

Risk factors for Turkish Cypriot patients with coronary artery disease

Cenk Conkbayir¹, Didem Melis Oztas², Murat Ugurlucan³

¹Cardiology Department, Near East University, Nicosia, Cyprus

²Bagcilar Training and Research Hospital, Istanbul, Turkey

³Department of Cardiovascular Surgery, Faculty of Medicine, Istanbul Medipol University, Istanbul, Turkey

Submitted: 8 July 2020

Accepted: 15 August 2020

Arch Med Sci Atheroscler Dis 2020; 5: e332–e334

DOI: <https://doi.org/10.5114/amsad.2020.103380>

Copyright © 2020 Termedia & Banach

Corresponding author:

Cenk Conkbayir

Cardiology Department

Near East University

Nicosia, Cyprus

E-mail:

cenkconk@hotmail.com

Abstract

Introduction: Ischemic heart disease is the leading cause of death worldwide. In this study, we evaluated the risk factors for Turkish Cypriot ischemic heart disease patients.

Material and methods: In this study we examined 7017 patients, retrospectively. 5.9% of the patients had myocardial infarction coronary artery disease (MICAD) and 94.1% of the patients were control patients. The mean age of the study population was 52, and 39.2% were female. The risk factors considered were: age, sex, hypertension (HT), diabetes mellitus (DM), family history of coronary artery disease, smoking, high total cholesterol levels and obesity.

Results: Consistently with the presumed risk factors, there was a significant difference between MICAD and control groups in our study for smoking, HT, DM and obesity. However, our study revealed no significant difference for high total cholesterol levels in contrast to the current literature. Assessing the risk factors among male and female patient groups separately, both men and women have the highest risk prevalence for hypertension. Smoking is the second most common risk factor among males, whereas it is the family history of coronary heart disease in the female group. HT, DM and obesity were found to be significant risk factors for both males and females in our study group, while family history was revealed to be significant only in women.

Conclusions: Modifiable risk factors such as smoking, hypertension, diabetes mellitus and obesity may be controlled by lifestyle changes and medical therapies, and should be approached with caution for preventing cardiac events. Non-modifiable risk factors such as age, gender, family history and ethnicity should be taken into account for disease prediction.

Key words: risk factors, coronary artery disease, myocardial infarction.

Introduction

Global Health Estimates 2016, published by the World Health Organization (WHO), stated that ischemic heart disease is responsible for the deaths of 2,730 people per 100 000 population, making it the leading cause of death worldwide [1]. A number of epidemiological studies have been carried out to identify the risk factors of the disease. Predictive values of these risk factors and their role in the disease prevention have been widely investigated. The pioneer of these epidemiological studies is

the Framingham Study published in 1957, which demonstrated the relations of smoking, blood pressure, and cholesterol levels with the incidence of ischemic heart disease [2].

According to our current knowledge, multiple factors are associated with increased risk for ischemic heart disease, which are commonly categorized as modifiable risk factors that may be controlled by lifestyle changes and medical therapies such as hyperlipidemia, hypertension, diabetes, smoking, poor nutrition, and lack of physical activity, and non-modifiable risk factors such as age, gender, family history and ethnicity.

Several studies have shown that the major risk factors identified in the Framingham cohort group apply universally regardless of race and ethnicity [3–5]. In this study, we evaluated the risk factors for Turkish Cypriot ischemic heart disease patients.

Material and methods

A comparative retrospective study model with a myocardial infarction coronary artery disease (MICAD) group and a control group (no MICAD) was employed for this study. The objective was to estimate the prevalence of risk factors for coronary artery disease in Turkish Cypriot patients. The risk factors considered were: age, sex, hypertension, diabetes mellitus, family history of coronary artery disease, smoking, high total cholesterol levels (HTCL) and obesity (body mass index – BMI > 30 kg/m²).

Population sample

The ethical statement of the study was approved with the YDU/2015/34-247 project number in the Near East University.

In this study we used 7017 subjects, including 5.9% MICAD patients and 94.1% controls. The mean age of the study population was 52, and 39.2% were female.

The mean age of the MICAD group was 59 years and 24.5% of them were female. Hence, the number of male patients in the MICAD group was significantly higher than the number of females, while the mean ages of males and females were

similar. In the control group, the mean age was 52 years, and 40.2% were female.

Statistical analysis

Statistical analysis was performed using SPSS (version 23). *P*-values less than 0.05 were considered statistically significant for all analysis. For percentages descriptive analysis and two related sample tests (Wilcoxon) were used to determine the relation of all variables with the risk of coronary heart disease.

