



Investigating the Frequency of Atherosclerosis Risk Factors in Patients Suffering from X Syndrome

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ABSTRACT

X syndrome is a cardiovascular disease during which the patient suffers from chest cage pains. Their fitness test might be unnatural and the angiography of most of them is normal or close to normal. As the researches indicate, there is currently no certain method to treat this disease. The treatments which are usually applied now use nitrogen compounds to loosen and widen vessels. As the researches indicate, controlling the risk factors of Atherosclerosis can partially recover the symptoms of this disease. In this research, as many as 160 files of patients suffering from X syndrome was obtained from 502 Hospital of the Army. Factors such as Hyperlipidemia, diabetes, high blood pressure, obesity, smoking cigarettes, long stress and family history of cardiovascular disease were studied and the frequency and frequency percentage of each variable compared to the whole population was measured and assessed. Having analyzed each variable, it became clear that obesity with a frequency of 98 people (61.3%) had the highest impact factor and preference in this disease. Following obesity, other factors such as high blood pressure, smoking cigarettes, diabetes and Hyperlipidemia have the highest influence and preference for intervention. Thus, controlling the above said factors, especially obesity and weight can help us significantly control this disease and its effects.

Keywords: X syndrome, Atherosclerosis Factors, Heart Disease, Vascular Disease, Obesity.

INTRODUCTION

Heart X syndrome is a disease during which one suffers from chest cage pains and resorts to doctor about it. The fitness test of them can be unnatural and angiography of these patients is usually normal or close to normal [1]. As the researches indicate, distal coronary arteries' involvement might contribute to the occurrence of this disease, so it is called microvascular angina, too [2-4]. The chest cage pain in these patients is usually more severe and longer than what is observed among those patients suffering from stable angina. This disease might even disrupt their daily activities [1, 4].

There is currently no definite and effective treatment for this disease and the treatments currently used for this purpose are based upon controlling the symptoms through nitrate compounds such as nitroglycerin as vasodilator of blood vessels in order to improve coronary artery perfusion to Myocardium, calcium channel blocker as the factor that reduces the spasm of smooth muscles in wall arteries, increases perfusion, reduces heart after-load and beta blockers. No appropriate response to improve the disease is usually observed [4-6].

As researches indicate, controlling atherosclerosis risk factors can play a major role in controlling the symptoms of this disease. The therapeutic effect of each one requires an accurate differentiation and measurement of the necessary intensity to control each risk factor, but the effectiveness has not been determined and described distinctively [1].

References have also pointed to the effective influence of controlling risk factors of atherosclerosis in treating this disease, but the distinctive effect of controlling risk factors on patients' symptoms and the main risk factor for control or for intensive control is not clear yet. The present research seeks to identify factors with greater frequency than normal population and pave the way for future studies about the influence of controlling each risk factor in controlling the symptoms of these patients [7].

In this research, 142 patients whose fitness tests were positive and their angiography was reported to be natural were studied in terms of heart risk factors and the results showed the the following shares for each factor: 45.7% for blood pressure, 33.8% for Dyslipidemia, 19.7% for obesity, 18.3% for positive family history of coronary veins disease, and 16.1% for smoking cigarette [1].

Studies also show that 95% of the patients suffering from X syndrome who had undergone heart MRI by injection of Adenosine were suffering from heart pains and sub-endocardial ischemia. This is the ischemic source of heart pain in patients suffering from X syndrome [2].

In another research, as many as 18 patients suffering from X syndrome and 10 natural and healthy people were put under test stress with Dobutamine. They were simultaneously under ischemic examination through heart MRI. As for those suffering from X syndrome, perfusion disorder was observed in them during stress test [3].

In this research, the influence of hyperlipidemia, diabetes, blood pressure, obesity, smoking cigarette, long stress and family history of cardiovascular diseases factors were analyzed in the patients suffering from X syndrome.

