Research Article

The relationship between blood groups, ABO, and Rh and the risk of diabetes in patients with acute myocardial infarction referring to Amiralmomenin Hospital in Zabol in 2016

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Abstract

Introduction:
The main cause of Cardiovascular diseases, especially myocardial infarction, is the arteriosclerosis of coronary arteries. Although the risk factors for arthroplasia are multiple, the risk factors for coronary artery disease are classified into two categories of unmodifiable, such as gender, age and familial history, and modifiable, such as high levels of blood lipids, high blood pressure, smoking, obesity, malaise, stress, emotional exertion, inappropriate diet, taking birth control pills, and diabetes.Diabetes is also the most common disease caused by metabolic disorders..This study was designed to examine the association between diabetes and blood group in patients with acute myocardial infarction.

Methodology:
The present descriptive cross-sectional study included 116 diabetic patients suffering from acute myocardial infarction admitting to Amiralmomenin Hospital in Zabol. The control group, as well, included 116 patients with non-diabetic acute myocardial infarction admitting to the same hospital.. The collected data was analyzed using SPSS22 and descriptive and chi-square tests.

Findings:
blood group A was the most common blood group in both groups participating in the present study. There was no significant difference between two groups in terms of distribution of the blood group.In the case group, 104 subjects were Rh positive and 12 were Rh negative and in the control group, 101 subjects were Rh positive and 15 were Rh negative.The difference between two groups was significant in regard with Rh type.

Discussion:
blood group gene is around 34th band of chromosome numbers 9 and how the blood group affects the interactions of genesseems quite related. All these evidence and many other research findings strongly reinforce the likelihood of association of blood groups with diabetes.

Keywords: blood groups, ABO, Rh, diabetes

Introduction

With an annual population of 1.1 million people in the United States and a death rate of 30% resulting from this complication, myocardial infarction is one of the most common causes of hospitalization in industrialized countries(1). The main cause of Cardiovascular diseases, especially myocardial infarction, is the arteriosclerosis of coronary arteries(2). Although the risk factors for arthroplasia are multiple, the risk factors for coronary artery disease are classified into two categories of unmodifiable, such as gender, age and familial history, and modifiable, such as high levels of blood lipids, high blood pressure, smoking, obesity, malaise, stress, emotional exertion, inappropriate diet, taking birth control pills, and diabetes(3).Diabetes is also the most common disease caused by metabolic disorders. Complications and disabilities caused by diabetes impose high costs and expensive measurements on health and curative systems of countries(4). Diabetes is a chronic and progressive disease that causes disability and early mortality; it also functions as a major contributor to blindness, advanced kidney disease, and amputation, especially at work ages(5).Many factors, such as genetic and familial diseases and demographic status, contribute to the incidence of this disease. However, most of these factors, such as food culture, obesity, inactivity, etc.can be changed.But one of the most important factors is the genetic background of individuals(6). It is suggested that inheritance plays an important role in the development of the disease and the prevalence of this disease in families with a history is more likely than families with no inherited conditions(7).It has also been observed that the prevalence of diabetes mellitus in monogamous twins is more than 3 times that of twin monkeys, and given the fact that the cause of the disease as genes are recessive, about 22% of the carriers carry the gene.The human chromosome q21-q23 is associated with type 2 diabetes(8). Blood group genes are located around the band of chromosome number 9, which is common in this region of the genetic variation.The blood group of the population depends on the presence or absence of genes A and B, but no disease caused by the lack of expression of the group's ABO blood is known; however, the usefulness of blood groups has been identified as a tool to investigate the genetic factors in various diseases and the susceptibility to certain diseases is associated with the ABO phenotype, e.g(9). gastric cancer that is common in people with A blood groupand the duodenal ulcer that is more common in people with the O blood group(10)

.This study was designed to examine the association between diabetes and blood group in patients with acute myocardial infarction, the findings of which will help identify people at risk for diabetes and give people who are prone to having a child have the necessary recommendations for leading an active lifestyle and diet in order to reduce the risk of getting diabetes and heart attacks.

Methodology

The present descriptive cross-sectional study included 116 diabetic patients suffering from acute myocardial infarction admitting to Amiralmomenin Hospital in Zabol. The control group, as well, included 116 patients with non-diabetic acute myocardial infarction admitting to the same hospital. The exclusion criteria included psychiatric problems, acute illness, and history of diabetic ketoacidosis. Standard serological methods and anti-A, anti-B, and anti-D antibodies were used to determine blood group of study populations. The collected data was analyzed using SPSS22 and descriptive and chi-square tests.

Results

Study participants aged between 30 to 88 years; diabetic patients included 53 women and 66 men and the blood group of diabetic patients included 30 subjects with blood group A, 21 blood group B, 14 with blood group AB, and 51 subjects with blood group O. blood group A was the most common blood group in both groups participating in the present study. There was no significant difference between two groups in terms of distribution of the blood group.In the case group, 104 subjects were Rh positive and 12 were Rh negative and in the control group, 101 subjects were Rh positive and 15 were Rh negative.The difference between two groups was significant in regard with Rh type.

Table1. Distribution of absolute and relative frequency of subjects (case and control group) according to type of blood group

Total		control		Case		Blood group
number	percent	number	percent	number	percent	
58	25	28	25	30	26	**A**
44	19	23	18	21	18	**B**
29	12	15	13	14	12	**AB**
101	44	50	44	51	44	**O**
232	100%	116	100%	116	100%	**Total**

Discussion

Several studies have found that there is a significant relationship between blood groups, especially non-O blood groups, and the major risk factors for cardiovascular disease. This relationship has been activated with the duration of thromboblastin and the level of von Ville brand factor in non- O results. The results of various researches showed that people with blood group A had the most prevalence of the blood group in patients with acute myocardial infarction. However, according to the findings of the present study, blood group O had the highest prevalence in patients with acute myocardial infarction who had a heart attack(10). According to the results of Aird et al study, blood group had the highest frequency in both groups of the study, which was totally consistent with the findings of the present study(11). However, Chi-square showed no significant difference between two groups in terms of blood groups and no significant correlation was found between the distribution of blood groups in the case and control groups (P=0 / 05).The relationship between Rh and diabetes was also measured in the present study and Chi-square showed a significant difference between two groups in this regard (P= 0.0001). According to Rahman et al study, which was conducted on 2312 patients with diabetes and 8936 control subjects in Bangladesh, there is no relationship between blood groups and diabetes(12). The results of Kamil et al study, which was conducted on 70 diabetic patients and 140 healthy individuals, showed a negative association between A and O blood types with type II diabetes. Another study by MC Connel et al showed that the relationship between diabetes and group blood A is much more significant and common that diabetes and blood group B. the results of Anderson et al study, also, showed that diabetes was significantly associated with an O group(13). Blood groups, as common important and effective genetic factors, remain constant in many generations and there is a clear and prominent association between various diseases, such as gastric ulcer and gastric cancer and some other diseases, with specific blood types(14).Diabetes mellitus, whose inheritance and zonotypic role are well known, is also a common disease in human societies and it seems that the hypothesis of the association of specific blood groups with this disease seems to be reasonable and backed up, because blood group gene is around 34th band of chromosome numbers 9 and how the blood group affects the interactions of genes seems quite related(15). All these evidence and many other research findings strongly reinforce the likelihood of association of blood groups with diabetes. Considering the widespread results, more studies are needed in many parts of the world to prove the association between blood type and diabetes mellitus. By identifying the at-risk groups in the early years of life, it is possible to reduce the factors that lead to diabetes through, simply, adhering to a healthy lifestyle.

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