatives. Agglutination of red blood cells in the presence of antiserum was considered as positive test result.

The Rh grouping was also carried out at room temperature using rapid slide test. For Rh system, human monoclonal Anti Rh(D) antibody was used, using a dropper bottle. One drop of anti Rh reagent was put on the slide and one drop of blood was mixed. The agglutination reaction appeared and the test was read as positive test were there was no agglutination, the test was read as negative. The test was performed with antisera stored between 2 to 8 degree C.

All the subject underwent a through general physical examination to rule out the presence of various diseases like blood pressure, anaemia, diabetes, tuberculosis, peptic ulcer, thalassaemia and carcinoma.

Results: The study was conducted in 400 local resident of Ahmedabad. The subject was selected on random basis. The statistical analysis of the results was done to find out the prevalence of blood groups ABO and Rh(D) system in this part of country. Most of the subjects were between 11 to 30 years of age.

Distribution of ABO Blood Groups and Rh type

Frequency distribution of ABO Blood Groups

Statically analysis of the data revealed that most predominant blood group in the subject of present study was B showing a frequency of 36.5%, followed by O group with frequency of 30.5% and than A group with frequency 21%. The AB group was infrequent only with a frequency of 12%.

Rh System

The result of the present study depict that majority of subjects were Rh +ve while Rh –ve were infrequent. Out of 400 subjects 357(89.2%) were Rh+ve while 43 (10.7%) were Rh–ve. Among 357 Rh+ve subjects 265(66.2%) were males while 92(23%) were females. Among 43 Rh-ve cases 30(7.5%) were males while 13(3.2%) were females. It is evident from the results that there is no significant difference between distribution of Rh+ve and Rh-ve cases among males and females.

In the present study the analysis of ABO Rh+ve cases was also done to find any relation with sex. The numbers of Rh+ve male subjects were 265 while numbers of female Rh+ve subject were 92. Among the different blood groups studied, B group was predominant in males as well as females.

The results of Rh-ve individuals were further evaluated in order to know any significant change in distribution with regard to sex. O and B blood groups were frequent among Rh-ve subjects in females and in males respectively.

Table - 1

RELATIVE FREQUENCY OF ABO BLOOD GROUPS AND SEXWISE DISTRIBUTION				
BLOOD GROUP	NO. OF CASES	PERCENTAGE	MALE	FEMALE
O	122	30.5%	83	39
A	84	21%	57	27
B	146	36.5%	116	29
AB	48	12%	35	14
TOTAL 400			291	109

Table - 2

SEX WISE DISTRIBUTION OF BLOOD GROUPS ACCORDING TO Rh TYPE IN 400 PERSONS		
BLOOD GROUP	MALE	FEMALE
Rh+VE	265	92
Rh-VE	30	13
TOTAL	295	105

Table –3

DISTRIBUTION OF BLOOD GROUPS ABO, Rh+VE AND Rh-VE TYPE											
	O		A		B		AB		TOTAL	
	M	F	M	F	M	F	M	F	M	F
Rh+VE	76	26	50	25	105	27	34	13	265	91
Rh-VE	7	13	7	2	11	2	1	0	26	17

DISCUSSION

BLOOD GROUP O: In the present study O group frequency was 30.5%. it is less than that reported for South Indians and Kashmiries by shanker reported O blood group frequency of 38.7%. Myshra et al reported 40.21%. however frequency of blood group O in the study of Singh et al(1991) shows quite close and good correlation with the present study.

BLOOD GROUP A: A blood group frequency is 21% in present study. The results of present study show a close association with finding of Vyas et al, Dutta and Mathew, Shanker and Anand & Chandrashekhar. Frequency of A blood group all over India ranges between 20 to 25 %.

BLLOD GROUP B: The distribution of B blood group in present study was highest 36.5% the finding of present study are in agreement with observation of Seth, Tyagi, Sivraman, and Das et al. global levels studies indicate a very low level of distribution of B blood group as compared to present study.

BLOOD GROUP AB: The frequency in the present study of AB group is 12%. It shows a fair degree agreement with majority of studies in the other part of India. All over world AB blood group distribution shows a uniform pattern ranging from 3-10%.

Rh SYSTEM: In the present study Rh+ve blood group individuals are 89.2% and Rh-ve are 10.7%. Similar finding were of Sen et al, Anand, Singh, Das and other. Also in the present study there exists no statistically significant relation between Rh system and sex.

Conclusions:

- The most predominant blood group in people of ahmedabad region is B (36.5%), followed by O (30.5%), A group (21%) and AB group (12%).
- Majority of people are Rh+ve (89.2%) and only (10.7%) are Rh-ve
- There exist no significant difference in the distribution of ABO and Rh system in relation to sex.

REFERENCE

• GUYTON, C.A. (1991). Textbook of medical physiology WB Saunders Company Harcourt Brace Jovanovich, Inc: | • Landseiner, K. and Wiener, A.S. (1962). On the presence of M agglutinogens in the blood of monkeys. Journal of immunology I 33; 19-25. | • Mollison, P.L.(1959). Blood groups antibodies and red cell distraction. British Med. J. 15: 1035-1041. | • Mourant , A.E. (1983). Blood groups introduction. British Med. J. 15:89 | • Shanker , P.S.(1967). Distribution of blood groups in Northern Mysore state. Antiseptic 64:11 | • Singh, L; Gupta,P. ; and Goyel, K.V. (1974). Distribution of ABO and Rh blood groups among the Tibetians. Human Heredity 24: 387-388 | • Tyagi, S.P. (1968). Distribution of ABO blood groups in U.P. J. of Indian Med. Association. 51:57. | • Vyas, G.N. ; Bhatia, H.M. : Banker, D.D. and Purandare, N.M. (1958). Study of blood groups. Annals of Human Genetics 22: 185-199. | • Wiener, A.S. and Unger, L.J. (1962). Further observations on the blood factors. Transfusion 2 : 230-233.