MATERIALS AND METHODS

Statistical society and sampling method

In this study, the researchers went to the heart unit of 502 Hospital of the Army and extracted 4000 files of angiographic patients. 160 files corresponding to those suffering from X syndrome were randomly selected and the information concerning each variable was extracted from each patient's file and registered in the form prepared for the patient.

Table 1: Type of variables, the role of each one, scientific definition and measurement unit

Name of variable	Role of variable				Type of variable/scale of variable				Scientific- practical definition	Measurement unit
	Independent	dependent	Confounding	background	Quantitative		Qualitative			
					distance	relationship	nominal	ranking		
Age						*			The calendar age of the patient base on birthday	Years
Gender	*							*	Patient's gender based on his anatomy of genetics	Male – female
Sweet diabetes	*							*	A breakfast blood sugar more than 126 mg/dl	mg/dl
Hyperlipidemia	*							*	Having a total cholesterol level more than 240 mg/DI2 or triglyceride level above 200 mg/dl or an LDL level above 160 mg/dL	mg/dl
High blood pressure	*							*	Having a Systolic blood pressure above 140 mm Hg (constantly) or a Diastolic blood pressure above 90 mm Hg (constantly)	mmHg
Obesity	*							*	Having a BMI above 25	Kg/m2
Smoking cigarette	*							*	Smoking cigarettes constantly or intermittently	Yes – no
Long stress	*							*	Is the individual older than 50?	Yes – no
Positive family record	*							*	Do the first degree relatives have cardiovascular disease?	Yes – no

Patients with positive fitness test, positive heart scan or positive echo stress were included in our research and patients with obstruction in two or three coronary veins were excluded and those patients whose angiography results were normal or close to normal were included in the research.

Variables and the method of studying them

Variables such as age, gender, sweet diabetes, hyperlipidemia, high blood pressure, obesity, smoking cigarettes, long-term stress and positive family history were studied in this research. They were then categorized in terms of the type of variable, role of variable, scientific definition and unit of measurement. Table 1 shows the type of variables, the role of each one, scientific definition and measurement unit of each one.

RESULTS

Gender and age

As many as 160 patients were studied in this research from whom 88 were male (51.9%) and 77 were female (48.1%).

The average age of the patients studied in this research was 56.87±11.338 with the oldest and youngest ages being 78 and 21 years old respectively.

Descriptive results

Positive fitness test, positive heart scan and positive echo stress test were set as inclusion criteria. Of all these participants, 28 (17.5%) had a positive fitness test, 29 had a positive echo stress (18.1%) and 103 (64.4%) with positive heart scan took part in our study. Table 2 represents the frequency and number of people who took part in in our research in terms of positive fitness test, positive heart scan and positive echo test.

Table 2: Distribution of participants based on positive fitness test, positive heart scan and positive echo stress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EST positive	28	17.5	17.5	17.5
	stress ECHO pos	29	18.1	18.1	35.6
	MPI pos	103	64.4	64.4	100.0
	Total	160	100.0	100.0	

The final inclusion criteria was defined as having normal angiography, mild CAD and minimal CAD. 49 people had normal angiography (30.6%), 27 had minimal CAD angiography (16.9%) and 84 had mild CAD angiography (52.2%) and remained in our study. Table 3 describes the frequency and distribution of each angiography mode to include people in the study.

Table 3: The number of people and frequency of those with normal angiography, mild CAD, and minimal CAD who remained in our study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NL angiography	49	30.6	30.6	30.6
	MIN CAD	27	16.9	16.9	47.5
	mild CAD	84	52.5	52.5	100.0
	Total	160	100.0	100.0	

The total number of diabetic people among those patients suffering from X syndrome was 28 and their frequency percentage ratio to the whole population was 17.5%. 20 of these people were female (26%) and 8 were male (9.6%). In this research, 62 people were suffering from Hyperlipidemia which made up 38.8% of all participants. This number was composed of 35 female (45.5%) and 27 male (32.5%) participants.

