

Sub- Aortic Stenosis in Rottweilers- John Sauvage of Pierson Stewart & Partners of Cranbrook Kent

Aortic Stenosis is probably most common congenital heart defect in veterinary medicine at 22-35% of reported cases (Buchanan1992). There are three forms depending on the site of the restriction below the valve constriction (Subvalvular -subaortic stenosis or SAS), above the valve (Supravalvular) and at the level of the valve (Valvular). The vast majority of cases are SAS. The Breeds affected include Boxers (50% of dogs in UK)

Newfoundlands (shown to be hereditary), GSD, Golden Retrievers, English Bull Terriers Samoyeds but the Rottweiler is also a susceptible breed.

The constriction below the aortic valve acts like a chicane on a motoracing track and restricts the outflow of blood from the heart during every heart beat. This makes the left ventricle heart muscle work harder and therefore become bigger and more muscular in order to pump blood out of the heart. As it thickens the blood supply becomes inadequate encouraging heart rhythm disturbances and sometimes heart failure.

Clinical Signs

Vary from asymptomatic to exercise intolerance, collapse and sudden death. Cardiologists agree that the most common sign in Rottweilers is sudden death due to fatal rhythm disturbances.

A harsh murmur during the heart beat is heard in between the classic "Lub" and "Dub" sounds. This normal heart sound is familiar to us all from medical programmes as well as horror film soundtracks. The murmur is loudest at the head end (base) of the heart and may be heard with a stethoscope it may also be heard radiating in the neck and to the right side of thorax. The pulse usually remains fairly strong.

X-ray

Many are normal but the heart outline may be enlarged or a dilatation of aorta may be seen.

ECG

May be normal or show tall waves or other changes including ventricular rhythm disturbances.

Heart Ultrasound (Echocardiography)

The Gold Standard for diagnosing this disease. The thickened Left Ventricle can be seen and sometimes the narrowing itself. Ultrasound Machines that can map blood flow using the Doppler effect can actually measure the velocity of the blood leaving the ventricle and calculate the pressure difference between the Left Ventricle and the Aorta. Flow rates above 2m/s are considered abnormal

Prognosis

The chances of the disease being life threatening is related to severity of blockage and this is reflected in the Doppler estimation of pressure gradient across the stenosis.

> 100mmHg(severe)-Clinical signs and early death a possibility

50-100mmHg(moderate)- Variable presentation and course

<50mmHg (mild)-Likely to lead full and normal life but should not be bred.

Murmur intensity usually correlates well with severity of lesion. The louder and harsher the murmur the higher the pressure. Murmurs are graded 1-6. Grade 3 as loud as the heart sounds, Grade 2 softer than heart sounds, Grade 4 louder than heart sounds, Grade 5 so loud that the heart can be felt vibrating, Grade 6 so loud the murmur can be heard with the stethoscope actually off the dogs chests and the heart can be felt vibrating. This just leaves a Grade 1 murmur which is so soft that the cardiologist has to listen extremely carefully to make sure they can even hear a murmur. Dogs with a murmur of 2 or 3 are probably never going to have a problem and would be found to be mild cases on Doppler, Dogs with a murmur louder than a Grade 3 are at risk of disease so would be classified as moderate or severe on Doppler Ultrasound. Any dog with a murmur of 2 or louder should probably not be bred.

The final pressure difference or loudness of the murmur cannot be assessed until the dog is fully grown as the constriction may get worse or better with time as the heart grows.

Any murmur should not be declared innocent unless an Ultrasound examination has been carried out. In other words all murmurs should be declared guilty until proven innocent.

Treatment

Usually only in severe symptomatic cases with the aim of controlling arrhythmias, improve heart filling between beats, and minimising heart blood supply impairment damage. The drugs used including beta-blockers and other anti-arrhythmics. Balloon catheter dilation and open heart surgery has been used in humans and is theoretically possible in dogs but is less likely to be successful in large breeds such as Rotweilers

The Present and the Future

At the moment all dogs over one year old should be murmur graded by a cardiologist and any with a murmur of Grade 2 or over should not be bred from. Any dogs with a murmur of any age should perhaps be investigated with at least an Ultrasound cardiac examination by a cardiologist.