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Die Verteilung von Blutgruppen ABO-Rh bei Patienten mit Herz-Kreislauf-Syndrom X.

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ABSTRACT
Es gibt keine Informationen über die Verteilung der ABO-Rh-Blutgruppen bei Patienten mit cardiac syndrome X (CSX). Ziel war es, die Verteilung der ABO-Rh-Blutgruppen in diesen Patienten zu untersuchen. Material und Verfahren: In a cross-sectional study conducted from 2006 to 2010, a total of 247 CSX patients' records were reviewed. 120 Patienten (59.1%) waren Frauen, und die durchschnittliche Lebenserwartung der Patienten lag zwischen 52 und 11 Jahren. Die Häufigkeit von ABO-Rh-Blutgruppen wurde mit der Häufigkeit dieser Blutgruppen in der Provinz West-Azerbaijan im Iran verglichen. allgemeine Bevölkerung. Resultate: Die Verteilung der Blutgruppen zwischen CSX-Patienten zeigte Rh-negative Pherotypen bei 33,1%, 21.9%, 9,3%, 35,8% und 7,9%, respectively. Laut unseren Ergebnissen gab es

Key words: ABO-Rh blood groups, cardiac syndrome X, coronary artery disease

INTRODUCTION

At least 20 % der Menschen in entwickelten Ländern haben das kardiovaskuläre Syndrom X (CSX), eine Kombination aus mehreren bekannten kardiovaskulären Risikofaktoren.Aktuelle Daten zeigen, dass CSX-Patienten mit endothelialer Dysfunktion anfälliger für schwerwiegende kardiologische Ereignisse sind, obwohl die Krankheit traditionell als gut prognostiziert wurde. [1][2] Die Untersuchung von Patienten mit CSX könnte helfen, Merkmale zu identifizieren, die gegen das Auftreten von CAD schützen könnten.[3] In the past few years, fundamental pathophysiological mechanisms responsible for the occurrence of these situations have been of great interest. decades.[4] As known, elevated plasma concentrations of von Willebrand factor (vWF), an endothelial-derived glycoprotein, is a measure of endothelial dysfunction. The vWF is involved in primary hemostasis as well as in thrombogenesis and atherosclerotic vascular disease.[5] It has been reported that genetic factors are responsible for up to 66% of variations in plasma vWF antigen level, of which 30% is related to ABO blood groups.[6] Since endothelial dysfunction is the major pathophysiological mechanism in CSX,[7] it seems that there might be a relationship between ABO-Rh blood groups and CSX. We didn't find any data regarding the effect of ABO-Rh blood groups on CSX. In this study, we examined the distribution of ABO-Rh blood groups in CSX patients. We also compared frequencies of non-O and O blood groups because according to previous reports, subjects with non-O blood group have an increased prothrombotic tendency.[6,8-12]

MATERIALS AND METHODS

Two hundred forty seven of CSX patients' records

with available ABO-Rh blood typing were collected in the Department of Cardiology, Urmia, Iran; between 2006 and 2010. The subjects had angina-like pain on effort, ST segment depression on exercise stress test and totally normal coronary arteries at angiography. They comprised 101 (40.9%) males and 146 (59.1%) females; aged 20 – 80 years (mean age, 52 ± 11 years).

The prevalence of ABO blood groups were compared to the frequency of these blood groups in the West-Azerbaijan province, Iran; general population, which have already published by Iranian Blood Transfusion Organization.[13]

Continuous variables are expressed as mean ± SD, and categorical data are expressed as percentages. One-way analysis of variance (ANOVA) was used to evaluate differences in continuous variables across the groups. Chi-square test was used for categorical variables. A *P*-value of less than 0.05 was considered statistically significant. All analyzes were carried out with SPSS version 16.0 software for Windows.

RESULTS

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In unserer Studie waren die age and sex distribution sowie die häufigkeit von cardiovascular risk factors like smoking, diabetes mellitus, hypertension, and hyperlipidemia similar among patients in different blood groups. Die Geschlechtsverteilung war die einzige Unterscheidung zwischen Patienten mit nicht-O- und Patienten mit O-Blutgruppen [Table 1].

