PRELIMINARY REPORT ON THE TREND OF BLOOD GROUP DISTRIBUTION AMONG NEPALESE AND INDIAN MEDICAL STUDENTS

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ABSTRACT

Blood group distribution of ABO and Rh factor were studied among 322 Nepalese (male - 178; female - 144) and 100 Indians (male - 72; female - 28;) in a group of medical students.

The percentage of different groups A, B, AB and 0 in Nepalese showed relatively more in A & AB and less in 0 groups than Indians. The Rh (-)ve was more among Indians (9%) than Nepalese (1.5%).

This difference is likely to be due to difference of ethnic origin of Indian & Nepalese. The population of Nepal is a mixture of Tibeto-Burman, Australoid and Indo-Aryan races.

Key Words: A, B, O, Rh blood group.

INTRODUCTION

Blood group typing is based on the antigenic property of red blood cells. It is one of the important tool for anthropological study of ethnic origin of people and for blood transfusion to avoid catastrophies of mismatched transfusion reactions.

The membrane of human RBCs contains about 30 different varieties of blood group antigens and some

of these are important; and best known are A and B antigens; which are actually complex oligosaccharides, that differ in their terminal sugar. In RBCs they are mostly glycosphingolipids. The antibodies against red cell antigens are acquired during early childhood and are called agglutinins. According to the presence of antigens and agglutinins, individuals are divided into four major blood groups A, B, AB and 0.

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Human red blood cells also contain another antigen: antigen D (Rh) People having this antigen are called Rh positive and those who do not possess are Rh negative. It differs from ABO system that corresponding antibodies (agglutinins) are not naturally developed unless sensitised with Rh (+ve) blood transfusion to Rh (- ve) persons.

It is interesting to note that, distribution of ABO and Rh blood group varies from race to race. Among the Western Europeans 42% belongs to A group, 9% to B group, 3% to AB group and rest 46% to O group. Again some of the Western Europeans show higher proportion (upto 40%) of group B. On the other hand pure American Indians belong almost exclusively to group O.¹ Among the Americans the frequency of A, B AB and O blood group is 41%, 10%, 4% and 45% respectively.²

About the Rh group, existing literature indicates that 85% of white people are Rh (+) ve and rest 15% are Rh (-) ve. In American blacks, the percentage of Rh (+) ve is about 95% whereas in African blacks it is virtually 100%.³ 85% of caucasians and over 99% of Asians are Rh (+ve).²

Nepalese are the conglomerate of diverse ethnic communities. The composition of people of Nepal was the outcome of successive migrations of Tibeto Burman group from the northeast and others from south west. A very small member of Australo Asiatic people, the Satar and Jhangad inhabit the Terai plain of Nepal. Temperate highlands are natural homeland of Tibeto Burman people. The Paharis are widely distributed in lower subtropical zone. People of Terai are mostly Indian in origin from northern Gangetic plain. People in western hills include Gurungs and Magars. In central hills the Tamangs are the most

prevalent. Hindu Brahmins, Chhetris along with Newars make almost two thirds of Nepali population. Finally, in the mid mountain region there are Newars 50% of whom live in Kathmandu Valley. This group has thought to be have migrated from Tibet a few thousand years back. So Nepali population is a multiethnic population a mixture of Indo-Aryan, Tibeto-Burman and other ethnic groups.⁴ There is also a distinct ethnical variation among north and south Indian people.⁵ In this study most of the Nepalese students are from Kathmandu valley and most of the Indian students are from south India. So ethnicity of medical students from India and Nepal (who served as volunteers in this study) may be different. The present study was undertaken for comparative assessment of the trend of ABO and Rh group distribution among the Nepalese and Indian students studying the medical colleges in Nepal.

METHOD

322 Nepalese (male 178, female 144) and 100 Indian (male 72, female 28) medical students from College of Medical Sciences, Bharatpur and Nepal Medical College, Kathmandu were taken for the study. Standard slide method was adopted: a drop of each of the monoclonal antisera (Anti A, Anti B and Anti D) [manufactured by Tulip Diagnostics (P) Limited, Old Goa, India] were taken on glass slides. The subject's diluted blood cells, whose blood group is to be determined was mixed with each sera separately with the help of separate glass rods. Blood groups were determined on the basis of agglutination reaction within 5 minutes of mixing as follows: -

(+) = **Agglutination**, (-) = **No agglutination**

If agglutination occurs with anti D, then the group is Rh (+). If not it is Rh (-) ve.

RESULTS

Results have been presented in Table I, II and

Table I
Blood group distribution among Nepalese
medical students.
(Total No. 322, Male: 178, Female: 144)

III. Among the Nepalese (medical students) the frequency of A, B, AB and O groups were found 29%, 26%, 13% and 32% respectively; in them only 1.5% were Rh (-) ve and rest are Rh (+) ve.

On the other hand, among the Indian students the frequency of A, B, AB and O group were recorded 14%, 32%, 7% and 47% respectively, where 9% were found to be Rh (-) ve.

Table II
Blood group distribution among Indian
medical students.
(Total No. 100, Male: 72, Female: 28)

The blood group distribution among the Nepalese students of different ethnic groups has been shown in table III.

Table III
Blood group distribution among the different ethnic groups among the Nepalese Students.

DISCUSSION

It has been observed that percentage of blood group distribution in different parts of the world are different depending upon the ethnic origin of the races. Although Nepal is neighbouring country to India, pattern of blood group distribution seems to be different in Nepal than that of India. (Nepal's population is a mix of Tibeto Nepalese and Indo-Nepalese origin having many ethnic subgroups).

In the present study, the numbers of Indian origin is one hundred; Rh negative was observed 9%

(Female - 6, Male - 3). When compared between Indian and Nepalese irrespective of ethnic origin, it has been observed among Nepalese A (29%) & AB (13%) group are more and O group (32%) is less than the Indians. Rh negative was observed only 1.5% (4 out of total 5 were females) among the Nepalese whereas 9% in Indians. The blood group distribution in Nepalese ethnic groups in this population is shown in table III.

In our studies the number of subjects were not many. If the numbers of subjects are increased with proportionate representatives of different subgroups

the percentage distribution of different blood groups might give insight into the ethnic origins of the different groups of people living in Nepal. That might be a good anthropological study. Our's is preliminary report and presenting the likely trend in blood group distribution.

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