

Prevalence of Angina Pectoris in Relation to Various Risk Factors

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Received: 10.Dec.2015; Accepted: 24.Mar.2016; Published Online: 05.May.2016

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Abstract

The purpose of the present study was to determine the prevalence of angina pectoris in relation to various risk factors. One hundred cases of various types of angina pectoris in two hospitals of Narowal had been analyzed to determine the relative occurrence and incidence of angina pectoris, and effects of various risk factors using questionnaire. The analysis showed that silent angina pectoris were more prevalent (79%, n=79/100), and painful angina pectoris were less prevalent (21%, n=21/100). About 56% cases reported; belong to the age class 41-60 years with a higher incidence of silent angina pectoris. Angina pectoris is more prevalent in females (65%) as compared to males (35%). In relation to various risk factors, silent angina pectoris is the most prevalent. The mortality rate in this sample due to angina pectoris is 12%. All these factors contribute to the development of angina pectoris but only one of them may be responsible for its cause. The increasing importance of angina pectoris as a cause of morbidity presents a challenge. Therefore an active effort must be made to confirm or deny diagnosis.

Keywords: Silent angina pectoris, painful angina pectoris, mortality rate, risk factors, prevalence.

To cite this article: Iqbal, M.N., Ashraf, A., Yunus, F.N., Muhammad, A., Alam, S., Xiao, S., Ali, S., Irfan, M., 2016. Prevalence of Angina Pectoris in relation to various risk factors. PSM Biol. Res., 01(1): 06-10.

INTRODUCTION

Angina pectoris may be regarded as of three main types, stable, unstable and variant angina pectoris (Frileux *et al.*, 2004). The main locations of anginal pain are the epigastrium, neck, back, jaw, or shoulders (Maseri *et al.*, 1992). The disease becomes 'chronic' and 'stable' when symptoms last for at least two months, without any changes (Kaski *et al.*, 2011). Various factors are responsible for causing myocardial ischemia which include, reduction of coronary blood flow, abnormal constriction or deficient relaxation of coronary microcirculation and reduced oxygen-carrying capacity of the blood (Nissen *et al.*, 2007).

Risk factors for angina pectoris consist of diabetes mellitus, family history of early coronary artery disease, hypercholesterolemia, cigarette smoking, left ventricular hypertrophy, obesity, elevated serum levels of lipoprotein (a) and homocysteine, plasminogen activator inhibitor, serum triglycerides, or low high-density lipoprotein (HDL) (Chobanian *et al.*, 2003). Chest pain caused by means of

myocardial ischemia. It is classified as stable or unstable angina. Patients with unstable angina have a much privileged threat of acute cardiac actions than patients with stable angina pectoris (Gibbons *et al.*, 2002).

The pathogenesis of stable angina is multifaceted and often, even though not always, involves flow-limiting epicardial coronary artery stenosis that decrease the capability of the coronary exchange to transport suitable blood supply to the myocardium (Tarkin and Kaski, 2013). Latest studies have revealed that adenosine be able to the major chemical intermediary of anginal pain. During ischemia, ATP is deteriorate chemically to adenosine, which after circulation to the extracellular space, causes arteriolar dilation and anginal pain (Crea *et al.*, 1990).

Different drugs such as Aspirin, Clopidogrel, Metoprolol, Atenolol, Propranolol, Amlodipine, Ramipril and Ranolazine are used to reduce morbidity and to prevent complications relating to angina pectoris (Yusuf *et al.*, 2001). Beta-adrenergic overcrowding agents, calcium channel overcrowding agents, and short and long substitute nitrates

are the basis of therapeutic treatment for patients with persistent angina (Gibbons *et al.*, 2002). Enhanced External Counter pulsation is one more narrative treatment for patients with ischemic heart disease (Arora *et al.*, 1999). The present study was done to find out the occurrence and frequency of angina pectoris in relation to different factors such as age, sex, cigarette smoking, diabetes mellitus, obesity etc. in Narowal, Punjab.

MATERIALS AND METHODS

The prevalence of angina pectoris was determined in 100 samples of patients. The data of patients suffering from angina pectoris was collected from cardiac wards of different hospitals of Narowal (Pakistan). A Performa was developed to record patient history which includes information regarding family unit of early coronary artery disorder, diabetes mellitus, obesity, cigarette smoking and hypercholesterolemia or systemic hypertension. Data obtained was tabulated using Microsoft Excel (MS Excel 2010, Microsoft Corporation). Statistical Package for the Social Sciences version 16.0 (SPSS, Chicago, IL) was used to perform the statistical analysis.

