Valvular Heart Disease

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ABSTRACT

Nurse practitioners will encounter patients with valvular heart disease (VHD) because 5 million Americans are diagnosed with VHD every year. The American Heart Association and the American College of Cardiology released VHD guidelines in 2014. Once VHD is recognized, evidence-based guidelines need to be used in the management of patients with VHD. Nurse practitioners must have an understanding of the latest guidelines in order to initiate treatment, collaborate with the heart team members, and monitor and follow up on patients with VHD. Timely referral to cardiology and cardiac surgery is imperative for optimal outcomes in patients with VHD.

Keywords: clinical practice guidelines, evidence-based treatment guidelines, nurse practitioners, valvular heart disease

Valvular heart disease (VHD) is a common disorder that many nurse practitioners (NPs) will encounter in their practices, especially as the population ages. NPs have the ability to identify patients at risk or who have developed VHD. It is even more vital for NPs to facilitate proper VHD treatment for their patients, including timely referral to cardiology or cardiac surgery.

PREVALENCE

It is estimated that there are 5 million Americans diagnosed with VHD every year,[1] and it accounts for 10% to 20% of heart surgeries in the United States.[2] As the population ages, VHD prevalence increases; for example, aortic stenosis increases with age, approaching 15% in octogenarians.[3] One of the most common causes of VHD in the elderly is calcific changes to the valve.[2] Because of improved modalities such as echocardiography, diagnosing VHD has increased, leading to more patients identified as having VHD.[4]

PATHOPHYSIOLOGY

Pathology occurs when a valve becomes stenotic or sclerotic, decreasing blood flow through the valve, or does not coapt leading to regurgitation.[5] Initially, patients may be asymptomatic with these conditions, and if undiagnosed and untreated, irreversible changes in the myocardium leading to left ventricular (LV) dysfunction can occur along with pulmonary hypertension. For instance, the aortic valve, which typically opens to 3 cm^2, does not cause significant symptoms until the valvular orifice is 0.8 cm^2, but once symptoms begin, there can be a rapid worsening of symptoms and possible patient demise.[5] The causes of VHD vary by valve lesion, with the most common causes being calcification, infective endocarditis, bicuspid aortic valve, rheumatic fever, and aortic root disease.[2] NPs need to be vigilant in screening, diagnosing, and comanaging VHD patients with the heart team.

The heart team is a multidisciplinary group of caregivers who collaboratively determine an individual approach to the patient's best plan of care. "A Heart Valve Team is usually composed primarily of cardiologists, structural valve interventionalists, cardiovascular imaging specialists, cardiovascular surgeons, anesthesiologists, and nurses, all of whom have expertise in the management and outcomes of patients with complex VHD."[6] NPs are vital members of the heart team because they screen for and diagnose VHD and provide education and postprocedure follow-up. NPs are also essential in VHD surveillance, monitoring for VHD progression and/or symptom improvement, and providing medical management.

CLINICAL PRESENTATION

Subjective

Patients with VHD may be asymptomatic for quite some time and may have an incidental finding of a

valve pathology. Although there are some patients who may deny symptoms, when probed further, they may report decreasing their activity levels to avoid having symptoms. They may develop subtle indications of worsening VHD and not realize the progression because they avoid any activity that may cause symptoms. As the VHD progresses, the patient may begin to complain of dyspnea, orthopnea, paroxysmal nocturia dyspnea, fatigue, activity intolerance, or edema. Patients may present to the hospital with severe shortness of breath or pulmonary edema and be in acute systolic heart failure and subsequently get diagnosed with VHD. NPs must take a thorough history of patients suspected of having VHD because "decisions about treatment are based on the presence or absence of symptoms."[6]

Objective

Signs may include a diastolic or systolic murmur, edema, crackles, abdominal distention, or increased jugular venous distention, and the NP needs to be an astute clinician identifying these physical examination findings. The patient may also have electrolyte abnormalities and elevated B-type natriuretic peptide as they develop signs and symptoms of heart failure, which often accompanies VHD. Once a patient is suspected of having VHD, a transthoracic echocardiogram should be completed to confirm the diagnosis; this helps to establish the etiology of the valve disease and its severity and to determine the timing of intervention if warranted.[6] An electrocardiogram and a chest x-ray may also be helpful in the initial assessment of patients with suspected VHD.[6]

STAGES

The 2014 American Heart Association (AHA)/American College of Cardiology (ACC) VHD guidelines focus on the management of adult patients with valve disorders.[6] These updated guidelines classify the different stages of VHD according to the progression of the valvular lesion from A to D, with stage A including patients at risk for VHD or risk factors for the development of VHD and stage D representing patients who are symptomatic and have developed symptoms as a result of VHD.[6] Staging allows for the provider to determine the most effective management plan for the patient and requires a thorough assessment of the patient with a comprehensive history and physical, including an echocardiogram.[6]

TREATMENT

The progression of most valve lesions is slow, and intervention is usually not indicated until VHD is severe. The timing of a valve intervention needs to be balanced with minimizing risks of the procedure but improving a patient's symptoms.[6] Medical, surgical, or percutaneous treatments are determined by the patient's comorbidities, preoperative risk assessment, frailty, and valvular pathology.

FOLLOW-UP

Comorbidity management of hypertension, diabetes mellitus, and dyslipidemia is extremely important using goal-directed medical therapy.[6] Many patients with VHD also have atrial fibrillation and heart failure. NPs should be familiar with guidelines for these disorders because optimal control of heart rate, blood pressure (BP), and volume status is extremely important in VHD management. Close BP monitoring is also important because abruptly lowering the BP in someone with aortic stenosis may cause syncope, whereas an elevated BP may worsen VHD symptoms.

Optimal oral health should be reinforced by the NP, and rheumatic fever and infective endocarditis prophylaxis should be given when indicated.[6] In addition, influenza and pneumococcal vaccinations should be given to appropriate patient groups with VHD.[6]

If the patient has been identified as having VHD, continual monitoring for progression of the valvular lesion or the development of symptoms is crucial, so NPs should partner with cardiology to ensure close follow-up and surveillance of the patient's symptoms and valve pathology progression.

CASE STUDIES

The following case studies show examples of the AHA/ACC guidelines used in the management plans of 2 patients with VHD. Surgical and medically managed patients will be discussed.