Es gab keine Unterschiede in der Verteilung der ABO-Rh-Blutgruppen zwischen Patienten mit CSX und den üblichen Menschen. Der Bluttyp nicht-O und der Bluttyp O unterschieden sich daher nicht zwischen den beiden Gruppen [Table 2].

DISCUSSION

Our results showed that ABO-Rh blood groups might be unassociated with CSX. This conclusion arises from the observation of a similar distribution of ABO-Rh blood groups among these patients and

the West-Azerbaijan general population. We didn't find any data on frequency distribution of ABO-Rh blood groups in CSX patients, but as stated, Bøtker *et al*. in their research on plasma concentrations of vWF in CSX patients, CAD patients and healthy controls reported that CSX patients had only insignificantly higher circulating levels of vWF than healthy subjects. They also found a considerable overlap between plasma concentrations of vWF in the 3 study groups. These researchers suggested that CSX patients comprise a heterogeneous group among whom random cases may display elevated levels of vWF. They justified that such heterogeneity may explain why some studies have demonstrated systemic endothelial dysfunction in a limited number of CSX patients.[5] Recent studies suggest that the adverse event rate may be increased in patients with CSX and demonstrable endothelial dysfunction.[2,14,15] We did not analyze the presence or absence of endothelial dysfunction in our studying group, which is a limitation of our project.

Comparing ABO-Rh blood groups distribution of non-O and O blood groups patients showed no association. Numerous studies reported that non-O individuals could have an increased thrombotic risk and CAD via having higher vWF levels.[6,8-12] For example, Carpeggiani *et al*. in their research concluded that a non-O blood group is associated with an increased mortality in patients with ischemic heart disease. They proposed ABO blood groups determination for genetic screening of ischemic heart disease.[16] Ketch

Table 2: ABO-Rh blood groups distribution in CSX patients and normal population

Blood groups	Distribution in CSX patients (%)	Distribution in normal population (%)	*P* value
A	33.1	37.4	0.93
B	21.9	20.9	
AB	9.3	8.8	
O	35.8	32.9	
Rh +	92.1	90.18	0.63
Rh –	7.9	9.82	
Non-O	64.2	67.1	0.59
O	35.8	32.9	

Variables are expressed by percentage and were compared by chi-square test

Table 1: Demographic data and clinical characteristics of the study population by blood type

	A	B	AB	O	Rh +	Rh -	Non-O	O
Age, (years)	52 ± 11	50 ± 10	54 ± 9	52 ± 10	52 ± 10	53 ± 12	52 ± 10	52 ± 10
Female gender (%)	56.0	48.5	71.4	71.2	62.0	50.0	59.3	71.2
Diabetes mellitus (%)	37.5	20.8	12.5	29.2	87.5	12.5	70.8	29.2
Hypertension (%)	32.8	20.3	7.8	39.1	92.2	7.8	70.0	39.1
Hyperlipidemia (%)	37.5	25.0	6.3	31.3	93.8	6.3	68.8	31.3
History of smoking (%)	37.9	13.8	6.9	41.4	100	0	58.6	41.4

et al. demonstrated that non-O compared to O blood groups patients have higher thrombus burden despite less extensive atherosclerosis.[17] von Beckerath *et al*. showed that carriage of the O1 allele is associated with a decreased risk of myocardial infarction, with homozygosity providing the greatest protection.[10] Ray *et al*. reported elevated absolute levels of vWF in non-O blood groups and concluded that the increased risk of non-O blood groups CAD patients may be related to intrinsically higher circulating levels of vWF.[18] As stated, the similar distribution of ABO- Rh blood groups among CSX patients in our study, indirectly hints to the irrelevant roll of vWF in this syndrome. However, the lack of direct measurements of vWF level or other biological marker of endothelial cell dysfunction precludes a more in-depth understanding. It seems that large scale studies, especially on the basis of endothelial dysfunction, would be helpful to better clarify this subject.

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