RESULTS AND DISCUSSION

The results of our study revealed that among 100 patients studied, a higher prevalence of silent angina pectoris (79%) compared to painful angina pectoris (21%) was found. Among 21% cases having painful angina pectoris, 33.33% were males and 66.66% were females. Females had a higher incidence of 64.55% whereas males had an incidence of 35.44% among 79% patients having silent angina pectoris (Figure 1).

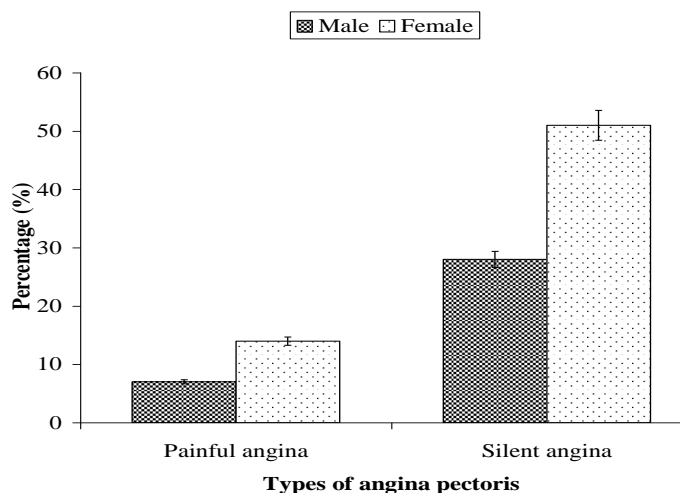


Fig. 1. Percentage of types of angina pectoris

Various risk factors were studied in relation to the incidence of angina pectoris. These include sex, age,

occupation, obesity, smoking, diabetes mellitus, premature coronary artery disease, hypertension and alcohol. Higher incidence of angina pectoris had been found in females (65%) than males (35%) (Figure 2). Similarly it has been found out in other studies that angina pectoris is more prevalent in women than in men, with a female-to-male ratio of 1.7:1 (Wenger *et al.*, 2007). The frequency of atypical presentations is also more common among women compared with men.

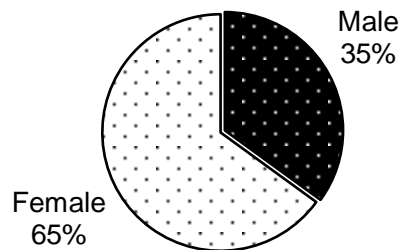


Fig. 2. Sex distribution in 100 patients of angina pectoris

The incidence of angina pectoris was the highest (56%) among the age group of 41-60 years out of which females (58.92%) had a higher incidence than males (41.07%) (Figure 3). In this age group, the incidence of angina pectoris is higher (66.66%) as compared to other age groups (Sorran, 2004). Previous studies have shown the incidence increases with grow old, getting higher starting approximately 8% in men and 3% in women almost 55-64 years, to 14% in men and 8% in women aged 65-74 years, in England (NICE, 2011).

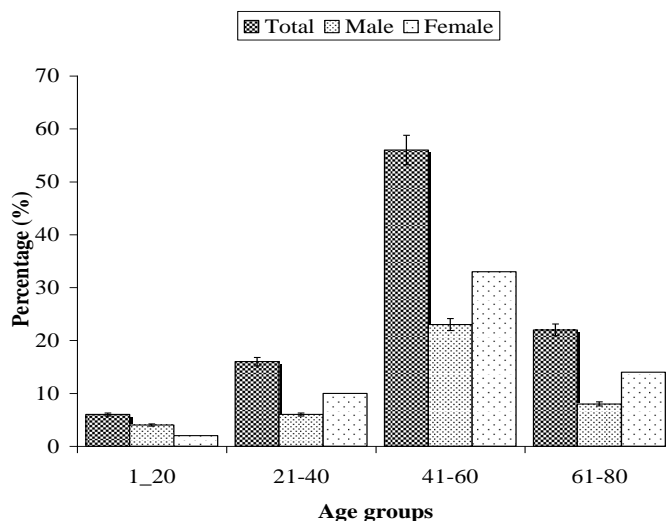


Fig. 3. Age and Sex Specific Prevalence

The incidence of angina pectoris was the highest among males and females who had higher cholesterol level (25%) among which 68% were females and 32% were males (Table 1). 56% had silent angina and 44% had painful angina respectively (Table 2). Chobanian *et al.* (2003) has described privileged occurrence of angina pectoris between patients having elevated cholesterol level. Smokers had a higher incidence of angina pectoris (13%). The risk factor of smoking found in females was 38.46% and in males 61.53% (Table 1). 53.84 percent had silent angina and 46.15% had painful angina respectively (Table 2). Smokers have a twofold risk of angina pectoris (Berk *et al.*, 1990).

