



Cardiac Syndrome X in Women

Priscilla O Okunji*

Associate Professor, College of Nursing and Allied Health Sciences, Howard University, Washington DC, USA

***Corresponding author:** Priscilla O. Okunji, Associate Professor, College of Nursing and Allied Health Sciences, Howard University, Washington, DC 20059, USA

Citation: Okunji PO (2021) Cardiac Syndrome X in Women. J Nurs Women's Health 5: 170. DOI: 10.29011/2577-1450.100070

Received Date: February 07, 2021; **Accepted Date:** March 18, 2021; **Published Date:** March 22, 2021

Abstract

Cardiac Syndrome X is a heart disorder that affects more women and individuals with underlying chronic diseases. Menopausal women are at risk for coronary MVD especially if they exhibit with lower than normal estrogen levels at any point in their adult lives. Symptoms of Cardiac Syndrome are similar to those of coronary heart disease, however, studies have concluded that the mechanisms underlying the association between Coronary Microvascular Dysfunction (CMD) and the Global Longitudinal Strains (GLS) reserve warrant further study. The Duke Activity Status Index is used to calculate a rough estimate of a patient's peak oxygen uptake within the individual. Non-pharmacological and pharmacological have been identified. Symptomatic patients with Coronary Flow Reserve (CFR) <2.5 and no obstructive Coronary Artery Disease (CAD) had improved angina and myocardial perfusion with ranolazine. Over the years CDC, AHA and NIH Study on Women's Ischemia Syndrome Evaluation is ongoing to learn more about the role of hormones in cardiac X.

Keywords: Women; Cardiac syndrome X; Coronary microvascular disease; Coronary flow reserve; Duke activity status index

Introduction

Cardiac Syndrome X, also known as Coronary Microvascular Disease (MVD) or Nonobstructive coronary heart disease is a heart disease that affects the walls and inner lining of tiny coronary artery blood vessels that branch off from the larger heart arteries [1]. In coronary MVD, the heart's tiny coronary artery blood vessels do not have plaque, but damage to the inner walls of the blood vessels which leads to spasms and decrease blood flow to the heart muscle [1]. Coronary MVD is more prevalent in women and occurs mostly in younger women. However, coronary MVD could occur in both gender especially on individuals with underlying disorders such as diabetes, high blood pressure or family history of cardiomyopathy. The diagnosis of coronary MVD has been a challenge for primary health care providers as the standardized tests are not designed to detect coronary MVD. Hence more research is recommended to find the best diagnostic tests and treatments for the disease.

Etiology

Risk factors for Coronary MVD include hypercholesteremia, hypertension, smoking, diabetes, overweight and obesity, inactivity, poor nutrition, older age and family history of heart disease. Menopausal women are at risk for coronary MVD especially if they exhibit with lower than normal estrogen levels

at any point in their adult lives. History of low estrogen levels could raise younger women's risk for coronary MVD with stress and malfunctioning ovaries as risk factors. Michelsen, et al. documented in their study that the Global Longitudinal Strains (GLS) reserve was significantly lower in women with coronary microvascular dysfunction (CMD) [2]. The investigators further concluded that the mechanisms underlying the association between CMD and GLS reserve warrant further study [2].

In addition, women who have systolic blood pressure, are at increased risk for coronary MVD. After menopause, women tend to have more of the traditional risk factors for atherosclerosis, which also puts them at higher risk for coronary MVD. Also, women who have heart disease are more likely to have a worse outcome if they have anemia in addition because anemia is thought to slow the growth of cells needed to repair damaged blood vessels [1].

The Duke Activity Status Index is a self-administered survey that measures a patient's functional capacity. It could also be used to get a rough estimate of a patient's peak oxygen uptake in the individual. There are ongoing investigations for better ways to detect and diagnose coronary MVD. Currently, there is no agreement on the best way to diagnose the disease [1].

Clinical Manifestation & Diagnosis

Women with coronary MVD often have chest pain called angina, also called microvascular angina usually lasting longer than 10 minutes, and it can last longer than 30 minutes. Other signs include shortness of breath, sleep problems, and fatigue

lack of energy. Cardiac Syndrome X could be identified with the use of coronary angiography, stress test and magnetic Resonance Imaging. The Duke Activity Status Index is a self-administered questionnaire with twelve questions. It measures a patient's functional capacity and could be used to estimate a patient's peak oxygen uptake as follows:

Duke Activity Status Index (DASI) = sum of "Yes" replies

$$VO_{2peak} = (0.43 \times DASI) + 9.6$$

$$VO_{2peak} = \frac{\text{ml/kg/min}}{\text{METS}} \div 3.5 \text{ ml/kg/min} =$$

***Currently, there is no agreement on the best way to diagnose the disease [1].

Implications for Practice

Relieving pain is one of the main goals of treating coronary Microvascular Disease (MVD). Hence, primary healthcare providers could manage this disorder with treatments that control the risk factors and other manifestations of this disorder. Non pharmacological prevention measures include education on lifestyle changes, body mass index reduction and knowing the family history of heart diseases. Pharmacological treatments may include cholesterol medication to improve cholesterol levels, antithrombotic medications to lower blood pressure and decrease the heart's workload, medication to help prevent blood clots or control inflammation and nitroglycerin to relax blood vessels, improve blood flow to the heart muscle, and treat chest pain [1].

