

Subvalvular Aortic Stenosis

Subvalvular aortic stenosis (SAS) (frequently shortened to aortic stenosis or subaortic stenosis) is one of the most commonly diagnosed congenital heart abnormalities of dogs. The disease is characterised by a narrowing (stenosis) caused by a ridge or ring of abnormal tissue growth that inhibits blood flow from the heart to the aorta. The narrowing is classified as mild, moderate, or severe (Tidholm, 1997).

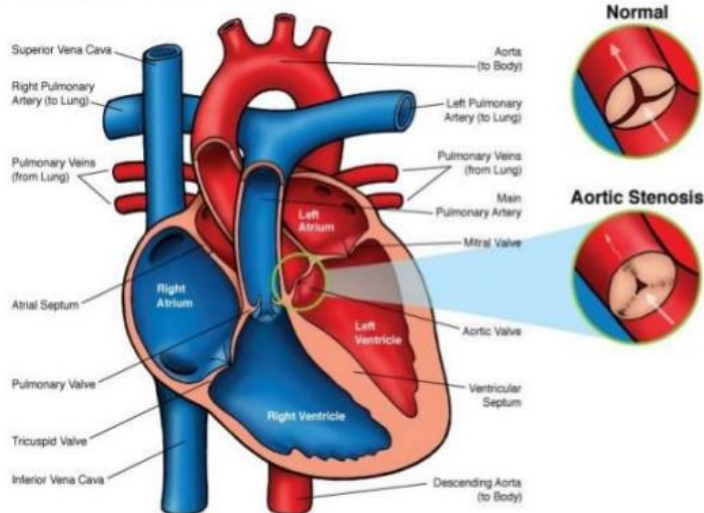
Mildly affected dogs with SAS may have a normal life span but moderate to severely affected dogs are at risk of developing severe complications (sudden death, congestive heart failure and endocarditis) and most dogs with severe disease die before the age of 5. Sadly, seemingly healthy dogs with SAS can die suddenly, in part because even animals with severe stenosis may show no clear signs of illness. And often their owners don't recognise that episodes of exercise intolerance, or fainting or collapsing from excitement are red flags for SAS (Kienle et al., 1994).

Symptoms

Symptoms of SAS, when they occur, include difficulty breathing, weakness, fainting, and in extreme cases, sudden death.

The median survival time for dogs with severe SAS who do not receive treatment is 19 months.

Aortic Stenosis - Valvar



For dogs receiving traditional treatment (beta-blockers), the median survival is 56 months. Most dogs with the severe form of the disease die before they reach 5 years of age.

Diagnosis

Diagnosis involves a thorough physical exam, including using a stethoscope to listen for a heart murmur or irregular heartbeat. If a heart murmur is detected an electrocardiogram (cardiac ultrasound) is done to look at the electrical activity of the heart and check for arrhythmias.

An echocardiogram can determine whether the murmur is innocent or not; it allows visualisation of the inside of the heart to assess the heart valves, blood flow patterns and velocity, extent of blockage, and severity of disease (mild, moderate, or severe), and other details of the heart's structure and function.

Treatment

In mild cases of the disease, treatment is not required. However, since SAS can worsen as a young dog matures, animals with moderate to severe disease may require medication. To reduce the workload on the heart and avoid symptoms, these dogs should also be prevented from engaging in sudden bursts of activity or intense physical exertion.

Traditional medical treatment of moderate to severe SAS involves giving beta-blockers. Recently, a balloon valvuloplasty procedure has shown promise in treating dogs with the severe form of the disease (*Kleman et al., 2012*).

SAS in the golden retriever appears to be inherited but its mode of inheritance is still uncertain (*Stern et al., 2012*). Since several genes are interacting to cause SAS in ways we do not understand it is strongly recommended to not use dogs with SAS in a breeding program.

Dogs used for breeding should be examined by a board certified veterinary cardiologist who has advanced training in congenital heart disease and issued a certificate stating that they are free of detectable heart defects. Because some dogs that carry genes involved in SAS will be missed using the most current diagnostic tests a clear certificate of a puppy's parents is not an absolute guarantee that the disease can not occur.

References

- Tidholm A. Retrospective study of congenital heart defects in 151 dogs. *Journal of Small Animal Practice* (1997) 38, 94-98.
- Kienle R.D. et al., The natural clinical history of canine congenital subaortic stenosis. *Journal of Veterinary Internal Medicine* (1994) 8, 423-431.
- Kleman M.E. et al., How to perform combined cutting balloon and high pressure balloon valvuloplasty for dogs with subaortic stenosis. *J Vet Cardiol.* 2012;14(2):351-61
- Stern et al., Familial subvalvular aortic stenosis in golden retrievers: inheritance and echocardiographic findings. *Journal of Small Animal Practice* (2012) 53, 213–216.

Contact your State Breed Club
for Further Information
<http://ausnrc.org/state-breed-clubs/>