Hypertrophic Osteodystrophy: A Bone Disease in Growing Dogs

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Hypertrophic Osteodystrophy (HOD) is a bone disease that usually affects young, rapidly growing, large breed dogs. The disease has several names including skeletal scurvy, Moller-Barlow's disease, osteodystrophy II, and metaphyseal osteopathy. The disease produces severe lameness and pain and usually affects multiple limbs. The cause of the disease is currently unknown.

Who gets hypertrophic osteodystrophy?

HOD is a disease of young, rapidly growing dogs. It usually strikes puppies between the ages of 3 to 6 months. It is primarily a disease of large or giant breeds of dogs, although there can be exceptions to this rule. As with most of the young, large breed bone disorders, it affects males more commonly than females. There does not appear to be an increased incidence in any one large or giant breed. There does not appear to be a strong inherited or genetic link.

What are the symptoms of hypertrophic osteodystrophy?

Dogs that are stricken with HOD often show symptoms of mild to moderate painful swelling of the growth plates in the leg bones. It most commonly affects the ends of the radius, ulna, (long bones from the elbow to the wrist) and tibia (long bone from the knee to the hock). The dogs may show lameness and a reluctance to move. They may be lethargic and refuse to eat. A fever may come and go rising as high as 106 degrees. The disease usually affects both legs at the same time. The symptoms may wax and wane and resolve on their own or if the fever is very high for long periods and the bony involvement severe, the dogs may suffer permanent structural damage or even die.

How is hypertrophic osteodystrophy diagnosed?

Diagnosis is based on the history, symptoms, physical exam showing pain and swelling at the growth plates, and with x-rays. The x-rays will show a thin radiolucent (dark) line at the metaphysis (growth plate) in the end of the ulna, radius, or tibia. Bony inflammation and bone remodeling may also be seen at these sites. Occasionally, there may be involvement and changes in the skull and teeth. Dogs often have a fever and occasionally a high white blood cell count.

What is the treatment?

The treatment is generally supportive. Since this is a very painful condition anti-inflammatories and painkillers such as buffered aspirin or carprofen (Rimadyl) are given. (Do NOT give your cat aspirin unless prescribed by your veterinarian.) In addition, the animals are usually given a broad-spectrum antibiotic. Strict rest on a comfortable warm bed is recommended. Feeding a nutritious, highly palatable food will help to encourage some dogs to eat. In severe cases steroids may need to be given to control the pain, but because of the possibility of this being a bacterial disease their use may be contraindicated due to their immunosuppressive qualities. Vitamin C is often supplemented though its benefit may be questionable.

What causes it and how is it prevented?

The prevention lies in understanding what causes this disease. Unfortunately, there is currently no agreement on the cause of this disease. One possible cause may be a bacterial infection. The bony changes and high fever support this possibility. The difficulty in obtaining a bacterial culture from the site and the sometimes-poor response to antibiotic therapy may fuel the argument against this possible cause.

Another suspect in the disease is vitamin C. It has been shown that dogs with this disease show very similar symptoms and bony changes as people with scurvy (vitamin C deficiency). In addition, these dogs often have a lowered blood vitamin C level. However, dogs synthesize their own vitamin C and do not have a nutritional requirement for this vitamin. In several studies and in practice, feeding affected dogs high doses of vitamin C does not always alter or cure the disease. Some researchers therefore speculate that the low blood level of vitamin C may be a result of the disease, not the cause.

Another possible cause of the disease may be nutritional. It has been suggested that several bone diseases in young puppies are linked to an excess of protein and calories in the diet leading to the development of these problems. The studies have not been done that confirm this, though many owners of large and giant breed puppies are currently feeding a diet lower in fat and protein to try to encourage moderate steady growth instead of rapid growth. It is possible that this disease may be caused by several factors. At this time, however, we do not know the cause or how to prevent it. Hopefully future studies will give us more information on the cause and prevention of this painful and debilitating disease.