

Cushing's Syndrome in a Dog

Nilüfer AYTUĞ*

Yavuz NAK**

SUMMARY

Cushing's Syndrome was diagnosed in an eight years old female Poodle. RIA, cortisol level measured during dexamethasone suppression test. Syndrome was diagnosed based on the dexamethasone suppression test, clinical symptoms and abdominal radiograph.

ÖZET

Bir Köpekte Saptanan Cushing Sendromu Olgusu

Sekiz yaşlı dişi bir Poodle'da Cushing Sendromu olgusu saptandı. Dexamethason supresyon testi uygulanarak RIA cortisol düzeyleri belirlendi. Dexamethason supresyon testi, klinik bulgular ve abdominal röntgen bulgularına göre tanı konuldu.

INTRODUCTION

Cushing's Syndrome or hyperadrenocorticism is the clinicopathologic manifestation of excess glucocorticoid production or administration¹. Although mature dogs of any breed are effected, Poodles, Boston Terriers, Dachshunds and Boxers are the most predisposed breeds^{2,3}.

* Department of Internal Medicine, Uludağ University, Veterinary Faculty, Bursa-Turkey.

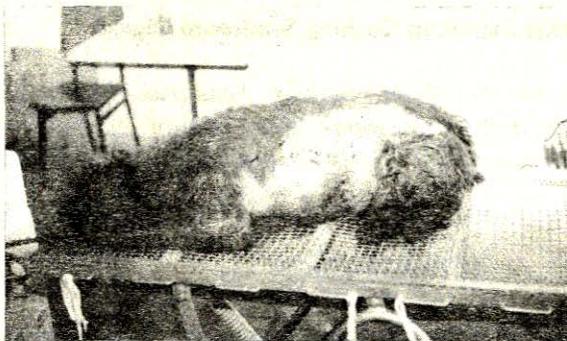
** Department of Obstetrics and Gynecology, Uludağ University, Veterinary Faculty, Bursa-Turkey.

The disease is insidious in onset and slowly progresses over a period of time⁴. Cushing's Syndrome has typical clinical signs³. Findings, common to all dogs with hyperadrenocorticism are polydipsia, polyuria, nonpruritic alopecia and an enlarged pendulous or flaccid abdomen, but these manifestations vary considerably among individual dogs. The absence of estrus in the bitch has also been reported as an early sign¹.

Patients with Cushing's Syndrome usually have elevated morning cortisol level and the lack of normal diurnal decline in the cortisol production⁵. Radioimmunologic quantification of cortisol in serum has become a well established procedure for diagnosis of hyperadrenocorticism in dogs^{6,7}. For diagnostic purposes cortisol is usually measured in samples collected during an adrenocorticotropic (ACTH) response or a dexamethasone suppression test⁸.

MATERIALS AND METHODS

An 8 years old, Poodle was presented because of seasonal bilateral alopecia (Fig. 1 and 2). Dexamethasone suppression test was performed. This test includes measurement of cortisol levels after dexamethasone suppression⁹. In this test, RIA plasma cortisol concentrations determined before and 3, 5, 8 hours after administration of a low dexamethasone dose (0.01 mg/kg, dexamethasone sodium phosphate) in a normal dog and a dog with hyperadrenocorticism.



*Fig: 1
Alopecia on
the left side*



*Fig: 2
Alopecia on
the right side*

RESULTS

The dog had a history of enlarged abdomen, lethargy, polydipsia and polyuria for two or three years. Exercise tolerance was reduced. Estrus cycle activity has been ceased three years ago. When the dog presented to our clinic an experimental laparotomie was applied and it has been observed that the dog had a genital anomalia (Fig. 3). The abdominal radiograph of the dog was normal. The results of dexamethasone suppression test in a normal dog and the dog suspected Cushing's Syndrome are shown in Table I.

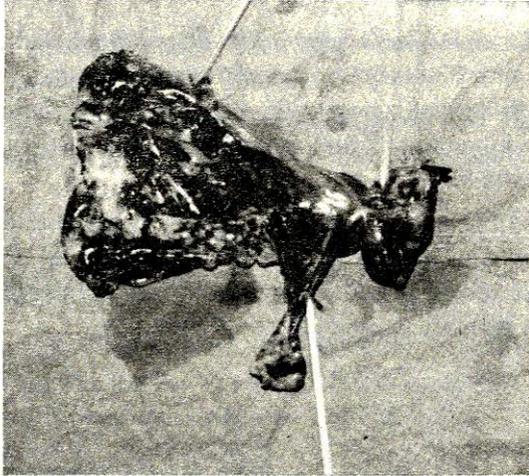


Fig.: 3

- a) Atrophic ovarium. The dog has only one ovarium.
- b) Atrophic cornu uteri.
- c) Normal cornu uteri. Cornu uteries are joining at the point "a".

Table: I
Plasma Cortisol Values in The Dogs

	Normal Dog ug / dl	Patient ug / dl
Resting	2.8	34
Dexamethasone supression		
after 3 hours	1.2	14
after 5 hours	1.0	10
after 8 hours	0.6	26

DISCUSSION

Secretion of endogenous ACTH can be suppressed with dexamethasone in normal dogs. Plasma cortisol concentrations rapidly declines and remains suppressed for 24-48 hours⁸.