The number of people suffering from obesity was 98 with a frequency percentage of 61.3%. Of this number, 50 were female (64.9%) and 48 were male (57.8%). Chart 1 presents the frequency percentage between fat and healthy people in terms of their gender and tables 4 and 5 display the number of healthy and fat people among women and men respectively.

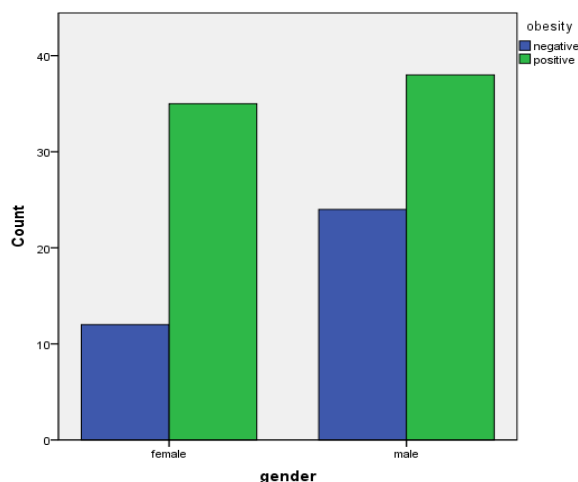


Figure 1: Frequency percentage between fat and healthy people in terms of gender

Table 4: Number and frequency percentage of fat and healthy cases among women

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	27	35.1	35.1	35.1
	positive	50	64.9	64.9	100.0
	Total	77	100.0	100.0	

Table 5: Number and frequency percentage of fat and healthy cases among men

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	35	42.2	42.2	42.2
	positive	48	57.8	57.8	100.0
	Total	83	100.0	100.0	

Frequency of long term stress among patients was 124 (77.5%) whose frequency among men and women was respectively 58 (69.9%) and 66 (85.7%) people.

36 of the patients studied smoked cigarette (22.5%). The frequency of this factor among men and women was 29 (34.9%) and 7 (9.1%) respectively. Tables 6 and 7 show the number of healthy cases and those with long stress for men and women respectively.

Table 6: Number and frequency percentage of healthy cases and cigarette smokers in women

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	70	90.9	90.9	90.9
	positive	7	9.1	9.1	100.0
	Total	77	100.0	100.0	

Table 7: Number and frequency percentage of healthy cases and cigarette smokers in men

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	54	65.1	65.1	65.1
	positive	29	34.9	34.9	100.0
	Total	83	100.0	100.0	

Frequency of positive family history of cardiovascular diseases among patients was 82 (51.3%) whose frequency among men and women was respectively 41 (49.4%) and 41 (49.4%) people.

Frequency of high blood pressure among patients was 70 (43.8%) whose frequency among men and women was respectively 25 (30.1%) and 45 (58.4%) people.

Tables 8 and 9 show the number of healthy cases and those with high blood pressure among men and women respectively.

Table 8: Number and frequency percentage of healthy cases and those with high blood pressure among women

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	32	41.6	41.6	41.6
	positive	45	58.4	58.4	100.0
	Total	77	100.0	100.0	

Table 9: Number and frequency percentage of healthy cases and those with high blood pressure among men

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	negative	58	69.9	69.9	69.9
	positive	25	30.1	30.1	100.0
	Total	83	100.0	100.0	

