The hair of the dog

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A surprisingly large number of dogs suffer from hyperadrenocorticism. The symptoms are caused by excessive amounts of hormones – glucocorticoids – in the body. Unfortunately, though, diagnosis of the disease is complicated by the fact that glucocorticoid levels naturally fluctuate and most methods for measuring the concentration of the hormones in the blood provide only a snapshot of the current situation. Recent research at the University of Veterinary Medicine, Vienna has shown that glucocorticoids accumulate in the animals' hair and that analysis of a dog's hair can provide quick and reliable preliminary diagnosis. The results are published in the current issue of the journal Veterinary Dermatology.

Just over a century ago, Harvey Cushing published an account of a young woman who showed unusual symptoms because her glands were making excessive amounts of something. Subsequent research has shown that the thing in question is a set of hormones known as glucocorticoids that are produced by the adrenal glands, so "Cushing's disease" is now more commonly known as hyperadrenocorticism, at least by those who can pronounce it. The condition is particularly common in dogs, particularly as the animals grow older. Most cases result from a tumour in the pituitary gland but some relate to tumours in one of the adrenal glands themselves.

Natural aging or serious disease

One of the main problems with the diagnosis of hyperadrenocorticism is that the symptoms appear only gradually, so owners and vets are initially

likely to overlook them or to attribute them to other causes, such as general old age. Cushing's disease is associated with excessive drinking (and urination) and overeating, leading to a pot-bellied appearance, as well as with loss of hair. All of these symptoms can stem from a wide variety of causes so even when a vet suspects that an animal might have Cushing's disease it is difficult to be certain. Unfortunately, the methods commonly used to test for the condition are complicated and costly – and generally only give information about the hormone concentrations at the time a sample is taken, when the animal might have unusually high levels because of the stress associated with the examination.

Analysis of dog hair reveals hormonal imbalance

Claudia Ouschan and colleagues at the University of Veterinary Medicine, Vienna decided to look for a way to monitor the long-term levels of glucocorticoids. As the hormones are known to be present in hair, at least in humans, Ouschan reasoned that measuring glucocorticoid concentrations in dog hair might represent a way of diagnosing Cushing's disease without causing the animals unnecessary distress. She thus compared the levels of cortisol, corticosterone and cortisone in the hair of twelve dogs with hyperadrenocorticism and ten healthy dogs. The results were striking: all three hormones were found at far higher levels in the hair of dogs with Cushing's disease than in the control group, with the increase in cortisol particularly pronounced.

The importance of the finding is clear. As Ouschan says, "we have shown that the level of cortisol in dogs' hair is much higher when the animals have hyperadrenocorticism. Measuring cortisol in hair is so much easier and less painful to the animal than other tests for the disease and we think it has real promise for use as a rapid and non-invasive method to diagnose hyperadrenocorticism."

More information: