

ABO AND SUB-GROUPS OF GROUP A IN THE LAHORE POPULATION

Pages with reference to book, From 200 To 201

Nighat Parveen (University Town, Peshawar.)

Abstract

ABO grouping and A subgroups are medically important since these are responsible for transfusion reactions . The ABO groups in our population were A: 24.2%, B: 31.9%, O: 35.5% and AB:8.4% of the population. A sub groups were A₁:18.4 %, A₂:5.8%. A₁B:6.7% and A₂B:1.7. The ABO pattern is similar to rest of Pakistan while A sub grouping shows similarity to North Indian populations (JPMA 37: 200, 1987).

INTRODUCTION

The human blood group systems have immense importance in medicine, genetics, medical jurisprudence and anthropology. In the field of medicine the life saving procedure of blood transfusion only becomes possible after the identification of the various blood group systems. The association of certain blood groups with various diseases like peptic ulcer and carcinoma stomach is also well established and blood group incompatibility between mother and baby is responsible for jaundice, kernicterus and death in the newborn. In the medico-legal field blood groups are used for establishing paternity and for other identification purposes. Anthropologists have used the blood group system to study the origin of races and movement of population through the centuries.

The North Western region of Pakistan has been the entry point of the hordes of invaders attracted by the riches and prosperity of this area and many settled down here. Therefore both medically and anthropologically it is important and interesting to study the blood group distribution in this area and to compare it with other races and population groups.

MATERIAL AND METHODS

Blood samples were collected from 3000 individuals in Lahore area including students from King Edward, Allama Iqbal, and Fatima Jinnah Medical Colleges and patients from Mayo Hospital, Ganga Ram Hospital and Lady Wellington Hospital.

The following tests were done:

1. ABO Blood groups
2. Sub types of A group

ABO group determination was done by using antisera provided by Biotest Germany. The method adopted was that of Dacie and Lewis¹ . No special preparation was necessary before specimen collection. Disposable syringes were used. Sm! blood was collected and allowed to clot. After 1½ hours it was centrifuged to separate cells, the cells were washed with saline and tests performed on them subsequently.

Tube technique was adopted for determination of ABO blood groups. A and AB cells were separated. The reagent Anti-A₁, used was from Biotest Germany and the technique adopted was that of Dacie and Lewis'. One drop of washed 5% red cell suspension was put on a clean slide and one drop of reagent Anti-A₁, was added to it. The two were mixed and kept at 40°C for 5 minutes, the mixture showing agglutination was labelled, A₁ group and one with no agglutination was labelled as A₂ group. Similarly

A1B and A2B groups were identified.

RESULTS

The ABO blood group distribution in the population studied is given in Table 1.

TABLE – 1
General Distribution of ABO Blood Groups.

| Groups | Number Observed | Percentage |
|--------------|-----------------|--------------|
| A | 725 | 24.2 |
| B | 956 | 31.9 |
| O | 1066 | 35.5 |
| AB | 253 | 8.4 |
| TOTAL | 3000 | 100.0 |

This distribution is similar to distribution reported from Peshawar, Karachi and Lahore^{2,3,4}
Table II shows the A subgroups distribution, A1 was found in 546/3000 or 18.2%,
A2 in 174/3000 or 5.8%, A1B in 202/3000 or 6.7% and A2B in 51/3000 or 1.7%.

ABO SUB GROUPS DISTRIBUTION

The distribution of A1, A2, A1B and A2B was calculated from the data and the results are shown in Table II.

TABLE – II

| Group | No. Observed | Percentage |
|-------|--------------|------------|
| A1 | 546 | 18.2 |
| A2 | 174 | 5.8 |
| A1B | 202 | 6.7 |
| A2B | 51 | 1.7 |

DISCUSSION

There is a worldwide variation in distribution of ABO group and subgroups. The commonest, group observed in this study was “O” with frequency of 35.5%. Next common was “B” with frequency of 31.9%, followed by A, with frequency of 24.2% and “AB” 8.4%. These results are more or less similar to the study done by Mzal et al⁴ A similar study done in Karachi also showed the same results³. The distribution of A1, A2, A1B and A2B is also variable. A2 gene is present nearly in all population but its average frequency of 5.8% in this study is lower than that in Europe⁶. So far in Pakistan no recent study regarding subgroup distribution has been done. The only studies on the subject to our knowledge were done in NWFP Gilgit and in Swat⁶. These studies showed A1 group to be 20%, A2 “3%, ‘A1B’ 10.53% and A2B-3%. The total cases studied were 133.

These results do not resemble the Mediterranean or Iranian picture⁷ but have close resemblance to the people of Northern Indian region where A1 is 20% and A2 5.8%⁶.

In European population usually the A2 figures are higher i.e. above 5%⁶.

In Saudi Arabia A1 was found to be 14.4% A2 4.7%, AB 1.93% and A2B 1.7%⁸.

Our results and others show differences from European and Mediterranean populations though similarities with North Indian populations may indicate genetic links. It would be interesting to study A sub groups in other areas of Pakistan to see differences, if any, specially in view of similarities in ABO groups.

REFERENCES

1. Dacie, J.V. and Lewis, S.M. Practical haematology. 5th ed. Edinburgh, Churchill Livingstone, 1975, p. 528.
2. Pakistan Medical Research Council. Survey of ABO blood groups in Peshawar. PMRC. (Un-

published data).

3. Arif, M.A. Neonatal jaundice due to Rhesus and AB isoimmunization. frequency of these antigens in Pakistani mothers. JPMA., 1982; 32:165.
4. Afzal, M., Ziaur-Rehman, Hussain, F. and Siddiqi, R. A survey of blood groups. JPMA., 1977; 27 : 426.
5. Race, R.R. and Sanger, R. Blood groups in man ed. Oxford Bleckwell, 1975, p.12.
6. Mourant, A.E.and Kopec, A.DA. The distribution of human blood groups and other poly morphism. 2nd ed. Oxford, Oxford University Press, 1976, p.1168.
7. Nijenhuis, LE. Blood group frequencies in Iran. Vox. Sang., 1964; 9:723.
8. Maranjian, G., Ikin, E. w., Mourant, A.E and Lehman, H. The blood groups and haemoglobins of Saudi Arabians. Hum. Biol., 1966; 38: 394.