In their randomized placebo-controlled trial study, Michelsen, et al. investigated on the Effect of ACE-inhibition on Coronary Microvascular Function and Symptoms in Normotensive Women With Microvascular Angina. The investigators concluded that there were no changes detected in parameters of systolic and diastolic function and serious adverse reactions were reported as well [2].

In another study, Rambarat, et al. concluded that symptomatic patients with Coronary Flow Reserve (CFR) <2.5 and no obstructive Coronary Artery Disease (CAD) had improved angina and myocardial perfusion with ranolazine. This report supports the hypothesis that the late sodium channel is important in management of coronary microvascular dysfunction [3].

Implementations

The Center for Diseases Control (CDC) is a renowned government agency and it supports cardiovascular prevention in the entire United States. The CDC focus is on preventing causative factors, thereby, reducing health disparities at state, local, and numerous ethnic groups using surveillance and measurable

research tools [4].

Another important organization is the AHA which is involved in funding opportunities focused on cardiovascular and causative factors prevention programs. The "Million Hearts" projects for 2022 and the "Well-Integrated Screening and Evaluation for Women across the Nation" also, known as "WISEWOMAN" are critical public-private initiatives for cardiovascular prevention activities.

Over a period of five years, the "Million Hearts" has been busy working with other organizations to save one million hearts from heart attacks and strokes. These activities are accomplished through the use of anticoagulants, and health lifestyles to prevent high blood pressure, obesity, cholesterol, smoking cessation and alcohol in moderation. The initiative also develops innovative ways to work with healthcare organizations and communities to initiate data driven measures in certain targeted sites. Many centers are being expanded to reach out to the underserved and underinsured population [4].

The "WISEWOMAN" program is focused on females of ages 40-64 years, who are uninsured and under-insured with low-income. These individuals are been enabled, encouraged and empowered to understand the benefits of decreasing the HF risk factors. These projects are implemented through risk factors' screenings and networking and individuals are encouraged to engage in healthy lifestyle behavior changes. Information on health resource availability and disease management that promote HF management are being provided for sustainability [4].

Discussion and Conclusion

Michelsen, et al. documented that the Global Longitudinal Strains (GLS) reserve was significantly lower in women with coronary microvascular dysfunction (CMD). Till date there have been no changes detected in parameters of systolic and diastolic function and serious adverse reactions [5]. However, Rambarat, et al. support the hypothesis that late sodium channel is important in management of coronary microvascular dysfunction with Coronary Flow Reserve (CFR) <2.5 [3]. Hence, this short review of Coronary MVD has shown that Cardiac Syndrome X, also known as Coronary Microvascular Disease (MVD) or Nonobstructive coronary heart disease is a heart disorder that affects more women and individuals with underlying chronic diseases. The Duke Activity Status Index is used to calculate a rough estimate of a patient's peak oxygen uptake within the individual. Non-pharmacological and pharmacological have been identified and the National Heart, Lung, and Blood Institute's Wise Study on Women's Ischemia Syndrome Evaluation is ongoing to learn more about the role of hormones in heart disease which could enable an innovative diagnostic method for coronary MVD.

References

1. American Heart Association (2018) Coronary Microvascular Disease (MVD).
2. Michelsen MM, Pena A, Mygind ND, Bech J, Gustafsson I, et al. (2018) Coronary microvascular dysfunction and myocardial contractile reserve in women with angina and no obstructive coronary artery disease. *Echocardiography* 35: 196-203.
3. Rambarat CA, Elgandy IY, Handberg EM, Merz CNB, Wei J, et al. (2018) Late sodium channel blockade improves angina and myocardial perfusion in patients with severe coronary microvascular dysfunction: Women's Ischemia Syndrome Evaluation-Coronary Vascular Dysfunction ancillary study. *Int J Cardiol* 276: 8-13.
4. Michelsen MM, Rask AB, Suhrs E, Raft KF, Høst N, et al. (2018) Effect of ACE-inhibition on coronary microvascular function and symptoms in normotensive women with microvascular angina: A randomized placebo-controlled trial. *PLoS One* 13: e0196962.
5. American Heart Organization (2018) CDC prevention programs.