Subaortic Stenosis

Subaortic stenosis (SAS) is a heart condition that begins to manifest within the first few weeks of life and can continue to worsen over the first 1-2 years of life. Large breed dogs are more commonly affected, with breeds like the Rottweiler, Boxer, German Shepherd and Newfoundland particularly predisposed. SAS is characterized by the appearance of a tough ring of tissue just beneath the aortic valve. The aortic valve is located on the left side of the heart where it separates the left ventricle from the aorta (the large artery that directs blood from the heart out to the rest of the body). The development of abnormal tissue beneath the aortic valve makes it more difficult for blood to be pumped past this narrowed area and out of the heart. In order for a normal amount of blood to move past the narrowed area during each heartbeat, the blood must move at a significantly faster speed than normal. It is this high-speed, turbulent blood flow that creates the audible heart murmur that is associated with this disease.

SAS can range from mild to severe. Patients with mild SAS are likely to live their entire life without developing any symptoms of their disease, while patients with more severe forms may develop symptoms such as exercise intolerance, fainting spells or even sudden death. Occasionally, left-sided congestive heart failure may develop and result in labored breathing and/or cough. All patients with SAS (whether mild or severe) have an increased risk of developing an infection of their aortic valve when compared to a patient with a normal heart. This is known as infectious endocarditis. To combat this increased risk, a pet with SAS may be placed on a course of antibiotics if they have a dental procedure or other surgery or intervention that may lead to a short-lived release of bacteria into the blood stream. It is also important that any pet with SAS not be used for breeding. SAS is a genetic condition that can be passed to offspring, sometimes in a more severe form than what is seen in the parent.

The diagnosis of SAS is based on the results of an echocardiogram (cardiac ultrasound). The echocardiogram allows the cardiologist to directly visualize the aortic valve and subvalvular area, measure the speed of blood flow across the valve, and look for evidence of heart enlargement or changes in heart function. It is common for more severe cases of SAS to develop substantial thickening of the left side of the heart. The severity of SAS is determined by measuring the speed of blood flow through the narrowed area beneath the valve. This speed is then converted to a pressure gradient. Pressure gradients of 80 mmHg or higher are considered severe.

Sadly, treatment options for patients with moderate to severe SAS are limited. Restriction of exercise and activity level is quite important and should be considered a mainstay of therapy. In some patients, anti-arrhythmic medications or other treatments may be needed based on the progression of the disease. At this time there is no interventional procedure or surgery that has been proven to lengthen survival time in patients with severe SAS, and no medical treatment can eliminate the risk of sudden death.