Results

Consistently with the presumed risk factors, there was a significant difference between MICAD and control groups in our study for smoking, hypertension, diabetes mellitus and obesity. However, our study revealed no significant difference for high total cholesterol levels, in contrast to the current literature.

When prevalence of modifiable risk factors is compared among the patients, hypertension is most prevalent for the overall sample group, followed by smoking.

Assessing the risk factors among male and female patient groups separately, both men and women have the highest risk prevalence for hypertension. Smoking is the second most common risk factor among male, whereas it is the family history of coronary heart disease in the female group. Hypertension, diabetes mellitus and obesity were found to be significant risk factors for both males and females in our study group, while family history was revealed to be significant only in women (Table I).

Discussion

In the Turkish Cypriot group investigated in our study, most of the findings are consistent with internationally accepted coronary risk factors. Smoking, hypertension, diabetes mellitus and obesity were found to be significantly related to higher rates of myocardial infarction coronary artery disease.

High cholesterol levels, a well-known global coronary artery risk factor, do not correlate with higher cardiovascular risk according to our results. HDL is inversely associated with the risk of coronary heart disease [6], and increases the total cholesterol levels in the blood. Olive oil and a plant-based Mediterranean diet rich in HDL may cause misinterpretation of our findings. Further estimation of HDL and LDL values of the individuals should be taken into account in order to better assess the role of “bad” cholesterol in ischemic heart disease.

In contrast to the literature [7], family history was also revealed to be insignificant in coronary

Table I. Risk factors of the patients

Risk factor	Male	Female
Hypertension	<i>p</i> < 0.05	<i>p</i> < 0.05
Smoking	<i>p</i> < 0.05	<i>p</i> < 0.05
Diabetes mellitus	<i>p</i> < 0.05	<i>p</i> < 0.05
Obesity	<i>p</i> < 0.05	<i>p</i> < 0.05
Family history	<i>p</i> > 0.05	<i>p</i> < 0.05

P < 0.05 significant.

heart disease in our patient group. Increasing the population of the myocardial infarction coronary artery disease group may yield more precise evaluation of the cardiovascular risk. Also, angiographic approval of the control group or other screening modality is needed for differentiating the non-myocardial infarction coronary artery disease group from disease-free individuals. Hence, risk factors for coronary artery disease, even without myocardial infarction, can be more accurately demonstrated.

The major limitation of the study is the unequal size of the MICAD group and control group.

In conclusion, modifiable risk factors such as smoking, hypertension, diabetes mellitus and obesity may be controlled by lifestyle changes and medical therapies, and should be approached with caution to prevent cardiac events. Non-modifiable risk factors such as age, gender, family history and ethnicity should be taken into account for disease prediction. Even though the Turkish Cypriot group evaluated in our study showed similar results with global findings in terms of cardiovascular risk assessment, further studies should be conducted for broader evaluation.

Acknowledgments

We would like to thank Prof. Dr. Evren Hincal (Near East university – Department of Mathematics) for statistical analyses.

Conflict of interest

The authors declare no conflict of interest.

References

1. Global Health Estimates 2016: 20 Leading Causes of DALY by region, 2016 and 2000.
2. Mahmood SS, Levy D, Vasan RS, Wang TJ. The Framingham heart study and the epidemiology of cardiovascular disease: a historical perspective. *Lancet* 2014; 383: 999-1008.
3. Leigh JA, Alvarez M, Rodriguez CJ. Ethnic minorities and coronary heart disease: an update and future directions. *Curr Atheroscler Rep* 2016; 18: 9.
4. Chaturvedi N. Ethnic differences in cardiovascular disease. *Heart* 2003; 89: 681-6.
5. Tillin T, Hughes AD, Whincup P, et al. Ethnicity and prediction of cardiovascular disease: performance of QRISK2 and Framingham scores in a UK tri-ethnic prospective cohort study (SABRE – SouthallAnd Brent Revisited). *Heart* 2014; 100: 60-7.
6. Rader DJ, Hovingh GK. HDL and cardiovascular disease. *Lancet* 2014; 384: 618-25.
7. Hindieh W, Pilote L, Cheema A, et al. Association between family history, a genetic risk score, and severity of coronary artery disease in patients with premature acute coronary syndromes. *Arterioscler Thromb Vasc Biol* 2016; 36: 1286-92.