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Infective Endocarditis Related to IV Drug Abuse

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**Introduction**

Black drug abuse amongst youth and adults in the United States continues to rise. In 2014, the U.S. had the highest rate of deaths due to drug overdose (Centers for Disease Control and Prevention, 2015). One common way people abuse drugs today are intravenously (IV). This route works fast and can cause an ‘immediate high’. These drugs are often drawn up in a syringe and then injected into a vein. People often inject heroin, cocaine, prescription opiates and several other illegal drugs. Needle shares are often shared amongst others, or re-used, leading to increased exposure to infectious diseases. The use of IV drugs can lead to serious health issues such as cellulitis, hepatitis, HIV, sepsis, abscesses, pulmonary emboli, and many other conditions. Infective endocarditis is a disease commonly related to IV drug abuse, and is often seen on this nurse’s unit. Infective endocarditis occurs when bacteria or fungi enter the blood stream and often infects an individual’s heart valves (Peirce, Calkins, Thornton, 2012). Infective endocarditis can be life-threatening and requires aggressive medical treatment. Treatment often includes long term antibiotics, frequent blood monitoring, drug cessation and sometimes valve surgery. After treatment these patients are often re-tested by doctors to consider making lifestyle changes to improve their health and overall quality of life.

**Signs and Symptoms**

IE may be classified as acute, subacute or chronic (McCanse & Heather, 2014). Symptoms may be difficult due to clinical manifestations that correspond with multiple organ systems: CNS, bones, joints, renal, pulmonary, or eyes (McCanse & Heather, 2014).

- **Night sweats**
- **Cardiac murmur**
- **Petechiae/purpurae (skin, conjunctivae, oral mucosa)**
- **Oular nodes**
- **Jaundice/leukemia**
- **Weight loss**
- **Chest pain**
- **Rash back**

**Frequent Drugs Injected**

- **Heroin**
- **Cocaine**
- **Fentanyl**
- **Prescription Opioids (oxycodone, morphine, fentanyl)**
- **Illicit Drugs - Heroin, cocaine, meth, benzodiazepines**
- **Weight loss**
- **Chest pain**
- **Rash back**

**Pathophysiology**

While injecting drugs intravenously, bacteria can enter the bloodstream and microorganisms can travel to the heart (McCancs & Heather, 2014). Endocardial damage may cause a release of cytokines, adhesion molecules are then expressed and tissue factor activity ceases, resulting in bacterial adhesions (Evans & Gammie). Bacterial adhesions on the valve cause an inflammatory response where monocytes react to the release of cytokines which then leads to ulceration, destruction of tissue, and fibrotic scarring within the valve (Evans & Gammie, 2011). The tissue then begins repairing itself excessively, causing vegetation to the heart valves (Evans & Gammie, 2011). The complication cascade is activated by tissue factor and platelets are then attracted, which is an element to vegetation (Evans & Gammie, 2011). As the vegetation increases, bacteria continuously binds and proliferates within the valve (Evans & Gammie, 2011).

**Implications of Nursing Care**

Patients diagnosed with IE are often hospitalized for close management during the initial treatment process. Nurses have a vital role in caring for these patients while in the hospital, rehab facilities, and even in the home setting. Below are few nursing implications:

- Monitoring vital signs
- Administration of antibiotics (IV/PO)
- Post-operative care (if surgery indicated)
- Encourage drug cessation, lifestyle modifications
- Education

**Conclusion**

IE can be a major complication for IVDA. IE often needs aggressive medical treatment, and sometimes surgical treatment. Individuals who abuse drugs with IV need to consider lifestyle modifications to prevent further infections and promote a healthier life. With the climbing rates of drug abuse within the U.S. today, we may start to see a rise in patients with IE and other drug related deaths. As health professionals it is imperative for us to continue to encourage drug cessation, support those trying to quit, and always educate our community the importance of not using drugs.

**Additional Resources**


**References**


Peirce, C., Calkins, H., & Thornton, D. (2012). Choosing not to abuse drugs would drastically lower ones’ risk of developing endocarditis. IE is a serious medical condition and can be life threatening. Although there have been medical advancements, the morbidity and mortality rates of IE are still high (Sale, Shrotha, Menon, 2013). Treatment of IE may include long term use of IV antibiotics for several weeks. If the heart valves are severely damaged, the valve may need to be replaced via open surgery. IE can result from several conditions other than IVDA. Other causative factors may include: congenital lesions, acquired valve disease, implants (pacemakers, defective valves), or chronic (McCance & Heuther, 2014). Different pathologies may occur with each condition. The causative factors mentioned above may not all be 100% preventable, however, IE caused by IVDA is 100% preventable. IVDA accounts for approximately 9.8% of the risk factors for IE (Peirce, Calkins, & Thornton, 2012). Choosing not to abuse drugs would drastically lower ones’ risk of developing endocarditis.