

## ABO BLOOD GROUPS IN RELATION TO ISCHAEMIC HEART DISEASE

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*This study was planned to see any relationship between ABO blood groups and ischaemic heart disease, by using a series of patients with IHD. Accordingly, interest attaches to our findings that the highest incidence was observed in blood group A (44%), followed by O (28%), B (22%) and AB (6%). Although majority of patients in group A were nonsmokers and non-diabetics but the incidence was observed still higher in this group. An important conclusion is reached that the individuals who have An antigen are more susceptible to develop IHD.*

**KEY WORDS:** ABO Blood Groups, Ischaemic Heart Disease.

### INTRODUCTION

Ischaemic heart disease (IHD) is a leading cause of death in the United States and most of the industrial and Western World.<sup>1</sup> The clinical picture in South Asian patients is similar to that in the Europeans. High coronary artery mortality is seen in Gujrat Hindus, Punjabi Sikhs and Muslims from Pakistan and Bangladesh.<sup>2</sup> Several risk factors for the development of IHD have been identified. Many reports<sup>3-4-5-6</sup> have appeared in recent years discussing the association between blood groups and various manifestations of IHD. Most of them, by using patients with IHD as subjects, show a higher proportion of patients with blood groups A, B or AB and a deficit of blood group O. This study was planned to see the above facts by using a series of patients with IHD.

### MATERIALS AND METHODS

Two hundred patients were selected from wards of National Institute of Cardiovascular diseases Karachi, Civil Hospital, Karachi and Peoples Medical College Hospital Nawabshah. The study was conducted at Physiology Department, Basic Medical Sciences Institute JPMC, Karachi. The records of each patient were carefully scrutinized by the same observer to reduce observer's error. A careful history was taken including presenting complaints. Based upon

history, clinical evaluation, ECG and Laboratory investigations, the patients were divided into smokers, nonsmokers, diabetics and non-diabetics. Then the incidence of ABO blood groups was seen among the patients of these groups. The patients were blood grouped by standard agglutination method.<sup>7</sup> Their venous blood (fasting) was taken for the estimation of blood sugar, that was determined by enzymatic calorimetric method.<sup>8</sup>

### RESULTS

When results were analysed and test parameters were compared, the ratio of patients with IHD among different blood groups was 44% in A, 28% in O, 22% in B and 6% in AB (Figure-1).

The ratio of smokers in different groups (Figure-2) was 30% in A, 40% in B, 6% in AB and 24% in O blood group. The ratio of non-smokers in blood group A was 66%, 8% in B, 6% in AB and 20% in O blood group.

The ratio of blood groups in diabetics (Figure-3) was 18% in A, 34% in B, 8% in AB and 40% in O blood group. The ratio of blood groups in non-diabetics was 62% in A, 6% in B, 6% in AB, and 26% in O blood group.

### DISCUSSION

Previous reports<sup>3 9,10,11</sup> have suggested an excess of blood group A and a deficit of O in patients with IHD. A five years prospective investigation as part of the Israeli Ischaemic Heart Disease Project (IHDP) has shown that the blood group A, B and AB tended to have higher rates of myocardial infarction than those with O. Patients with blood group O tended to have lower rates of myocardial infarction and angina pectoris.<sup>12</sup> The results of British regional heart study suggest that the blood group A is related to the incidence of IHD, without geographic differences in the distribution of ABO blood groups<sup>3</sup>. Present study

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is compatible with above studies,<sup>3-9-10,11</sup> as regards the highest incidence of IHD was seen among blood group A patient. The ratio of group A was found to be 44%. In our knowledge, there is no study available to show the incidence of IHD in smokers, nonsmokers, diabetics and non-diabetics according to their blood groups. Aim of this inclusion is to obtain correct figures. In general, 25% of total population of our country has been reported to have blood group A.<sup>13</sup> The majority of patients in our study were found non-smokers and non-diabetics and blood groups O and B are more common in our population, but the incidence was observed still higher in blood group A.

The IHDP (Israeli Heart Disease Project) results<sup>12</sup> have shown the ratio of group A patients suffering from IHD is greater than 63%, i.e. almost 2/3rd of IHD patients were found to belong this group. In present study, the second most common group was O (28%) in patients with IHD, while in Western studies, it was having poor association with IHD. Another contradiction is that, in studies done by Bronte-Steward et al<sup>14</sup> and Meadlie, et al<sup>12</sup> the second most common Blood group found was B, however in present study, it is observed on three number (22%) according to the frequency. The NPHS (North Wick Pork Heart Study) results, taking account of all four main blood groups show a significant excess of IHD in those of blood group AB<sup>5</sup>. Why the NPHS result differs so markedly from the British Regional heart study, is unclear. In our study AB blood group was 6% in IHD patients.

Variation in the incidence of IHD among ABO blood groups may be due, in part, to variation in genetic makeup (i.e. difference in the genes). The individuals belonging to blood group A have somewhat higher incidence than those with non A groups. Perhaps blood groups are an added genetic marker with respect to this condition. However much more work is needed to see the genetic aspects of IHD, and to see whether these results are due to a statistical chance or of biological importance, because the excess of A's in the series strengthens the evidence for the existence of a real excess of A's with ischaemic heart disease.

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