

# **The Mastiff and the Thyroid**

## **By Robin M. Smith, DVM**

My bitch has dark brown spots on her flanks, what is it? My dog hardly eats anything and she or he is still overweight, why? My bitch does not seem to have normal cycles and I can't get her bred, why? My bitch was bred and confirmed pregnant by ultrasound but on her recheck at 30 days, the ultrasound showed evidence of resorption, why?

Many of you have had these same questions and are looking for answers. I believe there can be a multitude of causes for these problems and by all means your veterinarian is the first one for you to ask about your concerns. One of the causes for all of the above problems can be abnormal thyroid function. While I will talk about the thyroid and the diagnosis of thyroid problems and the treatment, I again prevail to you to seek your veterinarian's advise before doing anything. Sometimes, even if what I talk about is to you what you think is the exact think happening to your dog, you could create more of a problem by not getting it accurately diagnosed.

Hypothyroidism is a syndrome characterized by deficient thyroid hormone secretion that can readily be treated with synthetic thyroxine (T4). Once the diagnosis is established, virtually all clinical signs and related disturbances can be completely reversed by T4 replacement therapy. In a small percentage of cases (5%), however, reduced thyroid function occurs as a result of a more serious condition and recognition of the cause is at least as important as documentation of deficient thyroid hormone secretion.

Hyperthyroidism is rare in the dog and will not be considered here.

Hypothyroidism in most dogs result from progressive loss of functional; thyroid tissue due to a primary problem with the gland. In the dog, there are two distinct mechanisms of thyroid destruction: lymphocytic thyroiditis, which is probably an autoimmune disease, and idiopathic (meaning "unknown") atrophy, in which the thyroid gland is replaced by fat and connective tissue. There are other less common causes which will not be discussed here, since the above accounts for about 95% of the cases.

Although not proven, genetic factors may play a role in the origin of hypothyroidism. In a major study in 15 U.S. and Canadian veterinary teaching hospitals, the Mastiff was not among any of the dogs tested. In this test, strong evidence for genetic transmission of thyroid pathology in dogs was found in data from selected groups of laboratory Beagles, in which that cause was lymphocytic thyroiditis. These dogs showed a higher frequency of autoantibodies (antibodies produced against oneself) to some thyroid molecules. Therefore, although good data conclusively demonstrating breed predisposition to primary cause, idiopathic atrophy, has not been linked to being heritable, it is hard to suggest sterilizing a dog unless the thyroid is biopsied and the diagnosis of lymphocytic thyroiditis is obtained. Also, the onset of canine hypothyroidism usually occurs later in life, after producing many puppies. With the advent of new diagnostic techniques, like the testing for autoantibodies, we may be bale to determine without surgical intervention, whether or not one is dealing with lymphocytic thyroiditis or idiopathic atrophy. I will deal more with the diagnostic in a later paragraph.

The clinical signs of hypothyroidism can be subtle to being very overt. Signs include mental dullness (your dog may not be as dumb as you think), exercise intolerance, lethargy, poor hair coats, hair coat color change, hair not regrowing when shaved (especially noticed after a surgery), infertility, irregular estrous cycles, resorption of fetuses after bred, neurological problems, bradycardia (slow heart rate), and cardiac arrhythmias (abnormal heartbeats). Not all of these symptoms will be seen, but whenever a breeder has a problem with reproduction, the thyroid should be examined.

Thyroid function and reproductive function have many interaction, any of which are not fully understood. In dogs, it has been shown that thyroxine (t4) is significantly higher during pregnancy than in any other reproductive rate. We usually think of the females when we speak of reproductive problems, but males are affected also. Affected dogs have decreases testicular size and lower fertility than nonaffected dogs. Poor semen quality has also been reported. Infertility, prolonged anestrus, short estrus, and poor libido are reportedly associated with hypothyroidism in bitches. An increased occurrence of abortion, stillbirth, resorption and mummified fetuses have been reported also. But, it has also been found that reproductive dysfunction is NOT always found in hypothyroid bitches. In human women, hypothyroidism has been shown to cause irregular cycles, including ovulation failure or cessation of cycles. When conception did occur, spontaneous abortion, low birth weight, and fetal death were common. It has been shown that pregnant women with clinical signs of impending spontaneous abortion who later did abort had lower T4 and T3 levels.

Where does all this leave us? Now that we know the thyroid can cause a lot of problems, what do you need to do? My recommendation, as a Mastiff breeder whom is a veterinarian, is to have your dogs thyroid tested. The best place to send the thyroid tests at this time is Michigan State University. The reason I recommend testing all your dogs is that we do not have enough information on mastiffs on what is normal or abnormal. I have encountered bitches that have undergone resorption of fetuses, or low fertility tests. I have also had dogs with the typical dark skin patches on the flanks have normal thyroid function tests. In all these dogs, I have explored as many possibilities as I could to find other causes and have found none. After supplementing these dogs with thyroxine, the symptoms disappear and the bitches get bred and maintain their pregnancies. I am not saying we should just arbitrarily put dogs on replacement therapy, but I am saying we need to look at what is "NORMAL" for the Mastiff breed. I believe if a particular breed or line of breed has demonstrable signs of thyroid abnormalities, and all other causes have been eliminated, that maybe we need to look at an alteration of "normal range" for thyroid function tests in that breed.

This is not the place to go into the physiological aspects of thyroid function. But I will say that there are more thyroid function tests than just the "T4" that many people test for. The actual thyroid hormone that is active in the body is T3. There is also reverse T3, free T4, bound T4, free T3 and bound T3, and circulating antibodies that can be measures and can help in diagnosing the problem. Michigan State tests all of these and give a good overall view of what is happening. A very important test, the antibodies produced, is important to know since these are often generated in association with lymphocytic thyroiditis, which we spoke of as possibly being hereditary. There is ongoing work to identify other important molecules, as TSH which once identified will lead to a new generation of thyroid diagnostic tests.

When diagnostic tests do not provide a clear diagnosis, thyroid replacement therapy has been suggested as a valid diagnostic step in an animal suspected to be hypothyroid. Again, every attempt should be made to rule out nonthyroidal illnesses using history, physical examination, routine laboratory, and other appropriate testing before doing this. Your veterinarian is the best judge for this trial.

I believe that we have a lot to learn about the Mastiff and the thyroid problems encountered in the breed. I am trying to collect information on as many mastiffs as I can and their thyroid profiles. Again, one must know what the "normal" is before we can diagnose the abnormal. I would appreciate your input and any thyroid test information that you have on your dogs as I am trying to put together information. The more I have, the more valid the information and the more we can all learn from it. If anyone has any questions regarding thyroid problems or would like more information, please feel free to contact me. Again, I am learning also and some of you have had much more experience with the breed and their particular problems.

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