DISTRIBUTION OF BLOOD GROUPS ABO AND Rh REPORTED FROM DISTRICT SIALKOT (PUNJAB) PAKISTAN

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***ABSTRATCT**:- The study was carried out to estimate the frequency distribution of ABO and Rh Blood groups in urban as well as rural population of District Sialkot and to compare it with data of other cities of Pakistan. Blood groups ABO and Rh determination was performed by slide method using antigen-antibody agglutination test. The study included blood donors record of past few years of the Blood donation and screening camps carried out in different areas of the district Sialkot like colleges, factories, prisoners jail etc. The total number of subjects included was 1656 having 981 male and 675 female subjects. The most prevalent blood type in this population was found to be blood group B (36.59%; n=606) followed by blood type O (31.34%; n=519) and blood type A (22.28%; n=369). Blood group AB showed least prevalence of 9.70% (n=162). Percentage for Rhesus-D positive subjects was 91.24% (n=1511) as compared to 8.76% (n=145) for Rhesus negative subjects. Relative distribution of blood types in male and female subjects in this population were observed as 21.30% and 22.28% for blood group A, 38.63% and 36.59% for blood group B, 8.15% and 12.15% for blood group AB, and lastly 32.42% and 31.34% for blood group O respectively. Percentages for Rhesus D phenotype for male and female subjects were 91.85% and 90.37% respectively. The results of this study explain the distribution pattern of ABO and Rh phenotypes in population of Sialkot and will also help in improving blood transfusion services.*

Keywords: Blood groups, ABO, Rhesus, Sialkot.

INTRODUCTION

The ABO system was the first recognized blood groups and actually the first known genetic markers of humans. Due to this system safe treatment practices and blood transfusions were possible in severe life threatening diseases and blood loss [1]. The frequency distribution of blood groups ABO and Rh factor has been estimated worldwide in various populations during the last few decades. These frequencies have great variations from one population to other in different geographic locations, indicating underlying ethnicity related genetic diversity of human populations loss [2]. Different diseases and blood groups have been found associated with each other [3]. For instance women having blood group A are considered more susceptible to endometrial and ovarian carcinoma compared with women having non-A blood groups [4]. The risk of peptic ulcer is more people with blood group O [5] and people with blood group A are at increased risk of catching coronary heart disease [6]. Blood groups ABO have also been used as a genetic marker for obesity and a strong predictor of suicide and homicide rates [7, 8, 9]. In a study on Chinese pregnant women, blood group AB was found to be a protective factor against Gestational Diabetes Mellitis (GDM) [10]. Also patients with Rotator Cuff Tears were found more likely to have blood group O [11]. A number of studies about the distribution of ABO and Rh blood groups among populations of different cities of Pakistan have been reported, however no data/study to our knowledge available for Sialkot (Pakistan); one of the most populated and industrial cities within Punjab province. The aim of present study was to record the frequency distribution of ABO blood groups and Rh factor in this area and the data gathered may have important use in future health planning and disease prevention programs in this region especially related to transfusion services.

MATERIALS & METHODS

Blood groups ABO and Rh determination was performed by slide method using antigen-antibody agglutination test. The study also included blood donors record of past few years of the Blood donation and screening camps carried out in different areas of the district Sialkot like colleges, factories, prisoners jail etc. The study included 1656 subjects including 981male and 675 female subjects. Antigen antibody agglutination test was performed by slide method for the determination of ABO blood types and Rh factor. Phenotypes were confirmed by mixing anti-A, anti-B, and anti-D antisera (Biolaboratory, USA) with blood samples and observing for agglutination under light microscope.

RESULTS & DISCUSSION

The objective of the present study was to know the relative frequency of ABO blood types and Rhesus D phenotype from urban and rural areas of district Sialkot of Punjab and to compare it with studies reported from other regions of Pakistan.

Table. 1. Distribution of ABO blood group and Rh phenotypes in random population from Sialkot (Punjab), Pakistan.

Phenotypes	Male Subjects	Female Subjects
A	21.30% (n=204)	24.44% (n=165)
B	38.63% (n=379)	33.63% (n=227)
AB	8.15% (n=80)	12.15% (n=82)
O	32.42% (n=318)	29.78% (n=201)
Rh positive	91.85% (n=901)	90.37% (n=610)
Rh negative	8.15% (n=80)	9.63% (n=65)

The study encompassed a total of 1656 subjects with 981 male and 675 female subjects. Figure 1 shows the relative prevalence of ABO blood types in random population of Sialkot. Overall in this population the most prevalent blood group was B (36.59%; n=606) followed by blood type O

(31.34%; n=519) and blood type A (22.28%; n=369). Blood group AB showed least prevalence of 9.70% (n=162). Relative distribution of blood type phenotypes in male subjects in this population were observed as: 21.30% blood group A, 38.63% blood group B, 8.15% blood group AB, and 32.42% for blood group O respectively. Relative distribution of blood type phenotypes in female subjects in this population were observed as: 22.28% blood group A, 36.59% blood group B, 12.15% blood group AB, and 31.34% blood group O respectively.

Percentages for Rhesus-D phenotype for male and female subjects were 91.85% and 90.37% respectively. Percentage for Rhesus-D positive subjects was 91.24% (n=1511) as compared to 8.76% (n=145) for Rhesus negative subjects. Blood group phenotypes among Rh positive subjects showed that 20.29% were A positive, 33.39% were B positive, 8.82% were AB positive and 28.74% were O positive. Among Rh negative subjects, 1.99% were A negative, 3.20% were B negative, 0.97% were AB negative and 2.60% were O negative.

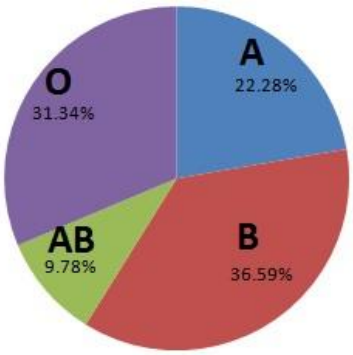

Fig. 1. Relative distribution of ABO blood group phenotypes in random population from Sialkot (Punjab), Pakistan.

The overall pattern of distribution of ABO blood type phenotypes in the population of Sialkot is B>O>A>AB. This is consistent with the general Indian subcontinent i.e. (B≥O>A>AB). Gender wise analysis showed same pattern for both male and female subjects. Similar trend of frequency distribution of ABO phenotypes has been reported in some studies about different cities of Pakistan [12, 13, 14, 15, 16, 17, 18, 19, 20]. There are many other studies describing a different trend in some other areas of Pakistan. For instance trend in Bannu and Peshawar (Province Khyber Pakhtoonkhwa) has been reported as B>A>O>AB [21, 22] A>B>O>AB in Skardu [23]. Another major trend is reported in different studies is O>B>A>AB in province Sindh and in many other parts of the country including different cities of provinces of Punjab and Khyber Pakhtoonkhwa [24, 25, 26, 27, 28]. These differences indicate a broad genetic and ethnic diversity in Pakistan.

CONCLUSION

It is concluded that the frequency distribution of ABO blood groups in Sialkot is B>O>A>AB. Blood group B was found to be the most prevalent and blood group AB the least prevalent. Rh positive phenotype is predominant (91.24%) compared with Rh negative phenotype (8.76%) in this population.

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