

Aortic stenosis

Definition

The aorta is the main artery carrying blood out of the heart. When blood leaves the heart, it flows through the aortic valve, into the aorta. In aortic stenosis, the aortic valve does not open fully. This decreases blood flow from the heart.

Alternative Names

Aortic valve stenosis; Left ventricular outflow tract obstruction; Rheumatic aortic stenosis; Calcium aortic stenosis

Causes

As the aortic valve becomes more narrow, the pressure increases inside the left heart ventricle. This causes the left heart ventricle to become thicker, which decreases blood flow and can lead to chest pain. As the pressure continues to rise, blood may back up into the lungs, and you may feel short of breath. Severe forms of aortic stenosis prevent enough blood from reaching the brain and rest of the body. This can cause light-headedness and fainting.

Aortic stenosis may be present from birth (congenital), or it may develop later in life (acquired). Children with aortic stenosis may have other congenital conditions.

In adults, aortic stenosis occurs most commonly in those who've had rheumatic fever, a condition that may develop after strep throat or scarlet fever. Valve problems do not develop for 5 - 10 years or longer after rheumatic fever occurs. Rheumatic fever is increasingly rare in the United States.

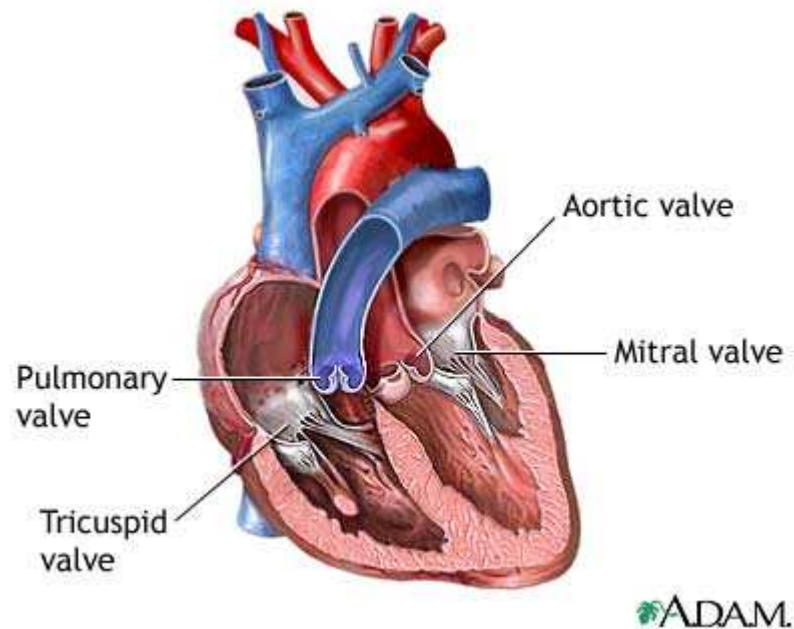
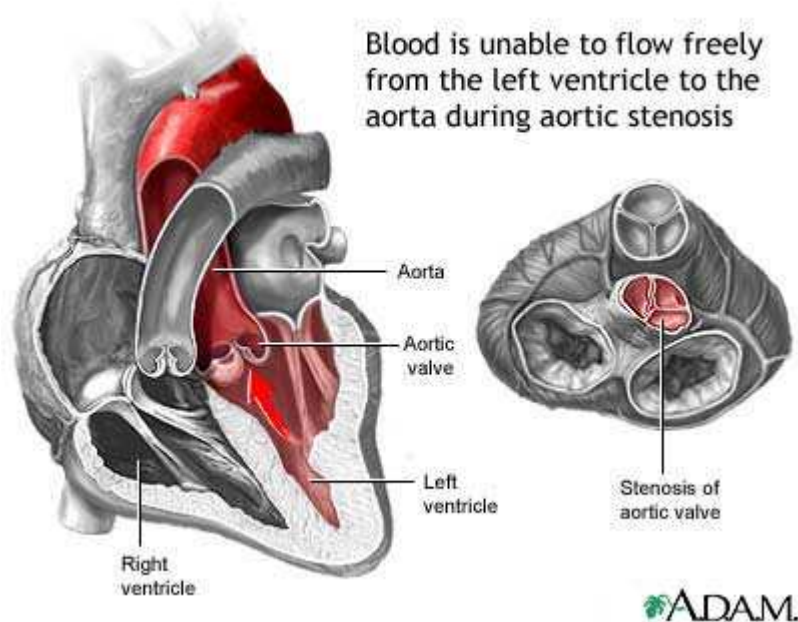
Only rarely do other factors lead to aortic stenosis in adults. These include calcium deposits forming around the aortic valve, radiation treatment to the chest, and some medications.

Aortic stenosis is not common. It occurs more often in men than in women.

Symptoms

People with aortic stenosis may have no symptoms at all until late in the course of the disease. The diagnosis may have been made when the healthcare provider heard a heart murmur and then performed additional tests.

Symptoms of aortic stenosis include:



- Breathlessness with activity
- Chest pain, angina-type
 - Crushing, squeezing, pressure, tightness
 - Pain increases with exercise, relieved with rest
 - Under the chest bone, may move to other areas
- Fainting, weakness, or dizziness with activity
- Sensation of feeling the heart beat (palpitations)

In infants and children, symptoms include:

- Becoming tired or fatigued with exertion more easily than others (in mild cases)
- Serious breathing problems that develop within days or weeks of birth (in severe cases)

Children with mild or moderate aortic stenosis may get worse as they get older. They also run the risk of developing a heart infection (bacterial endocarditis).

