

## ***Hypertrophic Osteodystrophy in Weimaraners and additional breeds***

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*Funding provided by the UC Davis Center for Companion Animal Health*



Hypertrophic Osteodystrophy (HOD) is a canine autoinflammatory disease affecting young rapidly growing large breed dogs between eight weeks to eight months of age. Sick dogs exhibit swelling and pain in their legs with reluctance to stand or walk. In addition to orthopedic pain, there are variable systemic signs of which some or all may be present during an HOD episode. Systemic signs include fever, lethargy, depression, and loss of appetite. A diagnosis of HOD is founded on radiographic evidence of bone involvement concurrent with hyperthermia and pain, and by ruling out infectious causes of the clinical signs. The cause of the disease is unknown and current treatments are focused on controlling the fever, alleviating the pain and treating the specific systemic signs present. Prognosis for severe cases is poor due to relapsing episodes and the low quality of life for the affected puppies that sometimes result in euthanasia.

Several breeds of dogs, including the Weimaraner the Irish Setter and the Great Dane, are at high risk for developing HOD. Therefore, an inherited component is highly probable. Entire litters of Weimaraners, as well as closely related individuals, were found to be affected [28-31], also suggesting a strong genetic effect in the breed. The aim of this study is to identify the genetic basis of HOD in susceptible breeds. By identifying the chromosomal regions associated with HOD, we hope to assist breeders to select against the disease in predisposed breeds. Selective breeding will reduce the number of HOD affected puppies in the general population and perhaps save puppies and owners from the devastating outcome of euthanasia.

Table 1: Summary of HOD clinical presentation in 20 Weimaraners: 20 dogs presented with six major signs of HOD, of which 13 had at least two minor signs involving the skin and/or the gastro-intestinal tract. Radiographs were available from 15 dogs only; however, all showed the typical bone lesions seen with HOD (Figure 1). 19 of the dogs had relatives with HOD and 4 out of 15 had persistent disease such as atopy or inflammatory bowel disease as adults. 4 dogs had a stressful event such as boarding in a kennel immediately prior to the onset of HOD and 4 other dogs had a history of vaccination 4-10 days prior to the beginning of HOD signs. 12 dogs had an “unprovoked” onset of HOD; one of them was still in the litter at the time of first HOD episode at 7 weeks of age.

<b>Clinical Presentation</b>
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Major		Minor	
<ul style="list-style-type: none"> <li>• Pyrexia &gt; 103°F</li> <li>• Depression</li> <li>• Anorexia</li> <li>• Lameness</li> <li>• Reluctance to walk</li> <li>• Pain upon metaphyseal palpation</li> <li>• Typical HOD lesion on x-rays</li> </ul>		<ul style="list-style-type: none"> <li>• Diarrhea</li> <li>• Pustulosis</li> <li>• Swollen/ sore mandible</li> <li>• Tonsillitis</li> </ul>	
20		13	
<b>Relatives with HOD</b>			
<b>Yes</b>		<b>No</b>	
19		1	
<b>Number of Episodes</b>			
Single		Multiple	
6		14	
<b>Treatment</b>			
Corticosteroids		NSAIDs	
18		2	
<b>Healthy As Adult (15 adults)</b>			
<b>Yes</b>		<b>No</b>	
11		4	
<b>Suggested Environmental Trigger</b>			
Stressful event	Vaccination	None	
4	4	12	



**Figure 1: Mediolateral view of distal radius and carpal joint of HOD case #14.** Irregular radiolucent line (arrow) in the metaphysis separated from the physis by a radio-opaque band. A radiodense zone is visible between the radiolucent band and the growth plate.

*We are currently accepting samples from affected Weimaraners and additional breeds that are commonly affected with HOD. Radiographs and samples of normal Weimaraner puppies are needed as controls. For details on how to contribute to the study please contact Dr Noa Safra [nsafra@ucdavis.edu](mailto:nsafra@ucdavis.edu) or [drnoasafra@gmail.com](mailto:drnoasafra@gmail.com)*