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Hypothyroidism: A New Direction

By: Elizabeth Bodner, DVM, AKC Gazette, February 1997

Scientists reach a long-awaited consensus on diagnostic protocols.

There's a champion whose coat has turned dull and dry. A bitch who can't seem to conceive. A sluggish, middle-aged dog with a growing weight problem. A hunter with a recent record of lackluster performances. Each of these dogs exhibit clinical signs of hypothyroidism (an underactive thyroid gland). But are they all hypothyroid? Maybe ... maybe not. Yet each is being treated for hypothyroidism with daily thyroid supplementation. This tends to occur for two major reasons: Hypothyroidism is difficult to diagnose definitively, and many dog fanciers are eager to medicate for what they perceive to be a very common disorder.

In fact, the incidence of canine hypothyroidism is unknown. It has been estimated that approximately 10 percent of cases with clinical signs compatible with hypothyroidism actually have the disease. In order to make a definitive diagnosis, veterinarians must relate the patient's history and clinical signs to results from laboratory tests that measure thyroid function.

But for one reason or another, some dogs are not tested prior to treatment. Others are diagnosed after a single test that may fail to tell the whole story. And even those that are tested extensively occasionally receive results that are conflicting or difficult to interpret (see "A Diagnostic Dilemma," November 1995). Furthermore, the diagnostic value of the various laboratory tests - at least 11 different ones at last count - has been questioned by some researchers. It's no wonder so many veterinarians, breeders and owners have eagerly anticipated a consensus from the experts about screening and confirming the diagnosis of hypothyroidism. The wait is over. In August (of 1996), approximately 100 clinicians and scientists met for three days at the University of California at Davis to discuss canine hypothyroidism. Presentations were given by leading researchers in canine endocrinology. An English Setter breeder outlined the issues of hypothyroidism as they affect breeders and veterinarians. Representatives from the AKC and the AKC Canine Health Foundation, which helped sponsor the event, also attended, including Dr. Sheldon Adler, chairman of the Delegates Committee on Canine Health Research and Education; Robert



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Kelly, a Board Member of the AKC/CHF; Ed Gilbert, an AKC Delegate; and Deborah Lynch, executive director of the AKC/CHF.

At the conclusion of the symposium, a practical approach to diagnosing and monitoring the disease was established.

For all dogs, it begins with a complete blood count, blood chemistry panel, urinalysis, case history and physical examination. After this initial database is developed, treatment diverges, depending on whether the patient is a pet, show or breeding dog.

Breeding dog. Because evidence gathered from various studies suggests a genetic component in hypothyroidism, the testing protocol is driven by the breeding dog, according to Richard Nelson, DVM, of the University of California at Davis. With testing, it's possible to predict whether a dog may be prone to hypothyroidism in the future even if it is currently asymptomatic. By performing several different tests, a more complete picture of the thyroid's function can be drawn.

- Total T4 (TT4)
- Free T4 measured by equilibrium dialysis (fT4ed)
- Thyroglobulin autoantibodies (TgAA)
- Canine thyroid stimulating hormone (cTSH).

In an apparently healthy dog, normal results indicate the absence of current thyroid disease, and breeding can proceed. If there is a family history of hypothyroidism, the tests may be repeated annually.

On the other hand, a dog that has normal results but shows clinical signs of hypothyroidism should be withheld from breeding, and the tests should be repeated in two to six months. Other causes for the clinical signs should also be pursued.

If the results of the apparently healthy dog's tests are abnormal, there is some potential risk in breeding. The experts again recommend waiting and retesting the dog in two to six months. Abnormal results in conjunction with clinical signs of hypothyroidism warrant treatment and, of course, a stay on breeding.



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The Show Dog. After establishing an initial database, the show dog should have the same tests as a breeding dog: namely, a TT4 test, fT4ed test, TgAA test and cTSH test.

If the results are normal and no clinical signs are present, but there is a family history of hypothyroidism, the tests should be repeated annually. The tests should be repeated in two to six months if the dog has normal test results and symptoms of hypothyroidism. Again, other causes for the clinical signs should also be pursued.

The apparently healthy show dog that tests positive for low thyroid activity should be closely monitored for clinical signs, and a cautious approach to breeding is recommended. Abnormal test results in combination with clinical signs warrant treatment.

The Pet Quality Dog. The diagnostic protocol for the pet-quality dog calls for a TT4 test after the initial database is created.

A normal result, in the absence of clinical signs, means there is no current hypothyroid disease. A normal result in conjunction with clinical signs, however, should lead to a cTSH and fT4ed test. At this point, if the results are normal, the investigation ends, and there is no treatment.

If clinical signs are still present, however, the experts recommend repeating the cTSH and fT4ed test. If they yield abnormal results, the dog is treated with thyroid supplementation.

The pet dog with clinical signs of hypothyroidism and an abnormal result on its initial TT4 test should also be treated. If clinical signs are absent but the TT4 test is abnormal, the dog should have a cTSH and fT4ed test. A normal result ends the analysis.

On the other hand, if the apparently healthy pet dog that is found to have an abnormal value on its TT4 test also produces an abnormal result on its cTSH or fT4ed test, the tests should be repeated and/or a TgAA test should be performed. If any of these test results are abnormal, the dog should be treated.

Symposium participants also discussed the preferred method of monitoring thyroid status after the initiation of treatment. Most recommended a TT4 or fT4ed test, measured four to six hours after thyroid supplementation. The



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test result, known as a "peak value," should fall within the high-normal to slightly high range. A few participants advocated "pre-pill" testing (just prior to thyroid supplementation). This test result, or "trough value," should fall within the normal range. Testing should be repeated annually, unless the history and clinical signs warrant earlier action. According to those at the symposium, dogs should be treated with a name-brand, synthetic levothyroxine sodium product approved for veterinary use.

Hypothyroidism will undoubtedly continue to be a subject of healthy discussion and debate for some time to come. Meanwhile, the scientific community has ushered us one step closer to detangling a troubling but treatable canine disease.

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Web Page Ed. Note: Not all agree with these recommendations for thyroid screening of the pet animal. There may be circumstances where a full thyroid panel is more desirable; e.g., in situations where there is a thyroid health problem in the line, and the breeder wants to know the thyroid status of all offspring.