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Original Article

A 5-year trend of myocardial infarction, hypertension, stroke and diabetes mellitus in gender and different age groups in Erzurum, Turkey



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المخلص

أهداف البحث: التحقق من توجه ومخاطر الإصابة بأمراض تصلب الشرايين التاجية، واحتشاء عضلة القلب، وارتفاع ضغط الدم، والسكتة الدماغية، والأمراض الدماغية الوعائية، وداء السكري من النوع الثاني عند الجنسين في مختلف الفئات العمرية.

طرق البحث: أجريت دراسة استيعابية لبيانات المرضى لمدة 5 سنوات (من 1 يناير 2007 إلى 31 ديسمبر 2011) المسجلين بمستشفى أتاتورك الجامعي، الذي لديه نظام تسجيل لقاعدة البيانات على أساس التصنيف الدولي للأمراض. وقد شملت الدراسة 88293 مريضاً. وتم استخدام نموذج الانحدار اللوجستي، لتقييم تأثير مجموعة من المتغيرات (على جنس المريض وتفاعله مع التقدم في السن) مع القيام بالحسابات الإحصائية اللازمة.

النتائج: من بين 88293 مريضاً، كان 45% (39514) من الإناث، بمتوسط عمر 56.86 ± 16.23 عاماً. وكانت نسبة الإناث مهيمنة في جميع الفئات العمرية من داء السكري من النوع الثاني. في حين كانت نسبة الذكور أعلى عند مرضى ارتفاع ضغط الدم، والسكتات الدماغية، وتصلب الشرايين القلبية في جميع الفئات العمرية عدا مرحلة الشباب. كما وجد أن لدى الإناث نسبة خطورة عالية للإصابة بالسكري من النوع الثاني، في حين أن نسبة الخطورة كانت منخفضة لديهم لأمراض تصلب الشرايين القلبية وأعلى قليلاً للأمراض القلبية بشكل عام.

الاستنتاجات: أظهرت النتائج ارتفاع نسبة الإناث المصابات بداء السكري من النوع الثاني، وكذلك بين الفئة العمرية الشابة لأمراض القلب والأوعية الدموية الأخرى ولديهن عوامل خطورة أعلى.

الكلمات المفتاحية: صحة القلب والأوعية الدموية؛ الفرق بين الجنسين؛ مشاكل القلب والأوعية الدموية؛ داء السكري

Abstract

Objective: To investigate the trend and risk of coronary artery diseases (CAD), myocardial Infarction (MI), hypertension (HT), stroke, cerebrovascular disease (CVD), and diabetes mellitus type 2 (DMT2) as regard to different age groups and gender.

Methods: We retrieved retrospectively almost 5-year data (January 1st 2007 through December 31st 2011) from the Ataturk university hospital that has database registry system based on International Classification of Diseases (ICD-10). We included 88,293 patients in this analysis. A logistic-regression model was used to assess the effect of groups of variables on the associations of interest (sex and its interaction with age) with calculation of odds ratios with their 95 percent confidence intervals.

Results: Out of 88,293 patients, 45% (39,514) were females and mean age was 56.86 ± 16.23. The females were dominant ($P = 0.001$) in all age groups in diabetes type 2. Whereas in case of hypertension, CAD and strokes except in young age groups males were more prominent. We found that females had high risk 1.54 (95% CI, 1.50–1.59) for diabetes mellitus while for other

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cardiovascular disease females had lower risk except a slightly high risk for overall CVD (1.01; 95% CI, 0.93–1.09).

Conclusion: The results demonstrated that for diabetes type 2 and young age group for other cardiovascular diseases females are dominant and have higher risk.

Keywords: Cardiovascular events; Cardiovascular health; Diabetes mellitus; Gender difference

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Introduction

Cardiovascular health mainly related to the whole system consists of heart and blood vessels¹ and it damages when main arteries are affected due to atherosclerosis. This is a process marked by abnormal buildup of fat, cholesterol and other substances in the inner lining of the arteries causes a more serious consequences especially when it affects the blood supply to the heart (causing angina or heart attack) or to the brain (causing a stroke).² Nevertheless this whole process relates to the risk factors for cardiovascular morbidity and mortality that include those that are inherently non-modifiable (gender, age, family history) and those that are modifiable through behavioral changes and improving self-care (obesity, smoking, diabetes, hypertension and dyslipidemia).³

Eventually there are always two main non-modifiable characteristics: age and gender to be taken into account while we are discussing about morbidity or mortality patterns and these both can influence clinical presentation of fatal diseases including acute myocardial infarction,^{4–7} diabetes mellitus,^{8,9} cardiovascular disease, hypertension and stroke.¹⁰ The literature^{5–7} demonstrated that females with acute myocardial infarction, in addition to being approximately 10 years older than males, have a higher incidence of systemic arterial hypertension, diabetes mellitus, normal coronary arteries, and clinical signs of heart failure. Furthermore differences between men and women with diabetes have been also reported and it has been shown that fatality rates are higher for women with DM and acute myocardial infarction than for their male counterparts. The increased risk of cardiovascular disease that accompanies type 2 DM is greater for women than it is for men.^{8,9} A significant association was also illustrated between DM and functioning, especially in women.^{11,12}

Though incidence and the progression rate of cardiovascular disease and hypertension (CVDH) are markedly higher in men than in age-matched premenopausal women. After menopause, this high ratio does not continue.^{13–15} A review article mainly based on studies from Western Europe showed that stroke incidence was about 30% higher in men than in women. The study showed that male patients are on average younger than female when they got their first stroke.¹⁰

Thus it is proven that there are differences in diseases as regards to sex and age. It has been debated too much during

recent years and a considerable number of articles have been published which add new knowledge on epidemiological differences between the gender and age groups in different parts of the world. However it seems that so far this kind of detailed and comprehensive data is not available in Turkey especially from Eastern region. Therefore the purpose of this study as Cardiovascular Health Analysis (CHA) is to give an update and insight on the current knowledge within this field as regard to specific age groups and gender in order to make a plan for preventing cardiovascular diseases and promoting cardiovascular health especially for women so far neglected group.

Materials and Methods

Study design

This is a retrospective epidemiological exploratory study.

Setting

Ataturk University Hospital is a tertiary care teaching hospital. It includes nearly all specialties wards and deals with all kind of patients. It is the only main referral and tertiary care hospital with 1362 bed and gives service to almost 700,000 inhabitants in the Erzurum province that covers 19 districts. The total population of the Eastern Anatolia region is 6,100,000 (2000 census).¹⁶

Patients

The hospital has an impressive database registry system on linked to national database system. International Classification of Diseases (ICD) codes use for all registered case as standard for database. In fact this system applied in July 2007 and now International Classification of Diseases (ICD-10) is using for database. We retrieved all data from January 2007 to December 2011. The hospital consecutively enrolls all patients as diagnosed and registered by physicians based ICD-10.

By December 2011, within four and half year a total of 30,331,973 visits had been enrolled to the hospital. In the current analysis, we excluded all other patients who were enrolled for other than Diabetes Mellitus, Hypertension, Coronary Heart Diseases, and Cerebrovascular Diseases. We also excluded patients with missing information on age, patients who were 110 years of age or older, and patients who were less than 18 years of age, since myocardial infarction, hypertension and stroke are rare in this age group. Therefore, 88,293 patients (39,514 men and 48,779 women) were included in this analysis.

Clinical variables

Information on clinical variables (Table 1) abstracted from the medical records of the hospital were based on International Classification of Diseases version 10.¹⁷

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