Caring for Cardiovascular Disease in Patients with SLE

Diondra Penland
penland1@otterbein.edu

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In the U.S., approximately 5-20 people per 100,000 are afflicted with the complex autoimmune disorder called Systemic Lupus Erythematosus (SLE). SLE affects predominantly more females than males, with a female to male ratio of 9:1. The occurrence of SLE is higher in African American women and Native American women (Park & Sutton, 2017). SLE is a debilitating condition that has malfunctioning immune system that attacks the skin, renal, musculoskeletal, and cardiac systems. “SLE is caused by interactions between susceptible genes and environmental factors, which can include ultraviolet light, infections, and viruses, resulting in an irreversible loss of immunologic self-tolerance” (Garyfallos, Goulielmos, Niewold, & Otterbein, 2018, p. 9).

Cardiovascular disease is a leading cause of mortality in the world, and atherosclerosis is a hallmark of the disease. People with SLE have a 4-6fold higher risk of developing atherosclerotic lesions than those with cardiovascular disease (Liang T., & Ye, 2015). “Increasing evidence shows that the cardiovascular morbidity and mortality are significantly higher in SLE than in the general population” (p.26). Just a couple of years back my mother had a Non ST Elevation Myocardial Infarction which lead to her diagnosis of SLE. However there is no way to identify or predict the risk factors that would put me at a higher incidence of developing heart disease. Firstly, I am an African American woman of childbearing age which increases my prevalence of developing the condition. This is my reason for SLE because in SLE young women have a 50 times higher risk for myocardial infarction compared to healthy women of similar age distribution (Giannelou & Mavragani, 2017). Secondly, I have a higher incidence due to the fact that SLE is hereditary and my mom has the condition. It is for these reasons that I chose to research SLE.

**Signs & Symptoms**

- **Fatigue**
- **Fever**
- **Joint pain, stiffness, and swelling**
- **Butterfly-shaped rash on face**
- **Photodermatitis**
- **Chest pain when taking a deep breath**
- **Hair loss**
- **Swollen lymph nodes**
- **Headaches**
- **Memory loss**
- **Seizures**

(Parz MD, 2017)

**Systemic lupus erythematosus**

Signs & Symptoms

- **Skin**
  - butterfly rash
  - mouth and nose ulcers

- **Lungs**
  - pnuemonitis
  - pulmonary artery hypertension

- **Heart**
  - antiphospholipid syndrome

- **Kidneys**
  - blood in the urine

- **Muscles and Joints**
  - arthritis, myositis

- **Blood**
  - high blood pressure

- **Severe abdominal pain**

(Parz MD, 2017)

**Pathophysiology on Atherosclerosis in SLE**

The exact mechanisms that lead to increased risk for heart failure in SLE are not known, however, it is believed that abnormal hemodynamics and that atomic inflammation lead to accelerated atherosclerosis (Al-Knidi, Dhilk, Kim, & Oliveira, 2018). In addition, SLE has direct cardiac, vascular, and other systemic manifestations that lead to increased risk of cardiovascular disease and heart failure” (p.100).

**Endothelial Dysfunction**

Endothelial dysfunction is one of the earliest signs of atherosclerosis, resulting in increased expression of adhesion molecules and impaired vasodilation. An imbalance between systemic pro-inflammatory cytokines (IL-6) and cardiovascular disease and contributes to endothelial dysfunction. Also patients with SLE have increased concentrations of reactive oxygen species and decreased antioxidant defense mechanisms which provide a conducive environment for endothelial damage and atherosclerosis (Botoluzzi, et al., 2018, pp. 7-3).

**Myocardial Dysfunction**

Left Ventricular Systolic Dysfunction

- **Left Ventricular Hypertrophy**
- **Secondary to arterial HTN and correlation between SLE duration and left ventricular mass hypertrophy**

Valvular Disease:

- **Common in SLE however over heart failure due to valvular involvement is rare**

Course System Disease Type: SLE may manifest as arthralgias or arthritis fibroblast activity speed up proliferation of endothelial cells (Bortoluzzi, et al., 2018).

**Significance of Pathophysiology**

**Pathophysiology Manifestations increase the risk factors for Heart Failure**

- **Myocardial Dysfunction**
- **Left Ventricular Systolic Dysfunction**

**Nursing Implications**

- **Active SLE is no longer the major cause of death in the condition. New mortality rates arise from conditions such as cardiovascular disease or renal failure compared to SLE death. Other organ involvement such as cutaneous lesions, arthritis, pleurisy, and pericardial effusion are some of the known contributors of atherosclerosis. It is recommended that SLE patients with these conditions do things to help reverse or control the adverse condition. Bichile and Petri recommend a 500 calorie deficit from their diet as well as a half ounce of moderate intensity aerobic exercise weekly to decrease diabetes (2014). Also, “guidelines recommend a target blood pressure of less than 130/80 mmHg” (Bichile, and Petri, 2014) to help reverse morbidity.

**Conclusions**

- Systemic Lupus Erythematosus is a complex autoimmune inflammatory condition that increases the risk for atherosclerotic lesions. In combination with other cardiovascular risk factors, SLE is a non curable however advances in the condition to live longer. More research is needed on the complex pathophysiology of the condition to better understand the disease process.

**References**

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