THERAPEUTIC MANAGEMENT OF HYPOTHYROIDISM IN A DACHSHUND BITCH

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Introduction

There are number of factors causing hypothyroidism, which ultimately alter the metabolic status of animal and therefore affecting the efficiency of animal. Hypothyroidism is the natural deficiency of thyroid hormone; it may occur either due to iodine deficiency which is caused by deficient iodine intake (Gupta *et al*., 2010) or due to impaired production or secretion of thyroid hormone resulting in reduced metabolism. It is one of the most commonly encountered hormonal disorders in dogs with incidence rate at about 1:150 to 1:500 (Chastain and Panaciera, 1995). The condition can be produced by immune mediated destruction of thyroid cells, by natural atrophy of the gland, by dietary iodine deficiency or as a congenital problem. Active thyroid hormone is necessary for normal metabolism. Thyroxine is required for normal cellular activity in all cells of the body and thus clinical signs vary depending upon the stage of disease and also the breed of the animal. Though it is very common problem in dogs, many times it poses a challenge to veterinarians.

Case history

A Dachshund, seven-year-old, 21 kg bitch was presented to Teaching Veterinary Clinical Complex, Pantnagar, Uttarakhand with the history of chronic skin affections, along with weight gain, inability to walk properly, weakness, early exertion and tendency to feel comfort in sun for the last 5 months. Pet keeper reported that the dog has been previously treated for skin affections with ciprofloxacin, ivermectin, chlorpheniramine maleate and multivitamin syrup but dog showed no improvement.

Clinical examination

Clinical examination revealed rough brittle hair coat and seborrhoea, symmetrical bilateral alopecia on lateral abdomen, spectacled appearance around the eyes, pale mucus membrane, and generalized obesity. Skin scrappings were found negative for fungal hyphae and mites. Rectal temperature (99.7^{o}F), respiration (17/min), heart rate (96/min) was within the normal range. Haemogram showed anaemia, neutrophilia and lymphocytopoenia. There was increased alkaline phospahatse, creatinine kinase and TSH level along with hypercholesterolaemia and low serum thyroxine level.

As the case presented here hypothyroidism is common in middle age dogs i.e. at the age of 4-10 years and mostly dogs of pure breeds like Golden and Labrador Retrievers, Doberman Pinschers, Irish Setters, Dachshund, Cocker Spaniel and Terrier are more susceptible for this condition. There does not appear to be sex predilection, but spayed females appear to be at greater risk (Kahn and Line, 2005).

Clinical signs observed in the present case correlates with signs described by many workers. Typical clinical signs are exercise intolerance; lethargy and weight gain (Bischel *et al.,* 1988). A high proportion of dogs develop dermatological signs (Budsberg *et al.,* 1993) based on duration and severity of the disease and the affected dogs have dry skin having dark pigmentation and alopecia which begins at areas of friction like at the tail region resulting in characteristic “rat tailed appearance” and neck area which progress in advance stage to trunk area. In some breeds like Retrievers nasal alopecia is also observed. In dogs, low level of T_4 is highly suggestive of hypothyroidism rather than elevated TSH level (Jonklass and Talbert, 2014). Myxedema, puffy appearance, tragic facial expressions are commonly seen clinical findings. Dogs suffering from hypothyroidism are known as “heat seekers” as there is difficulty in maintaining body temperature. Various reproductive disorders can be seen in intact dogs and bitches (Kahn and Line, 2005). Hypercholesterolaemia is found in about 70% cases and normocytic, normochromic non regenerating anaemia in 30% cases which represent physiological response to lowered basal metabolic rate. Mild to moderate increase in serum activity of ALT, AST, AP and CK may be noted (Schear, 2010). Neurological abnormalities are uncommon in dogs (Mooney, 2011). Based on clinical signs, haematological and serum biochemistry, the present case was diagnosed as primary hypothyroidism. Haemato-biochemical values are tabulated in Table 1.

Treatment

The dog was treated by Levothyroxine sodium @ 20 µg/kg body weight orally, twice daily initially for 15 days along with ointment Dexoderm®[1] topically on skin lesions. Feeding of formulated diet (Royal Canin-Obesity DP34®) was initiated with objective to reduce obesity. After 15 days owner reported improvement in the condition of dog and treatment was continued for next one month. After one month all clinical signs were resolved and treatment was further continued with Levothyroxine sodium @ 20 µg/kg body weight orally once daily as maintenance dose.

Thyroid replacement therapy with levothyroxine sodium which most closely resembles the T4 secretion of thyroid gland is treatment of choice. There are various treatment regimes which suggests that dog should be maintained on levothyroxine

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Dexoderm®- MICRO LAB LTD.- (Ofloxacin 0.75%w/w, Ornidazole 2%w/w, Terbinafine 1%w/w, Clobestasol Propionate 0.05%w/w)

Table 1: Haemato-biochemical values in Dachshund bitch

Parameters	Values
Haemoglobin (gm%)	9.7 ↓
TLC (/µl)	7300
Neutrophils (%)	85
Lymphocytes (%)	6
Eosinophils (%)	5
Monocytes (%)	4
Alkaline phospahatse (µ/L)	153 ↑
Creatine kinase (µ/L)	186 ↑
Cholesterol (mg/dL)	302 ↑
Glucose (mg/dL)	73
Serum thyroxine (T4) (nmol/L)	8.2 ↓
Endogenous thyrotropin (thyroid-stimulating hormone; TSH) (nmol/L)	0.95 ↑

sodium @ 0.02 mg/kg orally in divided dose, twice daily, until all clinical signs are resolved, before an attempt is made to medicate once daily (Plumb, 1999). In this case, the dog was kept on levothyroxine sodium, twice daily, until clinical sign were resolved followed by once daily medication. Replacement therapy is required for life.

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