

Risk Factors contributing to Angina Pectoris in Women

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Abstract— Ischemic heart disease (IHD) is the leading cause of death among women and associated with higher morbidity and mortality than in men. Angina pectoris in women is commonly micro vascular in origin than in men. Angina pectoris is a type of chest pain which is caused by reduced blood flow to the heart muscles. Angina pectoris is a symptom of coronary artery disease which is typically described by squeezing, pressure, heaviness, tightness or pain in chest. It is most commonly present in women compared to men. Angina symptoms include feeling out of breath, nausea, vomiting and sharp chest pain. Women are at great risk of developing angina than men. This review suggests that angina pectoris is under diagnosed in women's so, it minimize the opportunities for identification and prevention of cardiovascular morbidity in women.

Key words— Angina Pectoris, Ischemic heart disease, Hypertension, Plasma Lipoproteins, obesity, Hormonal Factors, morbidity

1 INTRODUCTION

Ischemic heart disease (IHD) is a major cause of death and global healthcare burden (TA et al., 2005). Angina pectoris, a symptom of IHD, is a severe chest pain due to ischemia of the heart muscle, during obstruction or spasm of the coronary arteries (HC et al., 2008). In the United States, IHD accounts for 26.6% of all deaths in 2005, with an age-adjusted male-to-female mortality ratio of 1.5 (Scottish et al., 2007). The morbidity and mortality of angina in middle aged and elderly people were ranked the top among all common diseases (SL et al., 2001). Angina pectoris is a term that describes mainly chest pain caused by myocardial ischemia a condition in which the amount of oxygen supplying to the heart muscle is insufficient. It is a generally symptoms of coronary artery disease. Angina usually occurs an exertion and is relieved by rest. In the most severe cases, it may occur with minimal effort or at rest. Typically, angina is described as a "Pressure" or "Squeezing" pain that starts in the center of the chest and may spread to the shoulders or arms the neck jaw or back. Some people experience angina while sleeping or at rest. This type of angina may be caused by a spasm in a coronary artery, which most commonly occurs at the site of atherosclerotic plaque in a diseased vessel. The two main cause of angina are coronary artery spasm, and atherosclerotic plaque buildup which causes critical blockage of coronary artery. Angina pectoris - commonly known as angina - is the sensation of chest pain, pressure, or squeezing, often due to ischemia of the heart muscle from

obstruction or spasm of the coronary arteries. While angina pectoris can derive from anemia, cardiac arrhythmias and heart failure its main cause is coronary artery disease an atherosclerotic process affecting the arteries feeding the heart. Angina pectoris is the result of myocardial ischemia caused by an imbalance between myocardial blood supply and oxygen demand. It is a common presenting symptom (typically, chest pain) among patients with (CAD). Approximately 9.8 million Americans are estimated to experience angina annually, with 500,000 new cases of angina occurring every year.

There are three types of Angina pectoris: Stable Angina; Unstable Angina; Micro vascular Angina

1: Stable angina It is most common in Angina which is related to myocardial ischemia. Stable angina is chest pain or discomfort that usually occurs with activity or stress. Angina is chest discomfort due to poor blood flow through the blood vessels in the heart. The term angina pectoris refers to William Heber den's classic description of the clinical symptoms of angina, as reported to the Royal College of Physicians in 1768 (ME et al., 1987).

2: Unstable angina. It is the form of acute coronary syndrome. Unstable angina is a condition in which your heart doesn't get enough blood flow and oxygen. It may lead to a heart attack.

3: Micro vascular angina Micro vascular Angina characterized by chest pain. This type of angina may be a symptom of coronary micro vascular disease (MVD). Coronary MVD is heart disease that affects the heart's smallest coronary artery blood vessels.

2 RISK FACTORS OF ANGINA PECTORIS

The common risk factors include: smoking high blood pressure or hypertension, high blood fats or cholesterol, hypercholesterolemia, diabetes men are at higher risk than women. There are mainly three types of Angina one is stable angina and another is unstable and lastly micro vascular angina. Stable angina also known as effort angina, this refers to the more common understanding of angina related to myocardial ischemia stable angina is that of chest discomfort and associated symptoms precipitated by some activity (running walking etc.), with minimal or non-existent symptoms at rest.

Different signs and symptoms of angina pectoris include:

1. Tightness, squeezing, pressure or ache in the chest
2. Sudden breathing difficulty.
3. Chest pain similar to indigestion.
4. Chest pain that radiates to the jaw, teeth or earlobes.
5. Heaviness, numbness, tingling or ache in the chest, arm, elbow or hand on the left side.
6. Pain between the shoulder blades.
7. Nausea, shortness of breath, sweating, Dizziness.

