



HYPERADRENOCORTICISM (or Cushings)

What is Cushing's Disease?

Cushing's Disease is a disease in which the adrenal glands overproduce certain hormones. The correct medical term for this disease is Hyperadrenocorticism.

The adrenal glands produce several vital substances which regulate a variety of body functions and are necessary to sustain life. The most widely known of these substances is cortisol which is commonly and incorrectly known as 'cortisone'. Either deficient production or excessive production of these substances may be life-threatening.

How does this disease occur?

There are three mechanisms by which this disease can occur. Regardless of the cause, the clinical signs are essentially the same. It is important to identify the cause, however, because the various forms are treated differently and have different prognoses.

- 1. Iatrogenic.** Iatrogenic Cushing's Disease means that the excess of 'cortisone' has resulted from excessive administration of synthetic cortisones. This may occur from oral or injectable medications over a long period. Although the injections or tablets were given for a legitimate medical reason, their excess is now detrimental. Occasionally use of ointment containing cortisone or its derivatives over a long period of time can result in excessive intake due to absorption through the skin or eyes or to the dog licking the product.
- 2. Adrenal gland tumour.** Cushing's Disease may be the result of a benign or malignant tumour of the adrenal gland. If benign, surgical removal cures the disease. If malignant, surgery may help for a while, but the prognosis is less favourable than for a benign tumour.
- 3. Pituitary gland tumour.** The most common cause of Cushing's Disease (85% of all cases) is a tumour of the pituitary gland. The tumour may be either benign or malignant. The tumour causes the pituitary to overproduce a hormone which stimulates the adrenal glands. Excessive cortisol secretion results. The tumour may be either microscopic or quite large. Depending on the size of the tumour, the presence of signs other than Cushing's will be variable. Generally, if the activity of the adrenal gland can be controlled, the dog will live a relatively normal life. Unfortunately, this is sometimes not the case. However, many dogs with this form of Cushing's Disease can live normal lives for many years as long as they take their medication and stay under close medical supervision. Growth of the pituitary tumour would give the patient a less favourable prognosis.

What are the clinical signs?

The most common clinical signs associated with Cushing's Disease are a tremendous increase in appetite, water consumption, and urination. Lethargy, or lack of activity, and a poor hair coat are also common. Many of these dogs develop a bloated appearance to their abdomen due to an increase of fat within the abdominal organs and a stretching of the abdominal wall as the organs get heavier. The pot-bellied appearance also develops because the muscles of the abdominal wall become weaker. The skin frequently appears paper thin. Panting is another common finding with this disease.

How is it diagnosed?

A number of tests may be necessary to confirm a diagnosis of Cushing's Disease and further tests may be needed to decide which form of the disease is present. All these tests involve taking blood samples, sometimes at timed intervals. Although some of these tests are expensive, they are necessary for a definitive diagnosis. Sometimes an ultrasound examination may be required to eliminate the possibility of an adrenal tumour.

What are the treatment options?

- 1. Iatrogenic Cushing's Disease:** Treatment of this form requires a discontinuation of the 'cortisone' that is being given. This must be done in a very controlled manner so that other consequences do not occur. Unfortunately, it usually results in a recurrence of the disease that was being treated by the 'cortisone'. Because there may have been adverse effects on the adrenal glands, treatment is also needed to correct that problem.
- 2. Adrenal Tumour.** Treatment of an adrenal tumour requires major surgery. Although this surgery is not without risk, if it is successful and the tumour is not malignant, there is a good chance that the dog will regain normal health.
- 3. Pituitary Tumour.** Treatment of the pituitary-induced form of Cushing's Disease is the most complicated to treat. Two drugs (Trilostane or Mitotane) are available to destroy the abnormal adrenal tissue or suppress cortisol function. If not enough drug is used, the abnormal tissue persists and the disease continues. If too much is used, most or all of the adrenal cortex will be destroyed, which can be life-threatening. Therefore, careful monitoring of the dog is necessary in order to achieve good results. Because the pituitary is not being affected by the treatment, it continues to stimulate the adrenal gland. This means that continued treatment is necessary. Although a cure is not achieved, control is possible for many years if the tumour is small. If the tumour is large, local effects of the tumour invading surrounding tissues in the head can be the limiting factor in survival.

Instructions for the treatment of the pituitary-induced form

Treatment of this form involves an **initiating phase** and a **maintenance phase**. The **initiating phase** arrests the disease and restores the dog to a more normal state. Some of the clinical signs, especially increased food and water intake, should stop within the first 1-3 weeks. Other signs, such as a poor hair coat or a bloated abdomen, may take several weeks or months to correct. The **maintenance phase** represents the phase of long-term therapy. This phase lasts the rest of the dog's life.

Food and water intake should be monitored. Both should return to a normal level. Normal water intake is approximately 60 mL/kg body weight per day. However water should not be restricted. If your dog weighs ____kg the normal daily intake should be approximately ____ml. Food amount should also be measured each day feeding at least two meals a day but not exceeding a total daily intake of ____g.



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Initiating Phase

1. Your veterinary surgeon will have given you precise instructions regarding the medication and when it will be necessary to examine your dog again. However if any of the following occur, please contact your veterinary surgeon without delay.
 - a) water intake appears to drop dramatically
 - b) appetite drops dramatically
 - c) your dog does not eat a regular meal
 - d) if any vomiting or diarrhoea occurs
 - e) if the patient becomes unusually listless
2. If any of the above occur it may be necessary to perform a monitoring blood test (ACTH stimulation test). This test should be done early in the morning and will require your dog to be hospitalised for the day or part of the day. If the test is abnormal, the initiating phase will continue. If the test is normal, the maintenance phase will begin.
3. If any of the above signs occur, further or alternative medication may be instituted without delay. Follow the instructions given by the veterinary surgeon very carefully. If in any doubt at all, contact the practice. It is really important that there is close cooperation between owner and the veterinary surgeon at the beginning of any treatment for Cushing's Disease.
4. Report any other changes in your dog's behaviour that are out of the ordinary. The disease and treatment can result in abnormal behaviour. However, your dog can also have other diseases that occur concurrently but independently of Cushing's Disease. It is important that we differentiate between the two situations so that proper treatment can be taken.
5. Do not despair. Although a serious disease, many dogs with Cushing's Disease enjoy greatly improved quality of life for many years.

Maintenance Phase

Once stabilised, medication will be routine with regular check ups. Again your veterinary surgeon's instructions, particularly regarding recalls or reports regarding progress must be strictly complied with. An ACTH stimulation test will be necessary about every 3-4 months to be sure that regulation is satisfactory. At the appropriate time, the specifics of the maintenance phase will be explained.

Written by P Honson 2017