

TREND OF BLOOD GROUP DISTRIBUTION AMONG THE JIRELS OF NEPAL

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ABSTRACT

This study was undertaken to find out the trend of blood group distribution among the Jirels, a small tribe, descended from Kirat tribe and to compare with other castes within Nepal and with people of other continents. Blood group distribution (ABO grouping and Rh typing) was studied among 2093 Jirels (Male-1057 and Female-1036). The frequency of distribution of A, B, O and AB was 55.05%, 14.72%, 21.64% and 8.6% respectively. The group A was found to be most common among the Jirels where as O is most common in the world. Only 0.14% of the Jirels were found to be Rhesus Negative (Rh -ve).

Key Words: A B O Blood group, Rh type.

INTRODUCTION

Blood grouping is based on antigenic property of red blood cells (RBC). It is the most important factor for blood transfusion to avoid complications of mismatched transfusion reactions. It is one of the important tools for anthropological study of ethnic origin of people. The RBC membrane contains about 30 different type of blood group antigens and the most important are A and B antigens. These antigens are complex oligosaccharides which differ in their terminal sugars. The antibodies against red cell antigens which are acquired during early childhood are called agglutinins (antibody). According to the presence of

these antigens and antibodies blood is divided into four major groups called A, B, AB and O.

Human red cell contains another important antigen called antigen D. Red cell containing this antigen are grouped as Rh positive and those which do not have this, Rh negative.

The distribution of ABO and Rh blood group varies from race to race. Among the Western Europeans 42% belongs to A, 9% to B, 3% to AB and 46% to O. Some Western European study show up to 40% of B. On the other hand some American Indians belong almost exclusively to group O.¹ In American

Table I

Blood type	Antigen in RBC	Antibody in plasma
A	A	B
B	B	A
AB	AB	NIL
O	NIL	AB

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population the frequency of O, A, B and AB blood group is 45%, 41%, 10% and 4% respectively.² As for as Rh typing is concerned, 85% of white people are Rh positive and the rest are Rh negative. Ninety five percent of American blacks are Rh +ve where as 100% of African blacks are +ve.³ Eighty five percent of Caucasian are Rh +ve and 99% of Asians are Rh +ve.² It is interesting to note the ethnic variation among Nepalese medical students which shows that in Brahmins, the frequency of A, B, AB and O blood groups is 32%, 42%, 26% and 46% respectively where as in Newars the frequency of A, B, AB and O are 23%, 20%, 39% and 25% respectively. The Rh +ve is >96% in both of the casts.⁴ The blood group distribution pattern reported from previous study shows high frequency of B in Brahmins and Sherpas whereas Newars, Tamang and Gurung have predominant of A. Moreover Asian Mongoloids has higher frequency of A gene and relatively low B is observed in Population of Korea, Japan and Several Asiatic population of USSR and North East part of India.^{9,10,11}

Nepalese people are a conglomerate of diverse ethnic communities. The composition of people of Nepal is the outcome of successive migration of Tibeto- Burman group from the North and other from South west. This population is a multiethnic population, a mixture of Indo-Aryan, Tibeto-Burman and other ethnic groups.⁵

Jirels are inhabitants of the Jiri-Sikri village, located in Dolakha District of Janakpur zone in Eastern Nepal. Jiri is situated 190 km east of Kathmandu, with an average elevation of some 2000 meters. Jiri area is composed of several small independent villages.⁶ The Jirels, a small tribe have been descended from Kirat tribe which are Surya Bansee. They have 12 major clans

and 11 sub clans⁷ and they are descents of the Mangolians. The total number of Jirels are 5319, the male female composition comprising 2582 and 2734 respectively which encompasses 0.02% of total population of Nepal.⁸

METHODS

Two thousand ninety three Jirels (Male 1057 and Female 1036) from Jiri VDC were included in the study which is 39% of total Jirel population. The standard slide method was used. A drop of each of monoclonal antisera Anti A, Anti B and Anti D manufactured by Glasgow company and Tulip company India Ltd were taken on glass slide and a drop of blood of individual, whose blood group was to be determined, was mixed with the sera separately with the help of bamboo stick and watched for agglutination within 5 minutes of mixing. The Blood group was determined on the basis of agglutination reaction that followed.

RESULTS

Among the study population of 2093 Jirels, the frequency of A, B, O and AB groups was found to be 55.05% 14.72%, 21.64% and 8.6% respectively. The Rh +ve were 99.02% where as only 0.98% were found to be Rh -ve. The result has been shown in following Table IV.

DISCUSSION

It has been observed that the percentage of blood group distribution differs in different parts of the world depending upon the ethnicity and races. The frequency of predominant blood group among Jirels is A (55.05%) whereas the predominant blood

Table II

Reaction with Anti A	Reaction with Anti B	Blood Group
+	-	A
-	+	B
+	+	AB
-	-	O

Table III

Reaction with anti D	Rh typing
+	Rh positive
-	Rh negative

(+) = Agglutination (-) = No agglutination

Table IV : Blood group distribution among the Jirels
(Males = 1057, Females = 2036)

Group	Male	Female	Rh -ve male	Rh -ve female	Total
A	588	584	3	3	1152 (55.05%)
B	135	173	1	2	308 (14.72%)
O	264	189	0	0	453 (21.64%)
AB	90	90	1	-	180 (8.60%)

group in Americans and Europeans is O (45% and 46%).^{1,2} The frequency of A is followed by O, B and AB in Jirels (21.64%, 14.22% and 8.60%). One similarity among the Blood group trend with other part of world is that AB is the least frequent group in ABO grouping system. In comparison to the other ethnic group of Nepal, Brahmins have frequency of O, B, A and AB (46%, 42%, 32% and 26%) in decreasing order. The Newars have A, B, O and AB (39%, 25%, 23% and 20%) in decreasing order⁶ whereas Jirels have A, O, B and AB (55.05%, 21.64%, 14.72% and 8.60%). As the sample size of Brahmins (125 people) and Newars (55 people) is very small, it is unwise to generalize the result. But the other study showed Chetris, Newars, Tamangs and Gurungs have higher frequency of A which is similar to our findings.^{9,10} The other important thing is that there is no variation among sex. The trend of frequency of occurrence is similar to male and females.

The other observed things are that 85% of white people, 85% of caucasian, 100% of African and 95% of American black are Rh positive whereas 99.02% of Jirels are Rh +ve which corresponds to the statement that 99% of Asian are Rh +ve.³ The blood group study among medical students shows that 3% of Brahmins has Rh negative whereas only 0.98% of Jirels are Rh -ve which supports the fact that there is an ethnic variation in Rh typing.

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