Different risk factors of angina pectoris are as follows:

1. Smoking, obesity, diabetes mellitus, High blood pressure, high blood cholesterol levels.
2. Excess intake of fat or salt.
3. Fatigue over work or stress.
4. Family history of coronary artery disease.
5. Exposure to cold and wind.

3 RISK FACTORS IN WOMEN (ANGINA PECTORIS)

The Framingham study, which began in 1948, is a longitudinal prospective study of cardiovascular disease involving several thousand men and women. In 1972 the natural history of angina pectoris was reported and several sex differences emerged (WB et al., 1972), Compared with men angina was the most common presentation of coronary artery disease in women (65% vs 37% in men) although the clinical course was less complicated. Subsequent myocardial infarction was twice as likely in men with angina compared with women. The 26-year follow-up of the Framingham population, reported in 1986 (DJ et al. 1986) demonstrated that the incidence of angina pectoris increased in men with age peaking between 55 and 65 years and then declining in

older men. In contrast, the rate in women increased in parallel with men until 55 to 65 years, when it continued to raise making angina a predominantly female disease over the age of 75 years. The Framingham (WB et al., 1972; JM et al., 1993) and other (A et al., 1993) studies highlight several differences between men and women with angina, in particular the better outlook of women. In contrast, when the diagnosis is very likely to be correct such as in recognized myocardial infarction, women fare less well than men. One possible explanation for the better prognosis of women with angina is that the chest pain may not have been cardiac in origin in all cases. Because cardiac catheterization was not used to establish a diagnosis of angina it is likely that a significant proportion of the women did not have coronary disease.

Many studies have shown a higher incidence of normal coronary arteries in women catheterized because of chest pain compared with men. For example in the Coronary Artery Surgery Study (CASS) 50% of women undergoing coronary angiography for chest pain had either minimal or no coronary artery narrowing (JW et al., 1982). The mean age at onset of angina was greater in women than in men (64 years vs 61 years) and women generally had a worse risk factor profile, with higher plasma cholesterol levels (6-71 mmol. l⁻¹ vs 6-19 mmol. l⁻¹ in men), a higher incidence of diabetes mellitus (12% vs 10%) and hypertension (49% vs 35%) but a lower incidence of smoking (22% vs 57%). In contrast, women presenting with angina had more favorable risk profiles than did women with other coronary disease presentations for example myocardial infarction. They tended to be younger have lower plasma cholesterol levels and a lower incidence of diabetes mellitus, hypertension and smoking. Subsequent myocardial infarction rates differed in women but not in men according to their initial coronary disease presentation. After 10 years of follow up myocardial infarction was twice as likely to occur in women whose initial presentation was myocardial infarction rather than angina (34-8% vs 17-8%). Similar to men the coronary death rate during follow-up was highest in women first presenting with myocardial and lowest in those women first presenting with angina. Women presenting with myocardial infarction fared at least as badly as men which could not be accounted for by their older age at presentation. Although the major risk factors are similar in men and women there are certain gender differences, described

below: Cigarette Smoking; Diabetes Mellitus; Hypertension; Plasma Lipoproteins; Hormonal Factors

Cigarette Smoking As a risk factor for coronary artery disease, cigarette smoking has become increasingly important in women. A recent editorial described smoking in women as the tragedy of the majority, since the decline in smoking during recent years has been considerably greater among adult men than women. Tobacco advertising has specifically targeted women such that more young women than young men smoke today. The introduction of low-tar brands has done little to reduce the risk of heart disease among women (JR et al., 1989).

Cigarette smoking is a major risk factor for coronary artery disease in women, in particular myocardial infarction, although the association is less strong for angina (MF et al., 1974). A clear dose-response relationship between the number of cigarettes smoked per day and the risk of fatal and non-fatal heart disease was demonstrated in the Nurses' Health Study (WC et al., 1987). Among heavy smokers (≥ 25 cigarettes per day) the relative risk was 5.5 for fatal coronary heart disease, 5-8 for non-fatal myocardial infarction and 2.6 for angina pectoris. Furthermore, there was no safe level of smoking for women — light smokers of 1 to 4 cigarettes per day had more than a twofold increase in risk of fatal coronary heart disease. The greatest risk was among women smokers already at increased risk because of other factors such as older age, hypertension, diabetes mellitus or hypercholesterolemia, in contrast to former smokers in whom there was little, if any, increase in risk.

