Ultrasound for Detecting Hypothyroidism

Although hypothyroidism is one of the most common endocrine disorders in dogs, diagnosis can be difficult. The clinical signs of hypothyroidism are quite variable and may be vague. Some animals have abnormal findings on thyroid function tests when they have nonthyroidal illnesses or euthyroid sick syndrome. Several drugs can also affect thyroid function and the results of thyroid function tests. A combination of several findings is required to diagnose a hypothyroid dog, including history, clinical signs, and results of thyroid function tests. Common screening tests include baseline tT4 or fT4, canine thyroid-stimulating hormone, and thyroglobulin autoantibody (TgAA). This study evaluated the use of ultrasonography as a tool for investigating thyroid disease in dogs. It involved 87 healthy control dogs, 26 dogs with euthyroid sick syndrome, 20 hypothyroid dogs with positive TgAA, and 23 hypothyroid dogs with negative results on TgAA. The thyroid glands were assessed by size, echogenicity, and homogeneity. Volume of the thyroid lobe was calculated by an ellipsoid formula: vol (ml) = \( \frac{4}{3} \pi \times \text{length (cm)} \times \text{width (cm)} \times \text{height (cm)} \). Thyroid volumes were related to metabolic body weight (BW0.75) to compare the variables of dogs of different sizes. The maximum cross-sectional area of the thyroid lobes was measured and related to metabolic body weights. Arbitrary cutoff values were assigned for relative thyroid volume, maximum cross-sectional area, and echogenicity; the cutoff value that yielded the highest sensitivity, specificity, and accuracy for canine hypothyroidism was thyroid volume. Thyroid ultrasonography may be an important ancillary diagnostic tool to distinguish between hypothyroid dogs and dogs with the euthyroid sick syndrome.

**COMMENTARY:** Diagnosing hypothyroidism, especially in sick dogs, can be a frustrating challenge. Having additional techniques will be helpful to confirm the disease. Thyroid sonography is routinely used in human medicine but has not been thoroughly evaluated for use in veterinary medicine. Although the technique of sonography of the thyroid gland was introduced several years ago, this is the first published report demonstrating that it may be useful in differentiating between dogs with hypothyroidism and those with euthyroid sick syndrome.—Patricia Thomblison, DVM, MS

*Thyroid sonography as an effective tool to discriminate between euthyroid sick and hypothyroid dogs. Reese S, Breyer U, Deeg C, et al. J VET INTERN MED 19:491-498, 2005*