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Myocardial Infarction in Women versus Men

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Pathophysiology and its Significance

It has been estimated that over 42 million women in the United States have been diagnosed with cardiovascular disease (CVD). In 2008, about 17.5 million people worldwide died of CVD (Selvin, E., & Keenan, R. J. 2001; Alimoradi, Salehborz & Ziaee, 2012). The study has shown that after age 40, approximately 23% of women die from CVD (Selvin, E., & Keenan, R. J. 2001; Alimoradi, Salehborz & Ziaee, 2012). The study also has shown the death rates for two times higher for women younger than 50 years compared to men (Dehni, E., & El Shafei, 2013). Over the years, mortality rates for women have been decreasing in women as well as men; however, the mortality rate is decreasing less significantly in women (Khalifeh, 2014). The decline in deaths in females nearly 22% between 1996 and 2006 has been contributed to the improvement in awareness of risk, primary and secondary prevention, lifestyle changes, early defibrillation, and advanced treatments (Dehni, E., & El Shafei, 2013). Over the years, coronary heart disease (CHD) has been described as the presence of atherothrombotic lesions in the epicardial coronary arteries which result in narrowing or occlusion of the vessel lumen. However, the recent study does not support this pathophysiology of CHD in women, stating that heart disease is primarily a matter of epicardial atherosclerosis (Edwards, 2012, p.575). Recent studies have shown that women who undergo coronary angiography for evaluation of chest pain very often have no evidence of obstructive coronary disease, which is eventually leads to a change in the phenotype of “key” versus “non-key” arteries (Dehni, E., & El Shafei, 2013).

The main difference identified between women and men include that women are more likely to report mild symptoms, experience chest pain and have higher incidence of prodromal symptoms. As a result, women are often taken to the hospital after the women may experience delays in triage, and be treated differently from men. Research shows that the average delay ranged from 1.8 to 7.2 hours in women compared to 1.4 to 3.5 hours in men (Almond, 2012).

Unique Signs and Symptoms Women versus Men

There are 2-3 times likely than men to report pain in the left arm, hand, left scapula and neck. Because of these mild symptoms, women’s heart attacks are often misdiagnosed (Warnar-Carter at al., 2013). Therefore, women with more severe symptoms are more likely to present sooner and receive immediate treatment.

Acute symptoms accompany MI in women, including anxiety, dizziness, shortness of breath, nausea, vomiting, and a feeling of impending doom. The symptoms of MI in a timely manner could influence the difference between life and death (Kalman et al., 2013). The study also showed that about 50% of women with heart disease show normal coronary arteries, compared to 17% in men experiencing symptoms of MI (Edwards, 2012, p.579).

Coronary microvascular disease (CVD) is in consequence of damage to the arterial wall. This disorder is more prevalent in women than men, and it affects about 3 million women in the United States. Microvascular disease results as a result of diffuse plaque disease of the coronary wall, and damage to the vessel wall. This small vessel disease usually is described in women, and eventually leads to ischemic disease (Edwards, 2012, p.579).

The pathophysiology of heart disease in women is impacted by endothelial function. Microvascular ischemia can be the result of endothelial dysfunction or even obstructive lesions, but the most common cause of endothelial dysfunction is a term used to describe a change in the blood vessel lining resulting from a decrease in nitric oxide (intracellular and vascular smooth muscle relaxant) which impairs blood flow and weakens vascular compliance. Endothelial dysfunction appears to be the result of the presence of plaque, which stimulates vascular restructuring (Edwards, 2012, p.575).

In a man, MI usually begins with the sudden rupture of cholesterol filled plaque in a coronary artery, which suddenly precipitates a blood clot. In women, plaque is more likely to invade into the vessel wall rather than to burst (Dehni, E., & El Shafei, 2013).

Many studies have proven that men and women can experience the signs and symptoms of MI differently. In general, symptoms of MI are more dramatic in men and more subtle in women (Almond et al., 2012; Dehni, E., & El Shafei, 2013; Edwards, 2012; Mackay et al., 2011; Poon et al., 2013; Van Berlo & Mollevink, 2016).

Unlike men, women frequently experience atypical symptoms suggestive of MI, and are less likely report waist pain compared to men (could be related to symptoms of peri-menopausal symptoms) (Edwards, 2012).

Implications

According to the study, it has been proven that 50% of MI experienced by women is undiagnosed or misdiagnosed in comparison to a 33% statistic for men (Warnar-Carter et al., 2013).

As many researchers have suggested, cardiovascular disease (CVD) was the cause of 7.3 million deaths worldwide in 2014. Stenographically, MI has been associated with chronic central chest pain, which is a typical for men. MI is the common symptom for women. Because of gender, MI is frequently being are misdiagnosed when presented with acute coronary syndrome, which eventually leads to myocardial infarction (Warnar-Carter et al., 2013). As the study suggests, gender difference is significant when it comes to early recognition of signs and symptoms of MI in women and men. It is fundamental, as healthcare workers, to be well aware of these "silent" and atypical symptoms in women in order to make an early recognition and diagnosis of the disease. There is a need for additional education both healthcare workers and women themselves about specific gender differences when it comes to MI. Also, Van Berlo and Mollevink (2014) stated in their research that women are underrepresented in cardiovascular clinical trials. Some action should be taken, and more women should be involved in preventive care, including healthcare practice and public health research. Gender differences in the development, presentation, and treatment of MI vary by different health-care systems.

References


