Original Article

Frequency of Dominant Blood Groups in Medical Students of Karachi

1. Tariq Kamal Jafri 2. Kiran Mehtab 3. Aijaz Ahmed Qureshi 4. Tafazzul HZ 5. Husan Bano

1. Asstt. Prof. of Physiology 2. Asstt. Prof. of Community Medicine 3. Asstt. Prof. of Physiology 4. Asstt. Prof. of Community Medicine, Sindh Medical College, DUHS, Karachi 5. Assoc. Prof. Al-Tibri Medical College, Karachi

ABSTRACT

Objectives:

1. To assess the different blood groups, in students of DUHS.
2. To determine the dominant blood group in the students of DUHS
3. To compare the results of present study with other cities of Pakistan & countries of the world

Study Design: Cross-sectional study.

Place and Duration of Study: This study was carried out on medical students of Sindh & Dow medical Colleges, {DUHS) Karachi from September 2000-2004.

Materials and Methods: Sample size of 2300 was drawn by using convenient sampling method. Blood samples were collected by finger prick method. Data was collected & analyzed on SPSS version 16.

Results Out of 2300 students group B was found to be the commonest (40%), group O (32%), group A (20%), group AB (08%).Rh positive (85%).The dominant being B+ in karachi as well in Pakistan, compared to O blood group in different countries of world

Conclusion The study showed very little %{ 08) of blood (AB) groups among the medical students of Karachi; it generated an authentic data, which may serve a useful purpose for high transfusion demand to very emergent situations.

Key Words: ABO, Rh (D), Blood groups, Medical Students, Dominant, Transfusion.

INTRODUCTION

Determination of blood group has important significance in clinical medicine. The frequency of blood groups in various populations can be used to establish relationship with certain diseases [1, 2]. In addition to establishment of efficient transfusion services data can be utilized for genetic studies, forensic investigations and exploring ancestral relations of humans [3]

Landsteiener in 1901 discovered first classical ABO system; Rh system was discovered in 1941[4].The basis of ABO system is occurrence or absence of antigens on erythrocytes. However these antigens may be present in other tissues like salivary glands, pancreas, kidney, liver [5].Rh blood system is polymorphic. The antigens of this system are C, D,E [6].Anti – D agglutins are cause of erythroblastosis foetalis.[7]

The purpose of this study was to determine the frequency of blood groups (ABO, Rh) in students of Sindh Medical Colleges, Karachi, to determine the dominant blood group in the students, as well as compare results with similar studies carried out in other cities of Pakistan and world wide this study can become a tool to generate data in case of high transfusion demands.

MATERIALS AND METHODS

A total of 2300 students,1288 females and 1012 males were selected for determining there blood groups during a four year period from September 2000 to 2004.

Blood samples were collected by finger prick. ABO and Rh grouping was done by Agglutination test, using antisera A, B, D. The data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) version 16.0.

RESULTS

Out of 2300 students,1288 (56%) females, 1012 (44%) males. Group B was found to be the commonest (40%) followed by group O (32%) group A (20%). Group AB was the least common (08%).

Table No.1: Prevalence of Different Blood Groups in the 2300 Students

Blood Group	Number	Percentage
A	460	20
B	920	40
AB	184	08
O	736	32

In Rh factor determination of 2300 students, out of 2186 Rh +ve (95%), 114 Rh –ve (5%).Blood group A with 95.1% Rh +ve (4.9 %) Rh –ve. B, 95.6% were Rh +ve and 4.4% were Rh –ve. Those with blood group AB (96.0%) Rh +ve (4.0%) Rh –ve and those with group O (95.21%) Rh +ve (4.79%) Rh –ve.

Table No.2: Frequency of Rh factor among student's ABO groups.

Rh Factor	Total students (n=2300)	Blood Group			
		A	B	AB	O
Rh +ve	95% (n=2186)	95.10	95.60	96.00	95.21
Rh -ve	5% (n=114)	4.90	4.40	4.00	4.79

Table No.3: Comparisons of frequency of ABO& Rh blood groups in cities of Pakistan & other countries

Population	A	B	AB	O	Rh+	Rh-
Peshawar	26	34	7	31	94.6	5.4
Multan	21.9	36.9	7.4	33.8	92.1	7.4
Bannu	31.3	36.2	7.5	25	89.2	10.8
Britain	42	8	3	47	61	39
S.arabia	26	18	4	51	92	8
Iran	33	23	9	34	88.8	11.2

DISCUSSION

The results of the study were in approximation with similar studies carried out in other cities of Pakistan,[8,9,10] all studies showed dominance of group B and O, The studies in other countries showed high frequency of blood group O followed by B[11, 12, 13]

A study carried out in Muslim population of Karachi, who migrated from India also showed dominance of blood group B +ve. In Sindh & Dow medical colleges the high frequency of blood group B could be due to majority of students belonged to parents who ancestral relations with population had migrated from India during partition[14] all the studies showed least frequency of Rh –ve.

CONCLUSION

In Pakistan due to the dominance of B+ blood group, any emergency condition requiring Rh- groups would be difficult to meet, there is need for more extensive research throughout Pakistan, Government should add a column in censes or in voter lists mentioning blood groups, so a comprehensive data would be available.

REFERENCES

1. Purushottan A, Girri, Sankalp ZYadav. Guarav Singh Parhar Deepak B. phalke. Int. J Biol Med Res. 2011; 2(4): 988-90.
2. Fikrin F, Chesterman C, Penington D, Rush B. De.gruchs clinical haemotology in medical practice. 5th ed. Blackwell Science Publisher; 2008.p.475.
3. Boskabady MH, Shademan A, Ghanami G, Mazloom R. Pak J Med Sci 2005; 21(2): 194 – 8.
4. Mahmood MA, Anjum AH. Tariq SMA, Rafiq S, Usman M, Khawar S. Biomedical 21(2) 2005 1-4
5. Khanms, Subhan, et.al. Prevalence of blood groups and Rh factor in Bannu region (N.W.F.P) Pakistan Pak Med Res 2004; 43(1). 8-10.
6. Ganong WF. Review of Medical Physiology 21st ed. 2003.p.539-40.
7. Bashwari LA. Almulhim AA. Ahmad MS. Ahmed M.A. Frequency of ABO blood groups in eastern region of Saudi Arabia, Saudi Med J 2001; 22: 1008 – 12.
8. Guyton AC. Hal JE. Text book of Medical Physiology. 10th ed. London: WB Saunder Company; 2000.
9. Khursid B. Naz M. Hassan, Mabood SF. Frequency of ABO RH(D) blood groups in district Swabi NWFP Pakistan J. Sci Tech Univ Peshawar 1992;16:5-6.
10. Khaliq MA, Khan JA, Shah H, et al. Frequency of ABO and Rh (D) blood groups in Hazara division (Abbottabad) Pak J Med Res 1984; 23(4): 102-3.
11. Blood typing system other than ABO.http:// www.Bloodbank.com/type-sys.html
12. Blood Group Antigen GeneMutation,Database, http://www.bioc.aecom.yu.edu/bgmutlabo.html
13. PMRC. Some normal parameters of Pakistani's in the Peshawar area 1976 – 82 Peshawar: Pakistan Medical Research Council, KMC; 1982.
14. Moten AN, Stewart. Blood groups of muslims and parsees in Pakistan. Br J Haem.1956;2:61-4

Address for Corresponding Author:
Dr. Tariq Kamal Jafri,
Assistant Professor of Physiology,
Sindh Medical College (DUHS), Karachi
Email Address: dr_tariqkamal@yahoo.com
Phone #: 03002163790