

Introduction to Canine Hypothyroidism

Cause

Canine hypothyroidism is caused by progressive destruction of the thyroid glands by either lymphocytic thyroiditis or idiopathic atrophy. The underlying cause of these pathologies is unknown but some dogs appear genetically predisposed. It has been suggested that functional failure occurs once approximately 75 percent of the thyroid glands have been destroyed.

Signalment and Clinical Signs

Any breed can be affected: Clinical signs can be extensive but over 75 percent of cases have **both** dermatological and metabolic abnormalities. Dermatological signs include an “endocrine” alopecia often affecting the flanks, thighs, neck and dorsum; hyperpigmentation, skin thickening, poor quality hair coat, excess scurf and scale, seborrhoea and secondary pyoderma. Metabolic signs include weight gain (*it is a myth that all hypothyroid dogs are fat but many will have recently put on some weight*), exercise intolerance, lethargy, mental dullness, excessive sleeping. Less common clinical manifestations include peripheral neuropathies, corneal lipidosis, subnormal reproductive performance (*females*), amongst many others.

Diagnostic Tests

Routine biochemistry usually demonstrates hypercholesterolaemia (*often marked*) and haematology frequently shows a mild poorly regenerative anaemia. The most important reason for performing these routine tests is to help eliminate the presence of nonthyroidal illness that may subsequently interfere with the results of thyroid function tests. Total T_4 is invariably subnormal in hypothyroidism and so a “normal” total T_4 strongly suggests euthyroidism. However, subnormal results are also very common in euthyroid dogs and this test cannot be used in isolation. Thyrotropin (*thyroid stimulating hormone, cTSH*) is increased in 80 percent hypothyroid dogs due to loss of the negative feedback effect of thyroid hormones on the pituitary gland. Combined total T_4 and cTSH is an inexpensive reasonably reliable screening profile for hypothyroidism. Free T_4 is less affected by nonthyroidal factors than total T_4 and so low values although still not 100% confirmatory for hypothyroidism are more suggestive of it than low total T_4 values. Free T_4 is particularly useful in dogs with decreased total T_4 and reference range cTSH results since if due to nonthyroidal illness (*usually responsible for this combination of results*) then free T_4 is generally in the reference range. Note: Free T_4 must be measured by equilibrium dialysis (*the method used by Axiom*). Ensure that if you request free T_4 from any laboratory that this is the method used. Thyroglobulin antibodies (*TgAb*) are present in dogs with lymphocytic thyroiditis: the most common cause of hypothyroidism. The presence of TgAb are a very specific test for thyroid pathology and in the presence of reduced thyroid function and appropriate clinical signs strongly support hypothyroidism. A negative TgAb result is of little diagnostic significance since this is common in hypothyroid and euthyroid dogs.