

Subaortic Stenosis

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BASIC INFORMATION

Description

Subaortic stenosis (SAS) is a congenital heart defect that is usually present at birth. Stenosis is a narrowing of the area below the aortic valve, which is the valve that sits between the left side of the heart and the aorta. The stenosis is caused by a fibrous ring of tissue that forms below the valve. The severity of the stenosis depends on the amount of fibrous tissue in the ring. The less tissue that develops, the less severe the SAS and the later problems are likely to occur. The more tissue present, the more severe the defect and the earlier it can be detected.

The fibrous ring in SAS causes the left side of the heart to work harder to pump blood through the narrowed area. As a result, the left heart becomes thickened (hypertrophied). When less oxygen reaches the thickened heart muscle, abnormal rhythms (arrhythmias) can occur that may lead to sudden death. Occasionally, stenosis can arise if the aortic valve does not form properly and is stiff.

Causes

SAS can occur spontaneously in any dog for unknown reasons. It is rare in cats. SAS is an inherited problem in some large-breed dogs, such as the boxer, bull terrier, German shepherd dog, golden retriever, Great Dane, mastiff, Newfoundland, Rottweiler, and Samoyed. English bulldogs may also have a genetic predisposition to SAS.

Clinical Signs

Most dogs with SAS have no clinical signs. In some dogs, a murmur may be detected when the puppy is very young; in others, a murmur is not detected until the dog is about 1 year of age. Therefore, it is important to screen all dogs of breeds that are genetically predisposed to SAS after 1 year of age.

Dogs with severe SAS may experience exercise intolerance or lethargy, fainting episodes, or sudden death. A few dogs have an increased rate and effort of breathing from left heart failure.

Diagnostic Tests

If a murmur has been detected that could be from SAS, further tests are usually needed. Chest x-rays are commonly done to rule out other congenital heart defects. Echocardiography (heart ultrasound) with Doppler capabilities is usually needed to diagnose the problem and determine its severity. Severe and moderate SAS may

be detected with routine echocardiography equipment; however, referral to a veterinary specialist may be recommended if mild SAS is suspected.

TREATMENT AND FOLLOW-UP

Treatment Options

Dogs with mild SAS often require no treatment. In dogs with moderate to severe SAS, balloon dilation may be considered, but the long-term results from balloon dilation are not usually better than with medical management. Most of these dogs are started on atenolol, a beta-blocker drug that helps the heart. The side effects of atenolol are rare and usually temporary; however, if any exercise intolerance or decreased appetite occurs, notify your veterinarian.

Dogs with SAS are at a higher risk for infection of the aortic valve than healthy dogs, so they may be given antibiotics when surgery, teeth cleaning, or tooth extractions are performed or if any wounds occur.

Follow-up Care

For puppies with mild SAS, an echocardiogram is often repeated at 1 year of age. If SAS worsens during the first year, medication may be started. For dogs with moderate to severe SAS that have been started on atenolol, electrocardiograms (ECGs) are often done every 3-6 months in an attempt to detect any arrhythmias that could cause sudden death. Medications may be added or adjusted if an abnormal heart rhythm is detected. Yearly echocardiograms are also typically done in these dogs to evaluate how well the left heart is working.

Prognosis

Dogs with mild SAS often have close to normal life spans. Occasionally, a dog with mild SAS dies suddenly, but this is uncommon. The more severe the SAS, the shorter the life span. Dogs with very severe SAS may live only 1-2 years; however, some of these dogs survive up to 4 years with atenolol therapy. Dogs with severe SAS tend to die suddenly from arrhythmias, but a few develop left heart failure that can be stabilized for awhile with medications.

Any dog with SAS, even if it is mild, should not be used for breeding. In some large-breed dogs, such as the Newfoundland, 50% of the litter can inherit the defect from an affected parent.