Original Article

Coronary Artery Disease in critical patients of Iran

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Abstract

Objective: To identify the risk factors for Coronary Artery Diseases (CAD), such as hypertension, hyperlipidaemia, smoking, age, obesity, immobility and diabetes mellitus, in critical patients of Sistan-Baluchistan (SB), Iran.

Methods: This cross-sectional research was performed in 2006. The sampling method was convenience, and involved 616 hospitalised patients in the CCUs of hospitals of Sistan-Baluchistan province. Data was collected by structured interview and a checklist which included personal characteristics and risk factors like lifestyles as well as biochemical and physiological factors for CAD. SPSS software, Chi-square and exact fisher tests were used for analysis.

Results: Frequency of risk factors among patients with CAD was found to be high in the study area. Also, the results showed that the prevalence of some risk factors, such as diabetes mellitus 198 (32.5%), hypertension 266 (43.7%) and obesity 131 (22.9%), was significantly higher in women than men. Besides, there was a significant relationship between smoking, 317(52.3%) and low mobility 503 (83.3%), with gender (p=0.001).

Conclusion: Clinical and para-clinical data indicated that the adult population has a high level of CAD risk factors in the Sistan-Baluchistan province which may require urgent steps to address national control measures regarding CAD. Implementation of a prevention programme is necessary in order to reduce the risk factors. Also, health education is necessary, specially for women.

Keywords: Coronary artery disease, Risk factor, Patient. (JPMA 62: 1282; 2012)

Introduction

Coronary artery disease (CAD) is the largest killer in the developed world and is rapidly becoming one in the developing countries such as Iran. CAD is a leading cause of mortality, morbidity and disability with high healthcare costs in Iran. It accounts for nearly 50 percent of all deaths per year.[1] Appreciation of the crucial role of risk factors related to CAD is one of the most significant advances in the understanding of the disease. Many epidemiological researches have established smoking, diabetes, hyperlipidaemia, and hypertension as independent risk factors for CAD. The risk factors for CAD in the general population have been well characterized.[2-6] The Framingham Study and other studies have identified a number of atherogenic risk factors, including increasing age, male gender, family history, hypertension, diabetes mellitus, smoking, and elevated serum cholesterol levels. More recently, homocysteine and lipoprotein have been identified as additional coronary risk factors, necessitating a broadening of existing risk factor-reduction strategies.[7,8] In addition, treatment of these risk factors has been convincingly shown to reduce the risk of future cardiac events and heart diseases such as CADs.[2,6] Although the importance of mentioned risk factors is well established, but it is commonly suggested that more than 50% of patients with coronary heart disease (CHD) lack any of the risk factors.[7-13] This implies that other factors play a significant role in the development of this disease. This perceived void has led to considerable research on non-traditional risk factors and genetic causes of heart disease. Yet, data to support this "50%" belief are limited, and some have suggested that conventional risk factors play a much more significant role.[14,15] Determining the validity of this idea is important for scientific accuracy and to guide the practice of clinical medicine, public health policies, and prioritisation of research efforts. In addition, patients and physicians can better understand the impact of preventing or modifying these specific risk factors on the risk of future CHD and CAD. Since the prevalence of cardiovascular diseases are high and the patients involved are young, the most basic way is identifying risk factors for CAD and modifying individuals' lifestyle. Yet, little is known about CAD and its risk factors in the Iranian population especially in the Sistan-Baluchistan (SB) province. The results of this research in this geographical area were interesting because they are different in culture and race, food, lifestyle and other habits. The present study was undertaken to identify the risk factors for Coronary Artery Disease in critical patients of SB, Iran.

Patients and Methods

This was a cross-sectional research. The sampling method was convenience and 616 hospitalised patients in SB province were part of the study. The inclusion criteria were clinical and paraclinical diagnosis based on existing angina pectoris, CAD, myocardial infarction (MI), and the patients' willingness to participate in the research. The study was carried out in large cities of the SB province which consists of Zahedan, Zabol, Khash, Saravan, Iranshahr and Chabahar. The data was collected through structured interviews and a checklist which included four-parts: 1. Personal characteristics consisted of age, job, medical diagnosis, marital status, education, personal and family history and location; 2. Risk factors related to lifestyle consisted of smoking, high-risk diet (salty, fatty, low-fibre) and low mobility; 3. Biochemical and physiological risk factors consisted of history of diabetes, hypertension, hyperlipidaemia, hypercholesterolaemia, overweight and obesity; and 4. Personal risk factors consisted of age over 40 years for males, and over 55 for females, gender, and positive personal and family history of MI, sudden death of father before 55 years or mother before 65 years of age. Filling out of the questionnaire and the interview was completed by trained nurses employed in CCUs. SPSS software was used for analysis.

Results

The study participants comprised of 303 (49.3%) females and 311 (50.7%) males. The demographic factors related to CAD are shown in the Table. The findings showed that the biochemical and physiological risk factors for CAD in the patients were hypertension 266 (43.7%), diabetes 198 (32.5%), hyperlipidaemia 253 (42%), overweight 168 (29.4%) and obesity 131 (22.9%). The prevalence of personal risk factors for CAD were 80.7% for being over 40 years of age, 50.7% for the male gender, and 17.5% for positive family history. Also, the results brought to surface the fact that smoking was most prevalent in patients from Chabahar 61 (64.9%), high-risk diet was common in patients from Saravan 65 (89%), and low mobility was common in patients from Iranshahr 105 (92.1%). The high frequency of hypertension 39 (53.4%) and hyperlipidemia 38 (53.5%) was observed in patients from Saravan. The frequency of diabetes was 86 (42.8%) in patients from Zahedan. Also, overweight 37 (33.6%) and obesity 36 (32.7%) were most common in Iranshahr patients.