It has recently been shown that 75 % of dogs with Cushing's Syndrome clear dexamethasone from their plasma within a three hours period. Plasma dexamethasone concentrations in healthy dogs persist for more than eight hours. Thus dexamethasone clearance rates were altered in dog with Cushing's Syndrome¹⁰. If dexamethasone is rapidly cleared, it can not be present to cause persistent suppression of cortisol.

No cortisol suppression occurs in the dog with adrenal tumors. In about one third of dogs with Pituitary Dependent Hyperadrenocorticism (PHD) cortisol is suppressed to normal concentrations in two and five hours after injection, but escape from suppression occurs at the sixth to eight hours, with cortisol rising to presuppression levels¹¹.

As shown in Fig. 4, a transient suppression occurred in the dog with Cushing's Syndrome during the testing period. This results of screening test with the abdominal radiograph and clinical symptoms showed that hyperadrenocorticism in this dog is pituitary dependent.

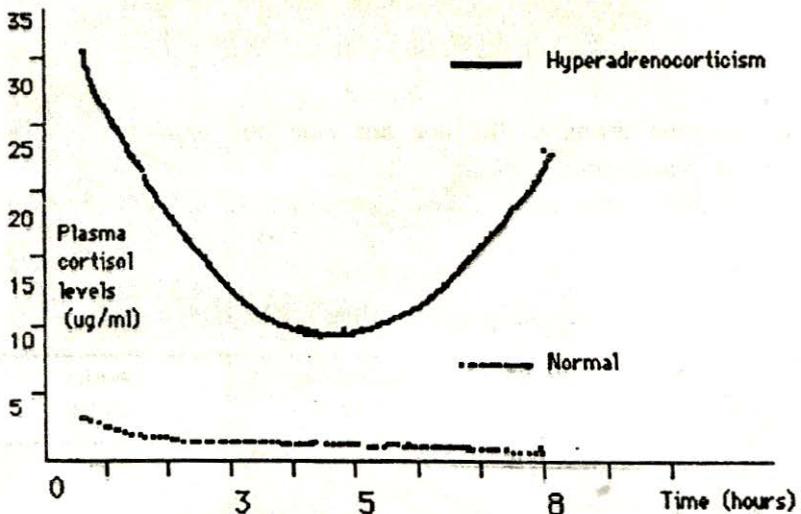


Fig: 4

Plasma cortisol responses during low-dose dexamethasone screening in normal dog and the dog with hyperadrenocorticism

REFERENCES

1. SCHECTER, R.D.: Hyperadrenocorticism in Current Veterinary Therapy VI, Small Animal Practice. Ed. by Kirk, R.W., W.B. Saunders Company, Philadelphia, London, Toronto, 1027-1032 (1977).
2. LYMANN, R.: Hyperadrenocorticoid dermatopathy (Cushing's Syndrome) in Quick Reference to Veterinary Medicine. Ed. by Fenner, W.R., J.B. Lippincott Company, Philadelphia, Toronto, 114-115 (1982).
3. LING, G.V.: Canine Hyperadrenocorticism: Pretreatment clinical and Laboratory evaluation of 117 cases, JAVMA, 174 (11), 1211-1215 (1979).
4. FRASER, C.M.: The Merck Veterinary Manual. Sixth Edition, Merck Co., Inc., Rahway, N.J., USA, 261-269 (1986).
5. BERKOW, R.: The Merck Manual of Diagnosis and Therapy, Published by Merck Sharp Dohme Research Laboratories, Rahway, N.J., 1056-1058 (1987).
6. PREIMERS, T.J.: Effects of age, sex and body size on serum concentrations of thyroid and adrenocortical hormones in dogs, Am. J. Vet. Res., 51 (3), 454-457 (1990).
7. KIRK, R.W., BISTNER, S.I.B., FORD, R.B.: Handbook of Veterinary Procedures and Emergency Treatment. 5th Edition, W.B. Saunders Company Harcourt Brace Jovanovich, Inc, 634-637 (1990).
8. LOTHROP, C. D. and OLIVER, J.W.: Dagnosis of canine Cushing's Syndrome based on multiple steroid analysis and dexamethasone turnover kinetics. Am. J. Vet. Res., 45, 2304-2308 (1984).
9. FELDMAN, E.C.: Comparison of ACTH response and dexamethasone suppression as screening tests in canine hypercorticism, JAVMA, 183, 195-198 (1983).
10. TOUTAIN, P.L.: Pharmacokinetics of dexamethasone and its effects on adrenal gland function in the dog, Am. J. Vet. Res., 44, 212-215 (1983).
11. REUSH, C.E., FELDMAN, E.C.: Canine hypercorticism due to adrenocortical neoplasia. Pretreatment evaluation of 41 dogs. Journal of Veterinary Internal Medicine, 5 (1), 3-10 (1991).