A STUDY OF RELATIONSHIP OF ABO BLOOD GROUPS WITH MYOCARDIAL INFARCTION AND ANGINA PECTORIS

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Background: This is a comprehensive report that has determined the occurrence of Myocardial infarction and Angina pectoris in "ABO" blood group system among patients with coronary artery disease in some areas of Sindh province of Pakistan. *Methods:* Three hundred patients with Coronary Disease (CAD) were selected from cardiology wards of LMC hospital Hyderabad, DMC hospital Karachi and PMC hospital Nawabshah. The patients were separated into two categories: myocardial infarction and angina pectoris. The patients with old myocardial infarction were also included. A careful history was taken, suggesting myocardial infarction (MI) or angina from a standard WHO (Rose) chest pain, and an electrocardiogram showing evidence of possible myocardial infarction and angina, and the patient's recall of a doctor's diagnosis of M.I or angina. ABO blood grouping of above patients was done by simple agglutination method. ***Results:*** The blood group "A" was the commonest among myocardial infarction and angina pectoris patients while these diseases were least in blood group "O" patients. ***Conclusions:*** This comparison shows the existence of a direct relation between blood group antigens and coronary artery disease. It is therefore of great importance for future genetic studies, as present report and our previous studies give clear picture of excess and deficit of CAD in particular blood groups of "ABO" system. This may be due to some special genetic makeup.

INTRODUCTION

Coronary artery disease (CAD) is a common clinical problem. The risk factors include familial and genetic factors, and the presence of other disease entities. There is a consistent association between certain risk factors and the subsequent development of CAD. Several reports have suggested that ABO blood group system is associated with the risk of CAD[1-6].

The present report emerged from our recent multiple studies on blood groups and CAD. Main object of this study was to explore the relation of ABO blood groups with myocardial infarction and angina pectoris separately. Most studies do not distinguish this relationship. Among those that do[7-8] there are too few cases for conclusive studies.

MATERIALS AND METHODS

Three hundred patients with CAD were selected from cardiology wards of LMC hospital Hyderabad, DMC hospital Karachi and PMC hospital Nawabshah. The patients were separated into two categories: myocardial infarction and angina pectoris. The patients with old myocardial infarction were also included in our study. A careful history was taken, suggesting myocardial infarction (MI) or angina from a standard WHO (Rose) chest pain, and an electrocardiogram showing evidence of possible myocardial infarction and angina[9'10], and the patient's recall of a doctor's diagnosis of M.I or angina. ABO blood grouping of above patients was done by simple agglutination method [H]. All the data were expressed and analyzed as the percentage of various blood groups.

RESULTS

The results of this study are summarised in table-1.

Table-1: Percentage of different blood groups in patients with Myocardial Infarction and Angina pectoris

Blood group	Myocardial Infarction No. of cases	Angina pectoris No of cases	Total	%
A	111	39	150	50%
B	39	27	66	22%
AB	30	27	57	19%
O	15	12	27	9%

DISCUSSION

Mourant *et a/[13].*, showed an excess of myocardial infarction in the results among patients with blood groups "A" and "B", compared with blood group "O". The excess was rather larger in those of blood group "A" than for "B" but the data were not obtained for those for group AB. In one of the largest studies of myocardial infarction, Bronste-Stewart *et* a/.[14], also found a great incidence of myocardial infarction in blood group "A" & "B" compared with "O". Havlik *et al.*$_s$ concluded that the incidence of angina pectoris might be associated with blood group "A", whereas for myocardial infarction, there appeared to

be no difference between blood groups "A" and "O"[9] Nefzger and Denbrough also observed a higher "A" and "B" incidence as compared to "O" for patients with both myocardial infarction and angina pectoris[1516]. Present study is compatible with the above studies[12-16], as the highest incidence of myocardial infarction was observed among blood group "A" patients (50%), as compared with group "O" (9%). But the second most common incidence was found in groups "B" and "AB", in this respect our study is in contrast with above studies. The incidence of angina pectoris was also highest in blood group "A" patients when compared with other blood groups, i.e. "B", "AB" and "O". Our results are also in contrast with the results obtained from the studies done by Havlik et al, who found no difference for myocardial infarction between blood group "A" and "O"[9]. Another apparent contradiction is that Medaiie <?/ <?/, found higher incidence of myocardial infarction in those patients with blood group "AB Regarding this, our study has shown that the blood group "AB" was on the third number (19%).

The findings presented here reflect that the excess was largest in patients of blood group "A"(50%) than for "B" (22%) or "AB" (19%). Both blood groups i.e. "B" and "AB" have same pattern for M.l and angina in our report.

The highest occurrence of M.l and angina in group "'A" patients and lowest in blood group "O" seen in this study may be due to the difference in the genetic make-up of will-established polymorphic 'ABO' system of genes i.e. persons who have "A" antigen are more susceptible to develop CAD[1]. However, the combination of "B " and "AB" groups takes an intermediary position. While persons with blood group "0"(who lack "A" or "B" antigens) are somewhat protected from CAD. It could be regarded 9 as genetic effect. Pakistanis have a very high group "O" and " B " genes[17-18]., but the occurrence was highest in "A" and lowest in "O".

It is therefore of great importance for future studies, as this difference noticed from present report and our previous studies[11-12] is very accurate and gives clear picture of excess and deficit of CAD in particular blood groups of "ABO" system. The main objective, in the past, has been to establish whether particularly "A" antigen influences the onset of CAD, involvement of which in CAD by some other mechanisms remains suggestive[2].

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