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Cardiovascular Disease

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Cardiovascular Disease

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Introduction

- Cardiovascular Disease
- Cardiovascular disease is a main cause of death in the world (Najafipour, Afshari & Rostamzadeh, 2018)
 - There are many lifestyle and health effects contributing to worsening of the disease process.
 - The diagnoses contributing to the disease are diabetes, hypertension, high cholesterol, obesity, smoking, and low activity.
 - Health care professionals should assess opportunities to change the probabilities of diagnosis in these potentially preventable diseases. (Najafipour et al., 2018).

Underlying Pathophysiology

Cardiovascular disease is caused by multiple different factors

Hypertension

- Affects 29% of the U.S. population.
- Uncontrolled hypertension causes microvascular and structural alterations, causing muscle cell hypertrophy and collagen deposits in arteries (Kaczmarek et al, 2019).
- Hypertension is a risk factor for a number of cardiovascular diseases; stroke, coronary heart disease, congestive heart failure, accelerated atherosclerosis, and myocardial infarction (Kaczmarek et al, 2019).
- Defined as blood pressure >140/>90 mmHg
- Treatment resistant hypertension remains uncontrolled despite 3 or more antihypertensive medication.

Cholesterol

- High cholesterol has always been significantly associated with the increased risk of atherosclerosis. Cholesterol levels are measured by low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) (You et al., 2020).
- Elevated LDL-C is associated with the pathogenesis of atherosclerosis. High LDL-C is considered >130mg/dl (Hedayatnia et al., 2020).
- Decreased HDL-C is associated with increased plaque formation (You et al., 2020).
- Low HDL-C is considered <40 mg/dl (Hedayatnia et al., 2020).

Diabetes

- Diabetes is becoming a more prominent diagnosis in the world, and epidemiology reports hypothesize patients with diabetes will increase to 360 million by 2030 (Guo et al., 2020).
- Prediabetes is considered a fasting blood glucose range of 100-125 mg/dl and it is considered diabetes when the fasting blood glucose is 126 mg/dl or more (American Heart Association, n.d.)
- When diagnosed with diabetes the patients have increased atherosclerotic disease, and higher risk for coronary arterial disease (Guo et al., 2020).
- Diabetic patients are more prone to multivessel disease, and complex lesions.

Smoking

- 1.62 million atherosclerotic cardiovascular deaths were related to smoking in 2000 (Yang et al., 2020).
- Women smokers are at increased risk compared to men for coronary artery disease.
- Smoking negatively affects cholesterol levels in both men and women (Yang et al., 2020).
- There is reduced oxygen supply to organs and patients are in a pro-thrombotic state.
- Tobacco can cause impaired functioning and myocardial strain (Hendriks et al., 2020).

Significance of Pathophysiology

The underlying pathophysiology of cardiovascular disease is important to understand as medical professionals and for patients. Having the understanding and education on how cardiovascular disease progresses and why, can help patients in the future. Cardiovascular disease develops due to lipoprotein metabolism abnormalities, oxidative stress, chronic inflammation, endothelium damage, and atherothrombosis (Kisioglu & Nergiz-Unal, 2018). The damaged endothelium contributes to the development of atherosclerosis. These risk factors can be modifiable by low blood pressure, low cholesterol, not smoking, weight management preventing obesity and diabetes (Kisioglu & Nergiz-Unal, 2018). There are nonmodifiable risk factors including gender, age, family history, ethnicity, and previous history (Kisioglu & Nergiz-Unal, 2018).

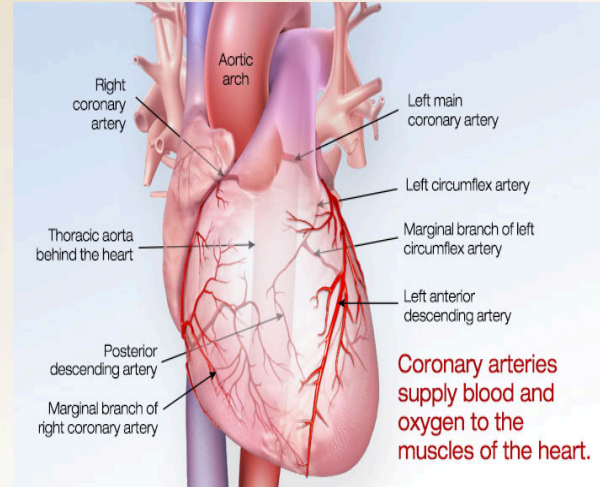


Figure 2: Imaging of the arteries of the heart which supply blood and oxygen (American Heart Association, n.d.)