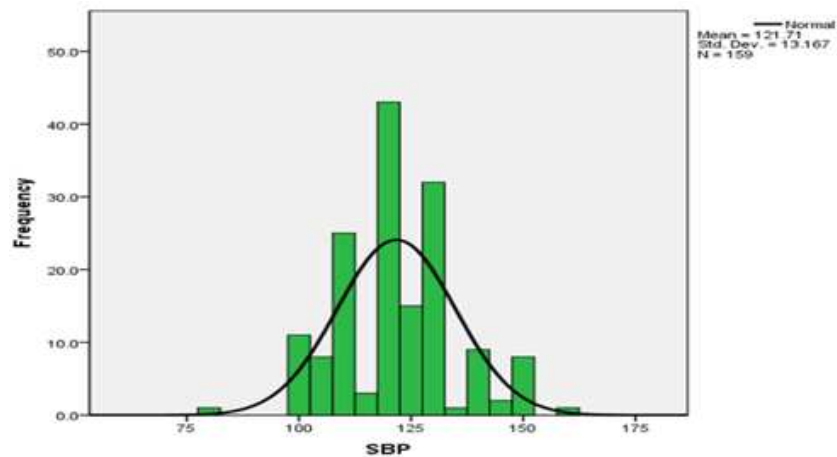


Figure 2: Average systolic blood pressure among the patients studied

As for the systolic and diastolic blood pressure in patients, the average systolic blood pressure of Heart X syndrome is a cardiovascular disease and the person suffering from it has pain in his chest cage and their fitness test might be unnatural. Angiography of these patients is normal or close to normal.

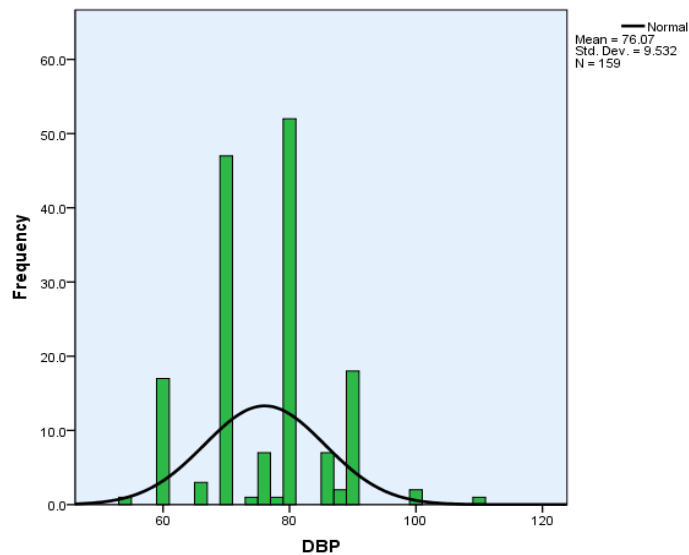


Figure 3: average diastolic blood pressure of patients

DISCUSSION

According to the results of various researches conducted, controlling Atherosclerosis factors can play a major role in controlling this disease.

In a research conducted by Kaski et al (1995), it turned out that the plasma levels of endothelin in patients suffering from X syndrome is significantly higher. This fact points to the failure of endothelium in these patients. We may also arrive at the conclusion that any pain in chest cage can be caused by high levels of endothelin in blood plasma [8].

In the researches conducted by Lanza et al (1997), it turned out that a high percentage of X syndrome patients show disruption in performance of Adrenergic nerves [9].

In another study conducted by Likelten et al (1995), 176 patients suffering from X syndrome were followed and monitored for 5 to 15 years. Their death toll caused by cardiovascular incidents was natural and similar to normal population. The risk of cardiovascular incidents among those patients with more risk factors had increased [7].

In another research conducted by Pit et al (1997), it was demonstrated that 17 patients suffering from X syndrome underwent angiography after 9 years and 15 cases showed no signs of obstruction. This fact was indicative of good survival and no rise of Atherosclerosis risk in these patients compared to normal population [10].

In this research, 160 of the patients resorting to the heart unit of 502 Hospital of the Army were studied in terms of age, gender, sweet diabetes, Hyperlipidemia, high blood pressure, obesity, smoking cigarette, long stresses and positive family history and their correlation with X syndrome disease.

Considering the results achieved in this research, it was shown that obesity had the highest influence and preference to conduct therapeutic interventional studies on Atherosclerosis risk factors and the trend of improvement in patients suffering from X syndrome. Following it, factors such as high blood pressure, smoking cigarette, diabetes and Hyperlipidemia had the greatest preference for intervention.

Based on the results achieved in this research, exercising can be recommended as one of the main factors to control Atherosclerosis factors and prevent obesity [11].

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