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FREQUENCY OF ABO BLOOD TYPING IN NORMAL VERSUS CORONARY ARTERY DISEASE MALE PATIENTS OF DISTRICT HYDERABAD, SINDH

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ABSTRACT

The escalating importance to find out the frequency of different blood grouping in different nationalities as well as in same nationalities with different time periods cannot be denied due to its role, not only in blood transfusion but also in its relevance with some disease. The particular type of blood has always been linked with various pathological conditions such as with thalasemia, diabetes, blood pressure, gastric ulcer, serum cholesterol level and even with cancer. Hence the main objective of the study is to find out the overall frequency of ABO blood grouping in coronary artery disease (CAD) patients and to compare the frequencies of the same blood group with normal individuals. A laboratory based cross sectional work was conducted. The sample was grouped into normal adults or Non CAD and CAD patients. The sample size (n) was 203; the age of the participant was 25-60 (mean= 50.99±9.41 non CAD and 52.83± 8.93) years. The prevalence of blood groups in CAD patients versus normal individual was found 13.8% and 10.3% in A blood typing, 16.7% and 15.3% in B blood typing, 4.4 %and 4.4% in AB blood typing and 15.8% and 19.2% in blood type O. Rh positive in normal adult was 47.0% and 47.7% CAD patients whereas prevalence of Rh negative was 2.5% in non CAD and 3.0% in CAD patients respectively. The study shows the prevalence of blood typing and the comparison of frequencies in both groups.

1. INTRODUCTION

The scope and importance of hematology generally and of blood grouping particularly cannot be denied due to the possible association between ABO and RH blood system with different physiological and diseased status of individuals. So the blood grouping has been linked with various physiological and pathological conditions, Blood group O is linked with peptic ulcer [1]. and with gastrointestinal bleeding [2].

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The frequency of Blood group A was reported higher in diabetes-I and AB in diabetes-II, while Rh negative is associated with diabetes generally[3], A,B,AB blood groups are significantly associated with Non alcoholic fatty liver disease (NAFLD)[4] furthermore impacts of blood grouping on fertility of women has been established, decreased ovarian reserved was reported in blood group O [5], moreover, single nucleotide polymorphism (SNPs) near ABO gene could cause menstrual dysfunctions [6], recently, frequency and association of ABO blood grouping in normal versus postmenopausal women is also reported [7].interestingly, the attempt was made to make a connection between water consuming capability of individual with blood groups [8], with hepatitis B [9, 10] , with malaria [11] and even with alopecia areata [12].

ABO typing is also associated with cardiac disorders (CAD patients) [13].The main objective of the study,

thus, is to find out the prevalence of ABO and Rhesus blood grouping in CAD patient and non CAD males of district Hyderabad, Pakistan. The current study also tried to establish link between ABO and Rh blood grouping with the coronary artery disease. To this end, participants were divided into non CAD and CAD patients on the basis of Troponin I level (cTnI) .

2. MATERIALS AND METHODS

A lab/ward based cross sectional study was carried out .Two hundred and three (203) individuals were observed approaching to hospital with the complaint of chest pain. The sample was collected from Cardiac emergency ward of civil hospital Hyderabad Sindh, Pakistan by having prior consent in a written form visiting individuals as well as from hospital. The range of age of individuals was 25-60 years. The sample was divided into those who were declared CAD patients and Normal. Those individuals whose cTnI level (cut off) was <0.040 ng/ml, were considered as CAD patients [14]. 2.5 cc blood was collected from median cubital vein. Troponin I level was measured and quantified by Architect Plus (Model 2000SR; Abbot).

ABO and Rhesus blood typing was performed by antigen/antibody reaction (Agglutination reaction) test by using standard anti sera A, B and D (Rapid Labs UK).

Statistical Analysis:

The data was presented as percentages; n was used for the number of individuals examined. *P* values were taken by calculating fisher's exact test. Relative risk was calculated.

3. RESULTS

The study is showing the current prevalence of frequency of blood typing in Coronary artery disease patients and in normal individuals. As shown in Table.1; the Blood group O is the most frequent allele (35.0%) followed by B (32.0%), A (24.1%) and AB (8.8%) respectively. The frequency of A, B, AB and O allele was 13.8%, 16.7%, 4.4% and 15.8% in CAD patients whereas; The frequency of A, B, AB and O allele was 10.3%, 15.3%, 4.4% and 19.2% in normal men, however the aforementioned groups are somehow similar in proportion with the *p*-value of 0.61.

Table1. The distribution of blood groups in CAD and non CAD individuals.

Blood groups	**CAD**	**Non CAD**	***Total***	***p*-Value**
A	28(13.8%)	21(10.3%)	49(24.1%)	.61
B	34 (16.7%)	31(15.3%)	65(32.0%)	
AB	09(4.4%)	9(4.4%)	18(8.8%)	
O	32(15.8%)	39(19.2%)	71(35.0%)	
Total	103(50.7%)	100(49.3%)	203 (100%)	

As described in Table.2; the total pole prevalence of Rh+ was 94.6% and Rh- was 5.4%.

Rh+ blood group in CAD patents was 47.7% and 47.0 in normal individuals. The frequency of Rh- was 3.0% and 2.5% respectively in CAD patients and in normal. However the distribution of Rhesus blood group could not be correlated the Troponin I in individuals.

Rhesus (Rh) factor	**CAD**	**Non CAD**	***Total***	**Relative risk**	***p*-Value**
Rh (+)	97 (47.7%)	95 (47.0%)	192 (94.6%)	0.9	0.7
Rh (-)	06 (3.0%)	05 (2.5%)	11 (5.4%)		
Total	103 (50.8%)	100 (49.2%)	203 (100%)		

4. DISCUSSION

In this work, the prevalence of blood groups in CAD versus non CAD was observed found 13.8% and 10.3% in A blood typing, 16.7% and 15.3% in B blood typing, 4.4% (both groups) in AB blood typing and 15.8% and 19.2% in blood type O. Rh positive in CAD patients was 50.8% and 49.2% in Non CAD individual. The trend observed in blood groups in CAD patients was B>O>A>AB and in non CAD was O>B>A>AB (over all O>B>A>AB) while Rhesus antigen was found equally distributed in both groups (with overall trend of $O^+ > O^-$). Hence this

comparative study could not establish any link between blood grouping and CAD patients versus non CAD individual.

In Sudanese coronary artery diseases patients, the risk of heart disease is common in non O blood group than O blood group[15],on the contrary according to another study, blood group O is prone to CVD risk factors [16]. A, B or AB is associated with 2 years cardiac death in CAD patients [17] while ,Blood typing A was found as a risk for myocardial infarction [17], According to a Chinese study blood group A is the independent risk factor for CAD [18]. Hence, a comprehensive survey based study with a big sample size is recommended to make a connection between coronary artery disease and its possible association with blood groups.

5. CONCLUSION

Conclusively, the current prevalence of ABO blood grouping was reported with the reference of non CAD or/and CAD patients, nonetheless, no any significant difference was observed in target groups. The study could be applied in a transfusion and storing of blood in above mentioned groups.

6. CONFLICT OF INTEREST

The collaborators of this work declared that they have nothing to disclose and have no any conflict of interest.

7. ETHICAL APPROVAL

The experimentation was done in accordance with 1964, Helsinki Declaration and its later amendments.

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