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Tetralogy of Fallot

Issue Description

Is a relatively uncommon but serious combination of defects that are the result of abnormal development in the embryo during the formation of the heart and great blood vessels. As the name implies, Tetralogy of Fallot consists of 4 defects. These are pulmonic stenosis, ventricular septal defect, over riding aorta and right ventricular hypertrophy secondary to the pulmonic stenosis.

Normally, the blood that is pumped to the body from the left side of the heart is fully saturated with oxygen. The oxygen is extracted from the blood for use in the various tissues and then the deoxygenated blood is returned to the right side of the heart. It goes to the lungs to pick up oxygen, and then is delivered back to the left side of the heart, from which it is pumped out to the tissues again. The result of the defects that make up the Tetralogy of Fallot is that poorly oxygenated blood is delivered to the body. This causes general cyanosis or a grey tone to tissues that would normally be pink. Tetralogy of Fallot is the most common cyanotic heart defect.

Causes

Evidence suggests that these defects are the result of varying degrees of abnormality in a single developmental process - the growth and fusion of the conotruncal septum. It is possible that pulmonic stenosis or a ventricular septal defect, both of which occur independently, may be less severe manifestations of the same genetic defect.

Symptoms

As with other heart defects, the degree to which your dog is affected depends on the severity of the defect. If your dog has Tetralogy of Fallot with a very mild degree of pulmonic stenosis and a small ventricular septal defect, then he or she may only have a heart murmur and no associated clinical problems.

More often though, puppies with this combination of defects experience weakness, failure to thrive and grow, a reduced tolerance for exercise, and general cyanosis (blue-grey instead of pink mucous membranes). These signs are the result of the delivery of poorly oxygenated blood to the different parts of the body.

Unfortunately, these dogs rarely live beyond 1 or 2 years without treatment.

Diagnosis

Puppies with this disorder are weak and grow poorly. On physical examination, your veterinarian will find cyanosis and a heart murmur. X-rays and an electrocardiogram (ECG) will show severe enlargement of the right side of the heart. X-rays will also show reduced blood circulation in the lungs.

Treatment

Complex open heart surgery is required to correct the condition. Surgery has a high mortality rate and is not considered a viable clinical option at this time.

There are medical and surgical treatments used to manage the condition. These include medication to reduce the muscular obstruction associated with the pulmonic stenosis (beta-adrenergic blocker), to allow more blood to flow to the lungs. There are some surgical procedures used in animals over 10 kilograms to reroute poorly oxygenated blood to the lungs, and this may help. This therapy is helpful in approximately 50 per cent of cases, although these animals will still have reduced activity levels.

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