

Valvular Heart Disease

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KEYWORDS

- Valvular heart disease • Aortic stenosis • Aortic regurgitation • mitral stenosis • mitral regurgitation

KEY POINTS

- Valvular heart disease can be categorized as congenital or acquired, and primary or secondary. The surveillance and recommendations for intervention and management are based on these differences.
- Basic understanding of pathologic murmurs is important for appropriate referral from primary care.
- Echocardiography is the gold standard for the diagnosis and grading of severity of valvular heart disease.
- All patients with progressive valvular heart disease should be followed annually by cardiology and surveillance imaging should be performed based on the severity of valvular dysfunction.
- In most cases, surgery or intervention is recommended only when symptoms dictate or when changes in left ventricular function have occurred. Surgery or intervention should only be performed after being discussed by a heart team that includes both cardiologists and cardiac surgeons.

INTRODUCTION

The intent of this article is to outline the diagnosis and management of commonly occurring valvular heart diseases for the office-based primary care provider in general clinical practice. The key concepts include (1) the understanding that valvular heart disease is generally categorized as either congenital or acquired, and can present in either primary or secondary fashion. Furthermore, (2) the surveillance programs, management strategies, and recommendations for intervention are based on these differences. Importantly, (3) a basic understanding of pathologic murmurs is important for appropriate referral from primary care and (4) echocardiography is the gold standard

Disclosure Statement: None

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for the diagnosis and grading of severity of valvular heart disease. All patients with progressive valvular heart disease should (5) be followed annually by cardiology and (6) surveillance imaging should be performed based on the severity of valvular dysfunction. In most cases, (7) surgery or intervention is recommended only when symptoms dictate or when changes in left ventricular (LV) function have occurred. Finally, (8) it is important to emphasize that surgery or intervention should only be performed after being discussed by a multidisciplinary heart team that includes both cardiologists and cardiac surgeons.

ANATOMY AND PATHOPHYSIOLOGY

The heart has 4 valves that promote circulation through the heart, pulmonary, and systemic circulation. The atrioventricular valves (mitral and tricuspid) separate the atria and the ventricles. These valves are open during diastole, allowing the ventricles to fill. The semilunar valves (aortic and pulmonic) are open during systole as blood travels from the heart to the systemic and pulmonary circulations. Valvular pathologic conditions lead to either stenosis or regurgitation. Stenotic valves restrict flow. Regurgitant valves allow blood to flow back across the closed valve into the preceding chamber. The aortic valve has no regurgitation in its physiologic state, whereas the other 3 valves have elements of physiologic regurgitation. Valvular pathologic conditions are further categorized into acquired or congenital. In general, the heart can withstand significant amounts of stenosis and regurgitation before clinical symptoms appear. These symptoms are unique to each valvular pathologic condition. The end stage of most valvular heart disease is heart failure. The goals of treatment are to maintain adequate hemodynamics (blood pressure and heart rate control), manage existing arrhythmias, and treat or prevent concomitant cardiac disease (coronary heart disease, arrhythmias, and stroke).

Symptoms and signs of valvular heart disease provide important clues about the origin of specific valvular lesions. Transthoracic echocardiography (TTE) is used to diagnose and grade valvular lesions. If TTE is inadequate, other noninvasive and invasive techniques (MRI, transesophageal echocardiogram, heart catheterization) are available to characterize valvular disease. TTE is also used to monitor the progression of valvular disease. Valvular interventions are considered after the onset of symptoms but before irreversible cardiomyopathy has developed. In some cases, intervention is indicated in the absence of symptoms when there is early evidence of valve-related decline in cardiac function. This article describes the most common adult pathologic valvular diseases, as well as some of the transcatheter and surgical options available to replace or repair valves. Although surgery has long been standard practice, recent developments in transcatheter techniques are reshaping the clinical approach to patients with severe valvular heart disease.

AORTIC STENOSIS

Etiologic Factors

Aortic stenosis (AS) is primarily caused by congenital malformations of the valve, calcification of normal trileaflet valve, and rheumatic disease. Congenital aortic valve malformations include unicuspid and bicuspid valves. The bicuspid form is more common.¹ Unicuspid valves typically produce severe symptoms in infancy. Bicuspid valves present with symptomatic stenosis later in life and when superimposed calcific changes result in clinically significant valvular obstruction. Congenital lesions of the aortic valve are commonly inherited in an autosomal dominant pattern.²

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