

Hypothyroidism and other Endocrine Disorders in Boxer Dogs

Dr. Peter Graham, AHDL, MSU
Notes from the ABC 2002 Health Seminar

Thyroid Diseases

> 50% of cases are lymphocytic thyroiditis (also called autoimmune or inflammatory thyroiditis)
This type of thyroiditis is identified by the presence of TgAA (thyroid autoantibody) in the blood

75% of outwardly "healthy" dogs have circulating TgAA
Other indications are low T4, high TSH, sub-normal TSH response

Symptoms include:

- **Weight gain**
- **Lethargy or weakness**
- **Cold intolerance/heat-seeking behavior**
- **Dermatological symptoms (poor coat, alopecia, seborrhea, hyperpigmentation, myxedema)**
- **Secondary dermatological symptoms are pyoderma and pruritis**
- **Bradycardia (slow heart rate)**
- **Rare or unconfirmed symptoms: Neuropathy, xanthoma, corneal lipids, female infertility, seizures**
- **"Tragic" facial expression**

Levels of Disease

Stage 1 - Subclinical thyroiditis

Stage 2 - Subclinical hypothyroidism

Stage 3 - Hypothyroidism

Incidence of thyroiditis

<u>Breed</u>	<u>Number of dogs</u>	<u>Percent w/thyroiditis</u>	<u>Rate affected</u>
Mixed Breeds	7598	9.17	1.00
Boxer	871	13.78	1.58

Boxer is #6 on the list of top ten breeds affected.

MSU Thyroid Panel

<u>Component</u>	<u>Normal</u>
Total T4	15 - 50
Total T3	1.0 - 2.5
Free T4	12 - 33
Free T3	2.8 - 6.5
TSH	0 - 0.68
TgAA	< 200%
T4AA*	< 20
T3AA*	< 10

*These can interfere with
T4 & T3 readings

Most cases of thyroiditis are seen in MI, WI, IL, OH, CA, and the northeast US.

Submissions to MSU ADHL from 1/1/01 - 4/1/02 for Boxers

2,473 Submissions

482 were already taking medication for thyroid

60 were for "screening" per vet's information (13 of these were for submission to OFA)

1,931 assumed to be testing for diagnosis.

Of those, 1,063 included information from the vet as to the symptoms leading to the test:

69% - alopecia

9% - flank alopecia

48% - obesity

31% - weight loss

Only 3% of submissions were known to be pre-breeding screenings

Of the 1,931 submitted for diagnosis:

1,093 were clearly normal	57%
165 were clearly hypothyroid	9%
114 - lymphatic	6%
51 - idiopathic	3%
156 had subclinical thyroiditis	8%
255 had subclinical hypothyroidism	13%
117 - TgAA+	6%
138 - TgAA-	7%
14 were possibly hypothyroid with TgAA+	1%
248 classified as other/undiagnosed	13%
non-thyroid related	
medication	
hypothyroid with normal TSH	
hyperthyroid	

Causes of Hypothyroidism (rate of autoimmune : idiopathic)

Overall (all breeds/mixes)	50:50
Boxers	70:30

Predisposition to hypothyroidism definitely has a genetic component.

Most dogs are found to be at certain stages at a specific age:

Stage 1	2-3 years old
Stage 2	4 years old
Stage 3	6-7 years old

Of 171 dogs with TgAA+:

>50% showed no symptoms

~25% showed symptoms of Stage 1

~14% showed symptoms of Stage 2

~15% showed symptoms of hypothyroidism

Of dogs found to have TgAA+ with no symptoms:

- 1 in 20 will become hypothyroid within 1 year
- 1 in 5 will have early/partial failure of the thyroid
- 6-15% will become TgAA-

Reluctant to discuss fertility problems related to hypothyroidism:

- The relationship is controversial
- The relationship is generally seen only in textbook hypothyroid cases

Flank alopecia in Boxers is more often not hypothyroid-related - it is generally seasonal follicular dysplasia.

Giving kelp to a TgAA+ dog will progress subclinical to clinical faster than anything else.

As far as testing: check the heart first, then the thyroid. Hypothyroidism can cause dysrhythmias. Thus, if the dog is diagnosed with (f.ex.) FVA and hypothyroid, low-dose treat the hypothyroidism first. (High doses are commonly given.)

MHC Complex in humans is associated with hypothyroidism.

Thyroid screening

- **Fasting preferred**
- **Estrus in females is not a consideration**
- **Age - start at 1 year**
- **If the animal is obviously sick, do not do the test**
- **Vaccination will change the TgAA levels, but not usually to over 200%**
- **(could wait 2-3 months after giving vaccination to do test)**
- **Steroid drugs will interfere with test results**
- **Antihistamines may interfere**

Hypothyroidism and allergies often show the same problems at the same rates; they are not necessarily causative of each other.

Adrenal Diseases

Hypoadrenocorticism (Cushing's)

85-90% of cases are pituitary dependent

Adenoma, adenocarcinomas are adrenal dependent.

Iatrogenic (caused by external factors) - usually due to exogenous steroids (not produced by the body)

Cushings in canines:

- **Generally occurs in mid-old age (7-8+ years)**
- **Females affected more often than males**
- **Signs include:**
 - **Polydipsia (excessive thirst)**
 - **Polyuria (excessive urination)**
 - **Polyphagia (excessive hunger)**
 - **Muscle wasting, weakness, potbelly, panting**

- **Skin thinning, calcinosis cutis (calcium deposits in the skin), pigment changes**
- **Hair loss (symmetrical)**
- **Reproductive dysfunctions**

Methods for diagnosis (many false positives are found)

- **Low-dose dexamethasone**
- **ACTH response test**
- **Urinary cortisol:creatin ratio**
- **For steroid-induced: alkaline phosphatase test**

Differential diagnosis:

- **Dexamethasone suppression (low, hi, mega)**
- **Endogenous ACTH**

Aggressive treatment of Cushing's can cause the opposite condition (Addison's disease).

Symmetrical

Alopecia

Causes can be endocrine, non-endocrine, or unknown (as in seasonal flank alopecia).