The results showed that there was a significant relationship between the prevalence of lifestyle risk factors with hyperlipidaemia, diabetes mellitus, obesity risk factors and patients' location (P=0.001). Also, the results demonstrated that there was a significant relationship between smoking 317 (52.3%) and low mobility 507(83.3%) with gender (P <0.001) and while smoking was more common in male patients, low mobility was mostly seen among females. On the other hand,

Table: Demographic factors related to Coronary Artery Disease.

Variable	Frequency	Number	Percent
Gender	Female	303	49.3
	Male	311	50.7
	Total	614	100
Age	≤ 30	10	1.6
	31.4	36	5.9
	41-50	147	24.1
	51-60	193	31.5
	61-70	125	20.4
	71-80	92	15
	≥ 80	9	1.5
	Total	* 612	100
Marital Status	Single	10	1.6
	Married	536	88.2
	Divorced	7	1.2
	Widow	55	9
	Total	*608	100
Education	Illiterate	383	64
	Literate	215	36
	Total	*598	100
Job	Jobless	339	59.4
	Free Job	133	23.3
	Employee	99	16.6
	Worker	10	1.8
	Total	*571	100
Medical diagnosis	UA	383	64.8
	MI	208	35.2
	Total	*591	100

*- There are some missing values in the table. MI- Myocardial Infarction.

there was also a significant relationship between hypertension (P <0.001), hyperlipidaemia (P=0.002), diabetes (P=0.03) and obesity (P <0.001) with gender and the prevalence of these factors were more in the female patients than males.

There was a significant relationship between a higher age (P <0.001) and positive family history (P <0.001) with gender. High age was more common in male patients and positive family history was more common in females.

There was a significant statistical relationship between hypertension (P <0.001), hyperlipidaemia (P=0.002), diabetes (P=0.03), obesity (P <0.001) and gender. The prevalence was more in the female patients than males.

There was a significant statistical relationship between high age (P=0.001), positive family history (P <0.001) and gender; high age for male patients and positive family history for female patients.

Discussion

Of the study population 50.7% were males. Winder proved in his research that men are more at risk for CAD compared to women due to different patterns such as alcohol intake, smoking and difficulty in coping with stress.[12] Nearly half of the patients 64% were illiterate and 88.2% were married. An earlier study has stated that myocardial infarction occurs more among married people (67.2%) and people with a low

education level (41.3%).[13] The American Heart Association (AHA) stated that age of over 40 for men and over 50 for women is a non-modified risk factor for CAD.[14] The prevalence of smoking was 52.3% which is similar to Motamedi's research which was found to be 56.3%.[15] Similarly in Ebrahimi's study in 2005, smoking was a risk factor for 61% of men.[16] In Aghasadeghi research, the prevalence of smoking was 79.9%[17] which is higher than the result of this study. CAD occurs more commonly in diabetic patients than in the general population, affecting more than 55% of patients. Diabetes mellitus is a major risk factor for independent cardiovascular disease, even after being adjusted for more advanced age, systemic arterial hypertension, and smoking.[18]

For being overweight, another biochemical and physiological risk factor for CAD, the prevalence was 29.4%. Wang reported that the prevalence of being overweight was 32.7% in the rural China population, while Akhavan Tabib reported that the prevalence of overweight is 33.3% in women and 30.3% in men, but Salehi reported it to be 59.6% in women.[19-21] The cause of this difference may be due to different lifestyle of the subjects.

The findings also showed that the prevalence of hypertension is 43.7%, whereas Aghasadeghi in his research reported that 74% of the subjects were hypertensive. It can be said that hypertension has a positive relationship with smoking, the increase of age and serum triglyceride level.[17] These findings confirmed the Everson study which found that there was a direct relationship between hypertension and cardiovascular diseases.[22,23] The result showed that the prevalence of low mobility is more common in women (89.5%) than men. Salehi found immobility in women to be 97.4%.[21] The reason for this result is probably due to the hot climate in the area which lasts for 10 months a year, and can lead to a reduction of physical activity. In comparison, it can be said that some risk factors were significantly more prevalent among women than men; for example, hypertension (P=0.001), hyperlipidaemia (P=0.002), diabetes mellitus (P=0.039) and obesity (P=0.001). Previous studies have also confirmed these results.[15,24,25]

The prevalence of other risk factors for CAD such as hyperlipidaemia was 48.3% in women and 35.9% for men. Khot reported that the prevalence of hyperlipidaemia was 39.6% in women and 34.1% in men. This different can be related to cultural and habitual differences and the overall difference in lifestyle.[24]

Conclusion

The study revealed that the adult population of Sistan-Baluchistan, Iran had a high level of CAD with risk factors as hypertension, diabetes mellitus and obesity being significantly high.

Recommendatinos

The implementation of a prevention programme is necessary in the Sistan-Baluchistan province of Iran in order to reduce CAD risk factors. Therefore, health education is necessary, especially for women. As one would expect, hospital personnel, nurses and general practitioners are the most important sources of information for patients, and the patients tend to interact with various medical personnel and support staff as they are hospitalised in a CCU. Clinical nurse specialists and pamphlets have to be available at hospitals. Pre-admission clinics are proven to be a very effective way of distributing information about CAD to those in need. Media and television reach out to just over a quarter of the patients and this number is quite low, especially as a lot of investment has gone into advertising campaigns in the recent past. With health programmes which educate the population and fight the risk factors, we will be able to decrease the prevalence of CAD and reach effective and favourable results in the struggle against morbidity due to coronary artery disease.

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