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## **Hypertrophic Osteodystrophy (HOD)**

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### **Affected Animals:**

Dogs.

### **Overview:**

A developmental bone disease usually affecting puppies between the ages of two and eight months, hypertrophic osteodystrophy, or HOD, occurs when there is a disturbance in the blood supply to the growth plate, leading to delays in bone production. This weakened bony lattice develops microscopic fractures, with the resulting inflammation causing pain and lameness. When HOD is severe, the dog may become systemically ill; loss of appetite, depression, and dehydration are common symptoms.

The breeds most frequently affected by HOD include the Great Dane, Irish wolfhound, Saint Bernard, Doberman pinscher, German shepherd, and the Weimaraner.

### **Clinical Signs:**

Warm, swollen, painful metaphyseal regions of the long bones, episodic or persistent lameness that is usually bilaterally symmetric, fever, weight loss, and anorexia.

### **Symptoms:**

Pain, swollen limbs, lameness, lack of appetite, and weight loss.

### **Description:**

Hypertrophic osteodystrophy, or HOD, is a disease usually affecting large breed puppies between the ages of two and eight months. The disease causes a disturbance in blood supply to the growth plate, resulting in delays in bone production and weakening of the bony latticework in this region. Inflammation, cell death or necrosis, microfractures, and hemorrhage may occur, leading to pain and swelling of the limbs. All or some of the limbs may show signs of the disease and the lameness is usually symmetric, meaning that both the right and left sides of the body are affected equally. With severe disease, the dog is often systemically ill and may need supportive care. In the most serious cases, damage to the growth plates can lead to growth deformities in the limbs. In milder cases, dogs can make a full recovery with no permanent damage.

### **Diagnosis:**

The veterinarian often makes a presumptive diagnosis if the dog shows signs of the disease and is a commonly affected breed. A definitive diagnosis is confirmed by taking an x-ray.

### **Prognosis:**

The prognosis is fair to good for mild cases but guarded for severe cases. Spontaneous regression often occurs in dogs that reach maturity. In severe cases, growth deformities requiring surgical correction can result.

**Transmission or Cause:**

The cause is unknown. Viral diseases such as distemper and other respiratory problems have been thought to play a role in causing HOD. Vitamin C deficiencies and other metabolic defects have been suggested as possible causes of HOD, but no research to date supports this. As some breed lines develop the disease with increased frequency, a genetic component is suspected.

**Treatment:**

The treatment of HOD is supportive. Intravenous fluids are given to dogs with a high fever or dehydration. Aspirin, carprofen, other non-steroidal anti-inflammatory drugs (NSAIDs), or narcotics may be required to control pain. Calorie-dense diets are discontinued and the dog is placed on an adult or large breed growth diet. Also, over-supplementation with vitamins and minerals is discontinued from the diet, since massive vitamin C supplementation may contribute to the disease.

**Prevention:**

Avoid feeding high-calorie diets to large or giant breed dogs. Vitamin and mineral over-supplementation should be avoided because they may increase the incidence of this disease.