Exams and Tests

The health care provider will be able to feel a vibration or movement when placing a hand over the person's heart. A heart murmur, click, or other abnormal sound is almost always heard through a stethoscope. There may be a faint pulse or changes in the quality of the pulse in the neck (this is called pulsus parvus et tardus).

Infants and children with aortic stenosis may be extremely tired, sweaty, and have pale skin and fast breathing. They may also be smaller than other children their age.

Blood pressure may be low.

The following tests may be performed:

- Chest x-ray
- Doppler echocardiography
- ECG
- Exercise stress testing
- Left cardiac catheterization
- MRI of the heart
- Transesophageal echocardiogram (TEE)

Treatment

If there are no symptoms or symptoms are mild, you may only need to be monitored by a health care provider.

Patients with significant aortic stenosis are usually told not to play competitive sports, even if they don't have symptoms. If symptoms do occur, strenuous activity must be limited.

Medications are used to treat symptoms of heart failure or abnormal heart rhythms (most commonly atrial fibrillation). These include diuretics (water pills), nitrates, and beta-blockers. High blood pressure should also be treated.

Antibiotics may be used for some people with aortic stenosis:

- People who had rheumatic fever in the past may need long-term, daily treatment with penicillin.
- In the past, most patients with heart valve problems such as aortic stenosis were given antibiotics before dental work or an invasive procedure, such as colonoscopy. The antibiotics were given to prevent an infection of the damaged heart valve. However, antibiotics are now used much less often before dental work and other procedures.

Patients should stop smoking and be treated for high cholesterol.

People with aortic stenosis should see a cardiologist every 3 to 6 months.

Surgery to repair or replace the valve is the preferred treatment for adults or children who develop symptoms. Even if symptoms are not very bad, the doctor may recommend surgery. People with no symptoms but worrisome results on diagnostic tests may also require surgery.

A less invasive procedure called balloon valvuloplasty may be done in children instead. This is a procedure in which a balloon is placed into an artery in the groin, advanced to the heart, placed across the valve, and inflated. This may relieve the blockage caused by the narrowed valve.

Some children may require aortic valve repair or replacement. If possible, the pulmonary valve may be used to replace the aortic valve.

Children with mild aortic stenosis may be able to participate in most activities and sports.

See also:

- Aortic valve surgery - minimally invasive
- Aortic valve surgery - open
- Heart failure

Outlook (Prognosis)

Without surgery, a person with aortic stenosis who has angina or signs of heart failure may do poorly.

Aortic stenosis can be cured with surgery. After surgery there is a risk for irregular heart rhythms, which can cause sudden death, and blood clots, which can cause a stroke. There is also a risk that the new valve will stop working and need to be replaced.

Possible Complications

- Arrhythmias
- Endocarditis
- Left-sided heart failure
- Left ventricular hypertrophy (enlargement) caused by the extra work of pushing blood through the narrowed valve

When to Contact a Medical Professional

Call your health care provider if you or your child has symptoms of aortic stenosis. For example, call if you or your child has a sensation of feeling the heart beat (palpitations) for more than a short period of time.

Also contact your doctor immediately if you have been diagnosed with this condition and your symptoms get worse or new symptoms develop.

Prevention

Treat strep infections promptly to prevent rheumatic fever, which can cause aortic stenosis. This condition itself often cannot be prevented, but some of the complications can be prevented.

Follow the health care provider's treatment recommendation for conditions that may cause valve disease. Notify the provider if there is a family history of congenital heart disease.

References

Otto CM, Bonow RO. Valvular heart disease. Zipes DP, Libby P, Bonow RO, Braunwald E, eds. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*. 8th ed. St. Louis, Mo: WB Saunders; 2007:chap 62.

Fullerton DA, Harken AH. Acquired heart disease: valvular. In: Townsend CM Jr., Beauchamp RD, Evers BM, et al., eds. *Sabiston Textbook of Surgery*. 18th ed. Philadelphia, Pa: Saunders Elsevier; 2007:chap 62.

Nishimura RA, Carabello BA, Faxon DP, et al. ACC/AHA 2008 guideline update on valvular heart disease: focused update on infective endocarditis: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2008;52(8):676-685.

Bonow RO, Carabello BA, Chatterjee K, de Leon AC Jr., Faxon DP, Freed MD, et al; 2006 Writing Committee Members; American College of Cardiology/American Heart Association Task Force. 2008 Focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 1998 Guidelines for the Management of Patients with Valvular Heart Disease): endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *Circulation*. 2008;118:e523-e661.

Obstructive lesions. In: Park MK, ed. *Pediatric Cardiology for Practitioners*. 5th ed. St. Louis, Mo: Mosby Elsevier; 2008:chap 13.



A.D.A.M., Inc. is accredited by URAC, also known as the American Accreditation HealthCare Commission (www.urac.org). URAC's accreditation program is an independent audit to verify that A.D.A.M. follows rigorous standards of quality and accountability. A.D.A.M. is among the first to achieve this important distinction for online health information and services. Learn more about A.D.A.M.'s editorial policy, editorial process and privacy policy. A.D.A.M. is also a founding member of Hi-Ethics and subscribes to the principles of the Health on the Net Foundation (www.hon.ch).

The information provided herein should not be used during any medical emergency or for the diagnosis or treatment of any medical condition. A licensed medical professional should be consulted for diagnosis and treatment of any and all medical conditions. Call 911 for all medical emergencies. Links to other sites are provided for information only -- they do not constitute endorsements of those other sites. © 1997- 2011 A.D.A.M., Inc. Any duplication or distribution of the information contained herein is strictly prohibited.

