Evaluation of AB blood group in patients with ischemic heart disease

Done by:

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Abstract

Background: Ischemic heart disease is among the most significant problems that modern civilization is confronting. Of the 16.7 million deaths from CVD that occur each year, 7.2 million are caused by ischemic heart disease. Recent years have seen the publication of numerous research relating blood types to coronary and ischemic heart disease. Among the different Ischemic heart disease groups, the AB blood group showed higher rates of acute myocardial infarction, stable angina, and stable angina.

Aim of the study: To evaluate the blood group in patients with ischemic heart disease in Baquba teaching hospital.

Methodology: This study was conducted at Baquba teaching Hospital in Diyala province . Using laboratory and clinical data from October 2023 to march 2024 . Total of 200 patients with ischemic heart disease were included in this study.

Result: Male was 67(33.5%) and female 133(66.5%). Age group 23(11.5%) was 40-49 years, 32(16%) was 50-59 years age group , 37(18.5%) es 60-69 years age group, 63(31.5%) was 70-79 years age group and 45(22.5%) was more than 80 years age group. The residence 42(21%) was rural and 158(79%) was urban . 2(1%) was have bleeding disorder. 115(57.5%) were have normal body weight while 80(40.5%) were have overweight(obese) and 5(2%) were underweight. 117(58.5%) were have hypertension , 107(53.5%) were diabetic patients and 88(44%) were have family history . A blood group 68(34%) , 58(29%) were B blood group , 28(14%) were AB blood group and 46(23%) were O blood group.

Conclusion: The current study's findings showed a strong correlation between blood group A and IHD. It was discovered that the IHD group had higher prevalence of risk factors such as diabetes mellitus, hypertension, and family history. Therefore, these may be the main variables raising the risk of IHD in the province of Diyala.

Keywords: Blood group , ABO , Ischemic heart disease.

Introduction

One of the most important issues facing civilization today is ischemic heart disease. Ischemic heart disease is the cause of 7.2 million of the 16.7 million CVD-related fatalities that occur each year. (1)

A diminished or obstructed blood flow to the heart muscle limits the delivery of oxygen and nutrients, which leads to ischemic heart disease (IHD). Heart failure, heart attacks, and angina are just a few of the cardiac diseases that can result from this.(2)

Atherosclerosis, or the accumulation of plaque, primarily cholesterol and fatty deposits, in the walls of the coronary arteries, is one of the leading risk factors for IHD, which is caused by a number of variables (supplying blood to the heart). This gradual narrowing of the arteries is caused by high blood pressure, another major risk factor. Persistently high blood pressure stresses the arteries more, hastening the onset of atherosclerosis and weakening the heart muscle.(3)

In addition, high levels of low-density lipoprotein (LDL) cholesterol, which promote the development of plaque in the arteries, are another major risk factor for IHD. Diabetes, whose uncontrolled blood sugar levels raise blood

sugar levels, contributes to atherosclerosis and blood vessel damage, and smoking, whose tobacco use directly destroys blood vessels, causes inflammation, and raises the risk of blood clots.(4)

Secondary risk factors include sleep apnea, stress, obesity, physical inactivity, and family history. An unhealthy diet heavy in added sugars, processed carbs, and saturated and trans fats increases the risk of inflammation and cholesterol issues.(5)

Angina is the most common sign, often described as a tightness, pressure, or squeezing sensation in the chest, behind the breastbone, or radiating to the jaw, neck, or arm, pain can range from mild discomfort to a feeling of intense pressure, may be triggered by physical exertion, emotional stress, or cold weather, typically lasts for a few minutes, subsiding with rest or medication.(6)

Other signs of ischemic heart disease include shortness of breath , fatigue, palpitations, dizziness or lightheadedness, swelling in the legs or ankles, sweating.(7)

Numerous studies have surfaced in recent years linking blood types to Ischemic heart disease and coronary heart disease. The AB blood group had greater incidences of acute myocardial infarction, stable angina, and stable angina among the various Ischemic heart disease groups. (8)

Ischemic heart disease was shown to be more common in the AB blood group in the UK population. According to Wazirali, blood group A was 3.14 times more common than blood group B, 6.35 times more common than blood group O, and 3.32 times more common than blood group AB.(9)

We are using this method to try to determine how much genetics plays in the development of ischemic heart disease because blood-group distribution is becoming more and more useful in the research of diseases. to the extent that they ought to. If it is true that we should continuously evaluate our techniques and abilities while providing therapy and fail, then it is also true that we should be reminded of the consequences of our inaction when we shirk our responsibilities to intervene.(10)

Although surgical treatment will undoubtedly result in some deaths, these will decrease if patients are given the opportunity to receive treatment earlier, before all of the major coronary arteries are significantly occluded.

The process of choosing which patients to include in this group is probably going to involve coronary angiography. (11)

There won't be any solid statistical evidence in favor of surgical treatment for a very long period if the history of anticoagulant therapy creates any kind of parallel. Patients should, in the interim, be evaluated for therapy based on the most thorough examination feasible so that, when data do become available, it can be utilized in statistical surveys.(12)

Aims of the study

The aim of the study was to evaluate the blood group in patients with ischemic heart disease in Baquba teaching hospital.