Signs and Symptoms Implications for Nursing

- Chest pain (angina)
- Radiating pain to arm and shoulder
- Sweating
- Nausea
- Black out
- Bluish skin appearance
- Coldness
- Difficulty breathing
- High blood pressure
- Pain in legs
- Severe pain in hand
- Throbbing sensation (Zeb et al., 2016)

Modifiable Risk Factors

- Hypertension
- Hyperlipidemia
- Obesity
- Diabetes
- Unhealthy dietary habits
- Smoking
- Physical inactivity
- Stress (Zeb et al., 2016)

- Educating patients on cardiovascular disease can positively change their medical outcome.
- Many patients especially of the elderly population and low socioeconomic status have a decrease in knowledge about cardiovascular disease risk factors (Dimovski et al., 2019).
- Populations with a lower education level are at an increased risk for cardiovascular disease due to the negative patterns associated with the diagnosis (Dimovski et al., 2019).
- Many patients can only recognize chest pain as a symptom (Zeb et al., 2016).
- Medical professionals should be promoting healthy lifestyles within their patient population.
- Even with non-modifiable risk factors a healthy lifestyle will significantly lower the risk of cardiovascular disease (Dimovski et al., 2019).
- If patients develop the risk factors it is important to educate on the medications and potential surgical interventions for the disease.

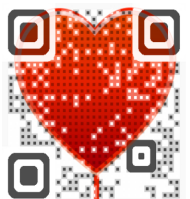
Treatments

- Cholesterol lowering medication (statin)
- Anti-hypertension medication (ace-inhibitor or beta-blocker)
- Aspirin
- Anti-platelet (Plavix)
- Combination drug treatment for absolute risk of cardiovascular disease
- Percutaneous coronary intervention (TaddesseTolla et al., 2016).

Conclusion

- 80% of deaths are related to cardiovascular disease (Zeb et al., 2016).
- There are over 200 risk factors for cardiovascular disease considered modifiable and non-modifiable, however over 90% of myocardial infarctions occur due to nine modifiable risk factors (Zeb et al., 2016).
- The World Health Organization recommends both population and individual based preventative measures for successful results with cardiovascular disease (TaddesseTolla et al., 2016).
- The medical professionals need to provide the proper education for preventative measures and modifiable risk factors.
- The patients should receive the proper information for the most cost-effective options, because that will decide the willingness to be compliant (TaddesseTolla et al., 2016).

QR code for References



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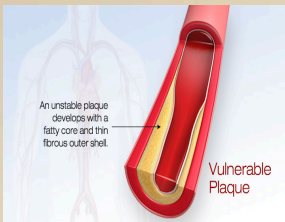


Figure 1: Imaging of atherosclerosis, which is fatty buildup in the inner wall of the artery. (American Heart Association, n.d.)

- Cardiovascular disease continues to increase in prevalence as people continue to not manage their health (K, 2016).
- Favorable changes to risk factors, enhanced medications, and improvements in revascularization procedures can better future outcomes (Koopman et al., 2016).
- Monitoring cardiovascular risk factor trends will help evaluate incidence rates, mortality rates, and risks for infarction (Koopman et al., 2016).
- Assessing patients' clinical presentation and their behavior towards seeking treatment will be important for future diagnosing and treatments (K, 2016).

Table 1: Understanding blood pressure readings (American Heart Association, n.d.)

Blood pressure category	Systolic mmHg (upper number)		Diastolic mmHg (lower number)
Normal	Less than 120	And	Less than 80
Elevated	120-129	And	Less than 80
High blood pressure (HTN stage 1)	130-139	Or	80-89
High blood pressure (HTN stage 2)	140 or higher	or	90 or higher
Hypertensive crisis (consult doctor immediately)	Higher than 180	And/or	Higher than 120

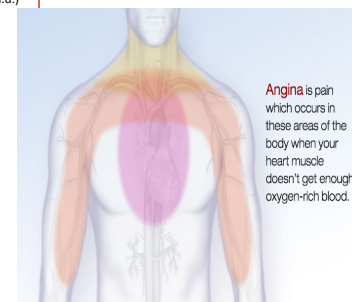


Figure 3: Areas in body where angina pain can radiate (American Heart Association, n.d.)