

Hello. My name is Brandy Worley. I am a nurse practitioner and coordinator for the structural heart program at the Harry S. Truman VA hospital.

Today, I will be talking about valvular heart disease. I will review valve function within the heart and how valvular heart disease is diagnosed. I will then focus my discussion on one of the most common forms of valvular heart disease called aortic stenosis.

Statistics show that as many as 11 million Americans have heart valve disease and more than 5 million Americans are diagnosed with heart valve disease each year.

So, what are heart valves and what does “heart valve disease” mean?

The heart has four valves, the aortic, mitral, tricuspid and pulmonary valves. These are the plumbing system of the heart. The valves open to allow blood to be pumped forward, and then close to prevent blood from flowing backward. Human heart valves are flaps of tissue called leaflets or cusps- these leaflets, or cusps, open and close with every beat of the heart, allowing blood to pass through the chambers of the heart and out to the rest of the body. Heart valve problems fall into two major categories:

1. Stenosis: which means tightening. Stenosis occurs when the opening of the valve becomes very narrow and interferes with the forward flow of blood.
2. Regurgitation, which is also referred to as “leaking”. Regurgitation occurs when the valve doesn’t close properly and it leaks blood, sometimes causing significant backflow of blood.

So, how is valvular heart disease diagnosed?

The initial diagnosis generally starts with a good physical exam. Many times, health care providers can hear a murmur on auscultation of the heart. Many of us have heard of a heart murmur, but what is it? Heart murmurs are sounds that occur during your heartbeat cycle that are many times described as a whooshing or a swishing. Murmurs can sometimes be the first sign that a person is developing valvular heart disease.

The gold standard test, to help diagnose valvular heart disease is, an echocardiogram, or ultrasound of the heart. This test can show the size and shape of the heart, the thickness and movement of the heart walls, it can measure the heart’s pumping strength, and it can show if the heart valves or working correctly. So, going back to what we have discussed regarding valvular heart disease-an echocardiogram can identify if a patient has stenosis or regurgitation of their heart valves.

At this point, I am going to focus this discussion on one of the most common valve problems, which is aortic stenosis. Aortic stenosis occurs in about 2-3% of people over the age of 65. It occurs more often in men than in women. What is most concerning about this disease is that most people with aortic stenosis do not develop symptoms until the disease is advanced.

The aortic valve’s main function is to act as a gateway for oxygenated blood to exit out of the heart to the rest of the body. The aortic valve is typically made up of 3 leaflets-each of these leaflets open and close with every beat of the heart. Aortic stenosis is a tightening of this valve. Our blood carries calcium, among other minerals and nutrients. As blood passes through the aortic valve year after year, calcium deposits can form on the valve leaflets, which can damage and harden the leaflets. When this occurs, the leaflets lose their mobility and can no longer open very wide which can restrict blood flow out of the

heart. Because of this restriction in the flow of blood exiting the heart, the heart muscle has to work harder to pump blood and can eventually become fatigued.

Symptomatically, a person with aortic stenosis, may experience chest pain, shortness of breath (especially with exertion or exercise), they may get tired easily and have a reduced exercise tolerance. In advanced disease patients may complain of being lightheaded or dizzy, or even pass out.

Many of my patients with aortic stenosis say they have noticed that they are slowing down and not able to do the things they used to, but they feel it is just a normal part of aging-when in reality, it is progression of their aortic stenosis.

The American Heart Association has classifications to identify the severity of aortic stenosis. We classify aortic stenosis as mild, moderate, severe and critical. A person with mild or moderate aortic stenosis generally can be followed by routine echocardiograms. Once a patient's aortic stenosis becomes severe, and particularly if that patient is having symptoms, it is time to treat their valve disease.

So, what are the treatment options for aortic stenosis?

When someone has severe symptomatic aortic stenosis, the treatment is to replace the valve. There are two ways to replace the valve. One way is to have a surgical valve replacement. This is when a cardiothoracic surgeon opens up the chest (sternotomy), removes the diseased aortic valve, and replaces it with a new valve.

Another option is a procedure called a Transcatheter Aortic Valve Replacement (TAVR). Sometimes this procedure is also referred to as Transcatheter aortic valve implantation or (TAVI). During this minimally invasive procedure a new valve is inserted without removing the old, damaged valve. The new valve is placed inside the disease valve. The procedure is somewhat similar to placing a stent in an artery. The valve actually looks really similar to a heart stent with a mesh frame. Inside the mesh frame are new valve leaflets (which are made from either cow or pig heart tissue). During the TAVR procedure, the physician makes a small incision, typically in the patient's groin, and runs the valve up with a catheter to the heart. They then position the new valve inside the patient's diseased aortic valve. Once the valve is in the correct position, the collapsible valve cage is opened. Once the valve is opened, the new leaflets start working.

There are many factors that determine which approach is best for a patient. If you have aortic stenosis it is best to get established at a facility that has a heart team that specializes in both of these procedures. After a thorough evaluation is performed which includes cardiac catheterization, pulmonary function testing, carotid ultrasound, and CTA imaging, the heart team can determine which approach to replacing the aortic valve is the best.

Is there any way someone can prevent aortic stenosis?

Unfortunately, there is not one specific thing a person can do to prevent aortic stenosis, however, there are other health problems which may increase your risk for aortic stenosis which may be controlled. It is important to maintain a normal blood pressure, lower your cholesterol, stop smoking if you are a smoker, prevent or control diabetes, and try to exercise regularly (the American Heart Association recommends 150 minutes of moderate intensity exercise each week).

Other recommendations are to try and identify aortic stenosis early and seek appropriate care. Studies show that severe AS is undertreated, and 50 percent of patients that receive an echo and show the presence of the disease are not referred to a surgeon to be evaluated for heart valve replacement.

The first step to identifying valvular heart disease is a good physical exam. I recommend that you have an exam with your health care provider at least once a year. Be sure to tell your provider if you are having any symptoms of valvular heart disease such as new or worsening chest pain, shortness of breath, decreased exercise tolerance or increased fatigue.

If you do have an echocardiogram, make sure your doctor reviews the results with you, and if there is valvular heart disease present, it may be a good idea to get established with a cardiologist.

Resources:

American Heart Association

Heart.org

Veterans' health library; veteranshealthlibrary@va.gov

National Heart Valve Awareness Day: February 22nd
www.valvediseaseday.org