

Cabergoline therapy against hyperadrenocorticism in a dog

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Abstract

A 9-year-old male Labrador dog was presented to Small Animal Medicine Unit of VCRI, orathanadu with a history of chronic skin infection for the past 6 months. Clinical examination revealed alopecia, skin thinning, calcinosis cutis and comedones with pendulous abdomen. Laboratory examination revealed increased ALP and hyperglycemia. Hepatomegaly and bilateral adrenal gland hyperplasia were noticed on ultrasonography. Based on clinical and ultrasonographic findings it was diagnosed to have hyperadrenocorticism. The dog was treated

Keywords: Cabergoline, Comedones, Dog, Hyperadrenocorticism.

Cushing disease (Hyperadrenocorticism) referred to an endocrine disease of dogs with excessive circulatory glucocorticoids (Ettinger *et al.*, 2017) owing to excessive endogenous cortisol production (Adrenal adenoma / Pituitary adenoma) or excessive exogenous cortisol administration (Iatrogenic) (Palui *et al.*, 2018). Naturally occurring hyperadrenocorticism was common in dogs, of which 80-85% of cases have pituitary dependent hyperadrenocorticism and 10-12% cases were due to adrenal dependent hyperadrenocorticism (Sanders *et al.*, 2018). Dogs with Cushing's disease exhibit polyuria, polydipsia, polyphagia, pendulous abdomen, muscle weakness, bilateral alopecia, obesity, comedones, calcinosis cutis, excessive panting and thin skin (Kooistra and Galac, 2010). Diagnosis of endogenous hypercortisolism can be made through Low Dose Dexamethasone Test (LDDT), High Dose Dexamethasone Test (HSST) and Urine Cortisol Creatinine Ratio (UCCR) (Peterson, 2007). Mitotane, Trilostane and Ketoconazole were used as standard treatment of choice for canine Cushing disease (Sanders *et al.*, 2018), Cabergoline could be used as effective therapy for dogs with Cushing disease (Palui *et al.*, 2018). Cabergoline has a long-acting dopamine agonist action, mostly used for treatment of prolactinoma (Sanders *et al.*, 2018). Canine corticotroph adenoma express dopamine D2 receptor, which inhibits ACTH secretion and decrease the circulating blood cortisol level (Castillo *et al.*, 2008). So, the present dog with hyperadrenocorticism was treated with cabergoline.

Case History and Clinical Observations

Canine patient name Oreo, a 9 Years old male Labrador dog was presented with a history of chronic

skin infection and treated locally for the past 6 months. The owner had witnessed bilateral swelling of ventral abdomen with gradual decline in the body condition, especially in term of physical activity. Physical examination revealed obese, generalized alopecia, skin thinning, Comedones (fig. 1a), calcinosis cutis (fig.1b) on ventral abdomen along with testicular atrophy. Rectal temperature, pulse rate, heart rate and respiratory rate were found to be within normal range. Haematology was revealed neutrophilia (88%) and increased WBC (16,500/cmm) counts. Serum biochemical analysis was showed hyperglycemia (194mg/dl), increased alkaline phosphatase (871 U/L) and alanine transaminase (121 U/L), whereas BUN (24mg/dl) and creatinine (1.3 mg/dl) level were found to be normal. Abdominal ultrasonography revealed hepatomegaly (fig. 2a) and bilateral enlargement of adrenal glands (fig. 2b). The above clinical signs and ultrasonographic findings were highly suggestive of hyperadrenocorticism.

Treatment and Discussion

The dog was treated with cabergoline @ 0.07 mg/kg P.O for every 3 days for a period of 3 months. Mild clinical improvement was noticed from first month of treatment. On subsequent months of treatment comedones, calcinosis cutis and ventral abdomen distension were disappeared. Hair growth was evidenced and the dog was returning to full physical activity after 3 months of treatment. Pendulous abdomen could be due to combination of muscle weakness, fat redistribution and hepatomegaly. Catabolic effect of cortisol causes muscle weakness. Cortisol causes breakdown of dermal protein (hypocollagenosis) which causes the skin to appear almost thin paper like. Calcinosis cutis would be due to crystalline deposition of calcium and

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phosphorous in dermal collagen. Comedone was due to excess follicular keratin (Bruin *et al.*, 2008). Increased alkaline phosphatase (871 U/L) could be due to the result of glycogen accumulation and hepatocellular vacuolation. Alanine transaminase (121U/L) was also increased owing to hepatocyte damage. Hepatomegaly could be due to excess glycogen accumulation in the hepatocyte (Boatright, 2021). Present case was successfully managed by using Cabergoline. This is long-acting dopamine receptor agonist. Corticotroph cells of pituitary adenoma have dopamine receptor (80% D2 receptor). Cabergoline bind to dopamine receptor

D2 and inhibit ACTH. Oral administration, low cost and good tolerability of cabergoline makes it an attractive treatment option for Cushing's disease (de Bruin *et al.*, 2009 and Palui *et al.*, 2018). But only a few small observational studies has been done with cabergoline against Cushing's disease. In future, expanded use of cabergoline could help to increase the survival inturn helps to lead quality of life in dogs. The aim of this case was to determine the efficacy and safety of cabergoline monotherapy in dog with Cushing's disease. In future, studies comparing cabergoline with other standard treatments were needed to get conclusive evidence.



Fig. 1a. Clinical signs showed comedones on ventral abdomen.



Fig. 1b. clinical signs showed calcinosis cutis on ventral abdomen

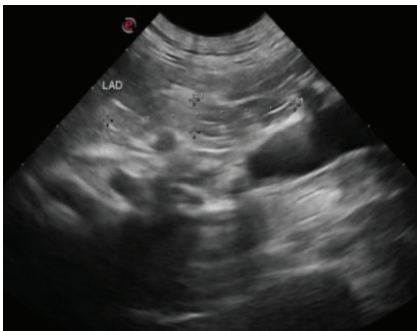


Fig. 2a. Ultrasonography of adrenal gland (left) showing hyperplasia

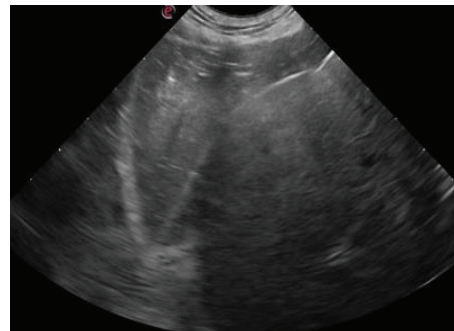


Fig. 2b. Ultrasonography of liver showing hepatomegaly



Fig. 3. Clinical recovery after 3 months of therapy

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