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Infective Endocarditis/Valvular Heart Disease

Lewis-Chapter 36, Case study/Online theory

Infective Endocarditis: E.F. is a 72-year-old man who comes to the clinic with "flu-like" symptoms. He has a history of hypertension, past MRSA infection, and a recently implanted pacemaker. E.F. has petechiae in the conjunctivae and splinter hemorrhages in his nail beds. His BP is 138/64, heart rate 80, respiratory rate 18, and temperature 99.5° F (37.5° C). A heart murmur is noted. The health care provider suspects infective endocarditis. E.F. is sent to the hospital for further workup and treatment. E.F.'s blood culture results are positive for *Staphylococcus aureus*. Echocardiogram demonstrates vegetations on his mitral valve. E.F. is started on IV antibiotics and seems to be resting comfortably. He occasionally requests PRN drugs for "achiness" and continues to have a low-grade fever. He is not demonstrating any symptoms of heart failure at this time.

1) **What risk factors for infective endocarditis (IE) does E.F. have?**
   Risk factors include age, history of HTN, past MRSA infection, and the use of intravascular devices (implanted pacemaker).

2) **What other risk factors would you assess E.F. for?**
   Other risk factors to assess for would be if he has had "flu-like" symptoms before, if he is on renal dialysis, how long he has had HTN, where the MRSA infection was, what the pacemaker was placed for, and any IVDA.

3) **What clinical manifestations of IE does E.F. present with?**
   This patient presented to the ED with flu-like symptoms, heart murmur, petechiae in the conjunctiva, splinter hemorrhages in the nail beds, fever of 99.5F, and myalgias.

4) **What other clinical manifestations of IE would you assess him for?**
   Other clinical manifestations to assess for would be chest pain, dyspnea, JVD from neckline to jawline, muffled heart sounds, abdominal discomfort, clubbing of fingers, and other vascular manifestations such as Osler's nodes on fingertips or toes, Janeway's lesions on pads of fingers and toes, Roth's spots upon eye exam, HF, and secondary manifestations of emboli (spleen, kidneys, limbs, brain, lungs).

5) **What diagnostic studies would you expect the admitting health care provider to order for E.F.?**
   I would expect the health care provider to order the following:
   - Labs that include blood cultures, CBC with differential, ESR, and CRP.
   - Echocardiography to show valve vegetation.
   - CXR
   - ECG to show heart blockage
   - Heart catherization that would not be done right away but possible down the road.

6) **What treatment would you expect the health care provider to order for E.F.?**

The doctor would want to prove or rule out IE and to do that he would order the blood cultures from 2 different sites at 30mins and then 1hr. Place an ECG and order an echocardiography. IE criteria is 2 out of the 3, +blood cultures, new or changed murmur, and vegetation seen on echo. The doctor would start IV antibiotics specific to the causative organism,

Identify appropriate nursing diagnoses for the patient:

- Deficient knowledge
- Decreases cardiac output
- Hyperthermia
- Impaired comfort
- Activity intolerance

Goals for the patient:

- Have normal cardiac function**.**
- Perform ADL's without fatigue.
- Understand therapeutic regimen to prevent recurrence.

E.F. has completed a week of IV antibiotic therapy in the hospital setting. He is afebrile and feeling better. Social service has arranged home IV antibiotic therapy in anticipation of discharge to home.

1) **What important patient and caregiver teaching should you provide E.F. and his family?**
   - Signs and symptoms to report
   - Reduce the risks of reinfection and avoid people who are sick.
   - Proper nutrition, exercise, rest, stress reduction, hygeine
   - Prophylactic antibiotics adherence.
   - Monitor body temperature daily
   - Oral care, prophylactic antibiotic therapy to be completed before procedures including oral care from the dentist.

Valvular Heart Disease: A.L. is a 72-year-old man who comes to the ED complaining of dyspnea and dizziness. He has a history of hypertension, myocardial infarction, pacemaker, infective endocarditis (IE), and MRSA infection. Physical examination of A.L. reveals a loud systolic murmur at the fifth ICS, left midclavicular line. A chest x-ray shows fluid in his lungs. The health care provider suspects A.L. may have mitral regurgitation. An echocardiogram shows severe mitral regurgitation. A.L. is admitted to the hospital for medical management. Although A.L. originally responds well to medical management, he has repeated hospitalizations for HF and his mitral regurgitation progressively worsens. A cardiovascular surgeon is consulted and recommends mitral valve replacement.

1) **What factors in A.L.'s history put him at risk for valvular disease?**
   The biggest risk factors that put him at risk for valvular disease are the history of MI and IE.

2) **Describe the pathophysiology of mitral regurgitation.**
   Acute MR: incomplete valve closure, backward flow of blood, and pulmonary edema.
   Chronic: Incomplete valve closure, backward flow of blood, left atrial enlargement, ventricular hypertrophy, and decrease in cardiac output.

3) **What additional clinical manifestations of mitral valve regurgitation would you assess A.L. for?**
   Acute: thready, peripheral pulses, cool, clammy extremities.
   Chronic: weakness, fatigue, palpitations, progressive dyspnea, peripheral edema, S3, murmur (loud).

4) **What treatment would you expect the health care provider to order for A.L.?**
   The health care provider would prescribe this patient with antibiotics and if that is ineffective then would be scheduled for a valve repair or replacement.

5) **What dysrhythmia is A.L. at risk for?**
   This patient is as risk for Atrial Fibrillation.

   A.L. asks you whether or not he should get a mechanical or biologic valve. How would you respond?

   I would give him information to read about mechanical and biologic valve replacement. I would then refer him to his health care provider to provide him with further guidance. The mechanical replacement lasts longer and is more durable but there is a risk of thromboembolism that requires lifelong anticoagulation treatment which in turn puts him at risk for bleeding.

A.L. successfully undergoes mitral valve replacement using a mechanical valve.

1) **What teaching will you provide A.L. prior to discharge?**
   I would provide teaching about medications and their side effects, importance of prophylactic antibiotic therapy, information related to anticoagulation therapy, when to seek medical care, follow-up care, to notify the healthcare provider for signs of infection, HF, or bleeding, and planned invasive dental procedures. I would also recommend him to purchase a medical alert bracelet that states valve replacement.