Diabetes Mellitus Whereas most coronary risk factors are better tolerated by women than men, diabetes mellitus remains an exception to the rule. Diabetes mellitus is more prevalent amongst women with coronary artery disease than amongst men and it appears to be a stronger risk factor for women such that the risk of (CAD) in diabetic women approaches that in diabetic men. In the Framingham study, diabetes mellitus was a greater risk factor for myocardial infarction in women than in men, and even exceeded the risk imposed by cigarette smoking. Diabetes mellitus was associated with obesity, hypertension and hypercholesterolemia but even after adjustment for other risk factors the relative risk for (CAD)

amongst diabetics was more than doubled compared with non-diabetics. In the Nurses' Health Study diabetes was associated with a more than six-fold increased risk of non-fatal myocardial infarction and fatal coronary heart disease during 8 years of follow-up (JE et al., 1991).

Hypertension Blood pressure rises more steeply in women such that, after the age of 50 years, hypertension is more prevalent among women than among men. Hypertension, including, isolated systolic hypertension is an independent risk factor for (CAD) in both men and women at all ages and is a more important risk factor in women (ME et al., 1992). A history of hypertension is frequently found in men and women with coronary artery disease and is more common in women (LA et al., 1985). Many studies have shown that hypertension in women is an important risk factor for myocardial infarction and, to a lesser extent angina. Although the benefits of treating severe hypertension are well recognized there is little evidence that lowering blood pressure in mild-to-moderately hypertensive women is beneficial. Several large trials have not included women, for example the Veterans Administration trials, the Oslo study and the Multiple Risk Factor Intervention Trial. One of the most comprehensive studies of the treatment of hypertensive women was the Hypertension Detection and Follow-up Program Cooperative Group study (Five-year findings of the hypertension detection and follow-up program which examined the effects of antihypertensive therapy on 5 year morbidity and mortality. Treatment was associated with a 27-8% reduction in mortality in black women and a small (2-5%) increase in mortality in white women. Similarly the Medical Research Council (MRC) trial (MRC trial of mild hypertension: Principle result et al., 1985), in which 48% were women and most were white, demonstrated a 26% increase in all-cause mortality in women. In contrast, drug treatment of older women with isolated hypertension than men, has been shown to be effective in reducing both stroke rates and coronary artery disease (SHEP Cooperative Research Group et al., 1991). In summary the consequences of treating hypertensive women depend on race the severity of hypertension and whether or not there is isolated systolic hypertension. Lowering mild-to-moderately elevated blood pressure in white women may be harmful.

Plasma Lipoproteins The relationship between serum lipids and coronary heart disease has been examined in prospective studies. Most studies, but by no means all have demonstrated an association between elevated total cholesterol level and risk of (CAD) in women (CG et al., 1992; WB et al., 1987; TL et al., 1988) although women appear to be at less risk compared with their male counterparts for given cholesterol level. HDL-cholesterol (WB et al., 1983) which tends to be higher in women at every age is a powerful predictor of coronary disease risk in women but because levels are higher in women, the total cholesterol/HDL-cholesterol ratio (MK et al., 1991) is a better predictor of coronary disease risk in women than the unadjusted total cholesterol. In the Lipid Research Clinics Follow-up Study, HDL cholesterol was second only to age as a predictor of cardiovascular death among women (DR et al., 1990).

Hormonal Factor The incidence of coronary artery disease rises after the menopause, whether natural or surgically induced. Consequently, the estrogen status of a woman has been considered an important factor with regard to coronary artery disease risk. Hormonal status, use of the contraceptive pill (and type of preparation) and the use of estrogen replacement therapy have been extensively studied with regard to the development of (CAD). Whether other hormonal and biochemical changes which occur at the menopause are also important is unknown. Epidemiological studies have shown a relationship between estrogen lack and increased risk of coronary artery disease. Estrogen replacement in postmenopausal women appears to be beneficial in this respect. Observational studies indicated that estrogen use in healthy postmenopausal women is associated with a risk reduction of approximately 50% for coronary heart disease an effect which may persist for several years after discontinuation of therapy (MJ et al., 1991).

Other Factors Obesity is associated with hypertension, diabetes mellitus and hypercholesterolemia in women but is probably not an independent risk factor per se for coronary artery disease (JE et al. 1991). Moderate alcohol consumption appears to have a cardio protective effect in men and women. In a study of 1048 British women, moderate alcohol consumption (1-20 g. days⁻¹) was associated with lower cholesterol triglyceride concentrations and lower insulin levels, suggesting that the beneficial effect might

be due to an increase in insulin sensitivity. The findings of a larger prospective study on the effects of alcohol consumption and mortality among 85 709 women have been recently published (CS et al., 1995).

4 CONCLUSION

This review suggests that angina pectoris is under diagnosed in women so, it minimize the opportunities for identification and prevention of cardiovascular morbidity in women.

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