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Hypertrophic Osteodystrophy

Issue Description

Hypertrophic osteodystrophy (HOD) is a bone disease in young large and giant breed dogs. It may occur between the ages of 2 and 7 months. HOD is characterized by decreased blood flow to the metaphysis (the part of the bone adjacent to the joint) leading to a failure of ossification (bone formation) and necrosis and inflammation of cancellous bone. The disease is usually bilateral in the limb bones, especially the distal radius, ulna, and tibia.

Other Names

HOD

Speculated Causes

The cause of HOD remains unknown, however, there are many speculations. The autoimmune nature of this is currently under investigation at one university. Viral causes (even Canine Distemper) have been implicated, although they just might be one more kind of stress precipitating HOD. Vitamin C deficiency has been thought to be a cause, however, there is neither documentation nor scientific reason for this in the dog. Vitamin C therapy has not met with much success. Excessive amounts of dietary protein and high caloric intake have been implicated, scientific support for this is also lacking. However, over nutrition does play an important role in Osteochondrosis. An infectious origin has been proposed, and there are reports where hematogenous (blood borne) bacteria have been noted to produce florid radiographic changes in the metaphyses which perhaps could be confused with HOD. Therefore, if not careful, hematogenous or osteomyelitis (bone infection) could possibly be confused with HOD. A good radiologist should be able to differentiate this. Documentation of the use of possible blood cultures, to isolate bacteria, in HOD cases has not been reported. Therefore documentable cases of actual infections have been few. For most cases, the cause is still unexplained.

Symptoms

Most of the affected animals are first presented because of lameness or reluctance to walk. There are often fevers of 104 - 104.2 degrees F and anorexia (refusal to eat). These signs usually get progressively worse. Over days the metaphyseal regions of the long bones (the area next to the growth plate, but towards the mid bone, not the joint) will be tender to digital pressure, slightly swollen and warm to the touch (using the inside of the wrist.) More adversely affected animals will be systemically ill. The fevers and anorexia will continue, and weight loss comes quickly if the affected animal is not treated.

Diagnosis

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 dark line at the 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.

Treatment

Since this is a very painful condition anti-inflammatories and painkillers such as buffered aspirin or carprofen (Rimadyl) are given. 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.

Prognosis

Overall, the prognosis is considered good for most puppies with hypertrophic osteodystrophy. Most puppies have one or two episodes and then fully recover. Occasionally, some puppies develop a foreleg growth deformity (bowing or swollen wrist region) after contracting HOD that will eliminate them from the show ring. Some puppies seem to have intractable relapsing episodes of pain and fever. Rarely, some die or are euthanized as a result.

Breeds at increased risk for HOD

- Boxer
- Chesapeake Bay Retriever
- German Shepherd Dog
- Golden Retriever
- Great Dane
- Irish Setter
- Labrador Retriever
- Weimaraner

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