The incidence of angina pectoris was high amongst patients who had an account of premature coronary artery disease (22%) out of which 68.18% were females and 31.81% were males (Table 1). Among patients having an account of premature coronary artery disease, the incidence of silent angina was 59.09% and painful angina pectoris 40.90% respectively (Table 2). In his evaluation of risk factors of silent angina pectoris Crea *et al.* (1990) reported that 21.54 percent cases had history of premature coronary artery disease (CAD). The annual mortality rate of coronary heart disease 0.9-1.4% in patients with stable angina (Fox *et al.*, 2006). Stable angina is the widespread medical demonstration of ischaemic heart disease, affecting 58% of patients with CAD (Lloyd-Jones *et al.*, 2010).

The incidence of angina pectoris in patients suffering from hypertension was 8%, among which 62.50% were females and 37.50% were males (Table 1). Among these patients 75% had silent angina whereas 25% had painful angina pectoris (Table 2). Chobanian *et al.* (2003) has described higher occurrence of angina pectoris among patients with hypertension. The frequency of angina pectoris in patients of diabetes mellitus was 4%, among which 50% were males and 50% were females (Table 1). Among these patients 75% had silent angina and 25% had painful angina pectoris (Table 2). Chobanian *et al.* (2003) has described elevated frequency of angina pectoris among patients suffering of diabetes mellitus.

The rate of angina pectoris in patients who were addicted to alcohol was 16% among which 56.25% were males and 43.75% were females (Table 1). Among these patients 62.50% had silent angina and 37.50% had painful angina pectoris (Table 2). More alcohol intake leads towards a relatively weak anatomy (Frileux *et al.*, 2004). The incidence of angina pectoris in obese patients was 12% among which 58.33% were males and 41.66% were females (Table 1). Among these patients 66.66% had silent angina and 33.33% had painful angina pectoris (Table 2). In his study on painful angina pectoris Wenger *et al.* (2007) found 27.31 percent obese cases.

Table 1. Sex specific prevalence of angina pectoris in relation to various risk factors

Risk factors	Prevalence of angina pectoris		
	Total %	Male %	Female %
Cholestrol	25	32	68
Smoking	13	61.54	38.46
Family history	22	31.81	68.18
Hypertension	8	37.50	62.50
Diabetes	4	50	50
Alcohol	16	56.25	43.75
Obesity	12	58.33	41.66

Table 2. Prevalence of different types of angina pectoris in relation to various risk factors

Risk factors	Prevalence of angina pectoris		
	Total %	Painful angina %	Silent angina %
Cholestrol	25	11	14
Smoking	13	6	7
Family history	22	9	13
Hypertension	8	2	6
Diabetes	4	1	3
Alcohol	16	6	10
Obesity	12	4	8

Table 3. Recurrence rate of angina pectoris and mortality rate due to angina pectoris.

Parameters	Total %	Male %	Female %
Recurrence rate	15	13	2
Mortality rate	12	5	7

The chief complaints reported by the patients are temporary pain, pressure, breadth or squeezing in the center of the chest or in the shoulder, neck, jaw, upper arm, or upper back. Other symptoms such as: faintness, sweating, weakness, numbness or tingling, or nausea. Among the patients 20.45% had painful angina pectoris and 79.54% silent angina pectoris. Among the 100 cases 15% experienced recurrent out of which 86% were males 14% were females (Table III). In a study the overall recurrence rate was 20.30% (Kung *et al.*, 2005) and smoking and age are the major risk factors for recurrence (Nissen *et al.*, 2007).

The risk factors like smoking, family history, and obesity also contribute to the development of other diseases like hernia in human population (Iqbal *et al.*, 2015).

In the present study all the patients underwent surgery and 88% were improved and able to return to their normal life routines. Mortality rate due to angina pectoris was found to be 12% (Table III).

CONCLUSION AND SUGGESTIONS

Among two types of angina pectoris, silent angina pectoris is more common in Pakistan. Epidemiological studies should be planned with the following objectives. One of them is to find out and to encourage the degree of the problem in order to inspire terms of suitable service. The second one is to put side by side the results with likewise acquired information from the residential world in search for extrinsic contributory factors.

ACKNOWLEDGEMENT

The authors are highly thankful to Pakistan Science Mission (PSM) for technical support during this research work.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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