Methodology

This study was conducted at Baquba teaching Hospital in Diyala province . Using laboratory and clinical data from October 2023 to march 2024 . We evaluated the blood group , type of IHD , any chronic disease ,family history , bleeding disorder and weight . A total of 200 patients with ischemic heart disease were included in this study .

Statistical analysis

After collection, data were checked manually and analyzed by computer based program Statistical package of social science(SPSS) 20 version. Results were expressed as frequency and percentage. Chisquare test was used for categorical data while student t-test was used for comparison of continuous variable data. P value < 0.05 was considered as statistically significant.

Result

A total of 200 patients were enrolled during this study period with ischemic heart disease. we found there were relationship between blood group and IHD which we found that the majority of the samples were have A blood group 68(34%) then blood group B were 58(29%) then blood group O were 46(23%) and then 28(14%) were AB blood group.

Male was 67(33.5%) and female 133(66.5%). Age group 23(11.5%) was 40-49 years, 32(16%) was 50-59 years age group , 37(18.5%) es 60-69 years age group, 63(31.5%) was 70-79 years age group and 45(22.5%) was more than 80 years age group. The residence 42(21%) was rural and 158(79%) was urban . 2(1%) was have bleeding disorder as shown in table 1.

Table (1): Demographic characteristics of patients included.

Character	Frequency	Percentage
Gender		
Male	67	33.5%
Female	133	66.5%

Age group		
40-49 years	23	11.5%
50-59 years	32	16%
60-69 years	37	18.5%
70-79 years	63	31.5%
80≤ years	45	22.5%
Residence		
Rural	42	21%
Urban	158	79%
Bleeding disease	2	1%

Table 2 show the body weight of the sample, 115(57.5%) were have normal body weight while 80(40.5%) were have overweight(obese) and 5(2%) were underweight .

Table (2): Body weight of sample.

Body weight	Frequency	Percentage
Normal body weight	115	57.5%
Overweight	80	40.5%

Underweight	5	2%

P value(chi-test) = 0.03 considered not significant (P value < 0.05 considered as statistically significant)

Table 3 show the risk factors of the sample , 117(58.5%) were have hypertension , 107(53.5%) were diabetic patients and 88(44%) were have family history .

Table (3): Risk factors of sample.

Risk factors	Frequency	Percentage
Hypertension	117	58.5%
Diabetes mellitus	107	53.5%
Family history	88	44%

The major of the sample were have A blood group 68(34%) , 58(29%) were B blood group , 28(14%) were AB blood group and 46(23%) were O blood group as shown in table 4.

Table (4): Blood group distribution among included sample .

Blood group	Frequency	Percentage
A	68	34%
B	58	29%
AB	28	14%
O	46	23%

P value = 0.04 considered significant (P value < 0.05 considered as statistically significant)

Table 5 show the type of ischemic heart disease , stable angina was the major of the sample 91(45.5%) , 19(9.5%) of patients were have unstable angina , 76(38%) of patients were have STEMI and 14(7%) of patients were have NSTEMI .

Table (5): Type of IHD among included sample.

Type of IHD	Frequency	Percentage
Stable angina	91	45.5%
Unstable angina	19	9.5%
STEMI	76	38%
NSTEMI	14	7%

P value = 0.02 considered significant (P value < 0.05 considered as statistically significant)

Discussion

Since ischemic heart disease is the leading cause of death globally, it is important to assess all factors that may predispose to the disease's development. The current study's findings appear to support the idea that blood group phenotype is significant risk factor for ischemic heart disease in Baquba teaching hospital.

In our study we found that 40.5% patients are overweight (obese) and the body weight play important role in ischemic heart disease patients , a lot of patients in the sample were have normal body weight . Rubins predicted that obesity may play an important role in developing ischemic heart disease.(13)

Other study done by Djoumessi et al.(14) found that Obesity has a strong link to coronary artery disease. Patients with a greater body mass index had more advanced cardiovascular problems than those with low body weight.

Tarjan et al.(15) found that Obesity has an association in atherosclerosis and coronary artery disease and in the development of heart failure.

The other major risk factors found in our study were diabetes, hypertension, and family history. They are suspected to increase the chances for the development of ischemic heart disease and this agree with study done by Hoeg et al.(16)

In our study we found that the prevalence of ischemic heart disease in blood group A is somewhat greater than in the other blood group according to the findings of this study. There were no significant variations in the frequency of ABO blood group in patients with IHD in an Iranian community in the research of Amirzadegan A et al, which was comparable to our findings.(17)

Other study done by Omidi et al.(18) found that blood type AB had strongest association with ischemic heart disease.

A comparison of various studies in Nepalese revealed that group A is the more common in ischemic heart disease patients.(19)

Other studies also show that blood type A was linked to an earlier development of ischemic heart disease.(20)

Conclusion

The current study's findings showed a strong correlation between blood group A and IHD. It was discovered that the IHD group had higher prevalence of risk factors such as diabetes mellitus, hypertension, and family history. Therefore, these may be the main variables raising the risk of IHD in the province of Diyala.

Recommendations

We suggest more studies with more number of samples and Increase the awareness about controlling the diabetes and hypertension.