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Incidence study of canine hypothyroidism in Bidar district of Karnataka

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Abstract
The present research study was conducted to record the incidence of Canine hypothyroidism in Bidar. Among 1864 canine cases with various disorders were presented to TVCC, Veterinary college, Bidar, were examined for the clinical signs suggestive of hypothyroidism among them 17 dogs diagnosed positive by CLIA method and 11 dogs were diagnosed positive by RIA method for hypothyroidism accounting for an overall incidence rate of 0.91per cent and 0.59 per cent respectively. It was found that incidence of hypothyroidism was highest in dogs aged between 4-6 years, female dogs were more prevalent to hypothyroidism as compared to male dogs with Labrador breed dogs to be more susceptible. higher prevalence of 60 per cent was recorded in the Labrador Retriever breed dogs, followed by Golden retriever breed (20%) Spitz (10%) and non-descript (10%).

Keywords: Canine hypothyroidism, Labrador retriever breed, golden retriever breed, clinical signs

Introduction
Dogs are the one of the oldest domesticated animals in the world. The health status of dog is influenced by its genetics, nutrition, surrounding environment and physical activity. Diseases of dogs may be of various etiologies such as infectious, nutritional, hereditary, metabolic and endocrine. Canine hypothyroidism is the most frequently diagnosed endocrinopathy in dogs. Hypothyroidism is a clinical syndrome resulting from a deficiency of the active thyroid hormones triiodothyronine (tT3) and thyroxine (tT4). Although considered a common endocrine disorder of dogs, its exact prevalence is largely unknown. The reported prevalence ranges from 0.20 to 0.80% (Panciera, 1994) [18]. Perusal of literature suggests paucity of reports of canine hypothyroidism in the Karnataka and no studies were undertaken in Bidar.

Materials and Methods
The study was conducted in the Department of Veterinary Medicine, Veterinary Clinical Complex, Veterinary College Bidar, Karnataka. Dogs presented to Veterinary Clinical Complex, Veterinary College, Bidar showing clinical signs of Canine hypothyroidism such as obesity, lethargy, inactiveness, exercise intolerance, rat tail appearance, bilateral alopecia, hyperpigmentation, Hyperkeratosis, and recurrent skin infections were screened for thyroid profile and considered for the study.
Incidence of Canine hypothyroidism in and around Bidar was studied by retrospective data. For retrospective study, cases presented to Teaching Veterinary Clinical Complex (TVCC) of Veterinary College, Bidar from January 2022 to December 2022 were considered. Further, prevalence of the disease was categorized as: prevalence of canine hypothyroidism with regards to age of the affected animals; sex of affected animals and breed of the affected animals.

Results and Discussion
Incidence of Canine Hypothyroidism
Epidemiological study of Canine Hypothyroidism has been undertaken in many parts of the country and all over the world. However, Review of the available literature indicated paucity of information in Bidar, Karnataka. Hence a study was carried out from January 2022 to December 2022 for incidence study.
In this study the overall incidence rate of hypothyroidism was found to be 0.91 per cent and 0.59 per cent by CLIA and RIA method respectively. Ettinger and Feldman (2000) [7] and Dixon (2001) [5] reported prevalencerange of 0.20-0.80 per cent and 0.20-0.64 per cent.

Panciera (1994) [18] and Ziener *et al.* (2015) [11] reported prevalence as 0.20 per cent and 2.70 per cent worldwide. Sunilkumar (2009) [19], Gulzar *et al.* (2014) [9], Kour *et al.* (2020) [12], Roopali *et al.* (2020) [21], Raja *et al.* (2021) [20] reported prevalence of canine hypothyroidism as 0.31 per cent in Bengaluru district of Karnataka, 0.46 per cent in Hyderabad, 0.40 per cent in Hisar, 0.174 per cent in Ludhiana, 1.28 per cent in 3 districts of Chhattisgarh state respectively.

Age-wise Incidence of Canine Hypothyroidism

The present study revealed that the age-wise incidence of hypothyroidism was highest in animals of 4-6 years age group (47.06%) followed by 2-4 years age group (23.53%), above 6 years age group (17.65%) and below 2 years age group (11.76%). The findings of present study were in accordance with Durga (2007) [6], Das *et al.* (2013) [3], Gulzar *et al.* (2014) [9], Kour *et al.* (2020) [12] reported highest prevalence in middle aged dogs.

Sex-wise Incidence of Canine Hypothyroidism

The present study revealed that the sex-wise incidence of hypothyroidism Canine Hypothyroidism was higher in females (58.82%) compared to males (41.18%) which is in agreement with Milne and Hayes (1981), Dixon *et al.* (1999) [4], Gulzar *et al.* (2014) [9], Kour *et al.* (2020) [12]. In contrary Gupta (2016) [10], Roopali *et al.* (2020) [21] recorded a higher prevalence in males, whereas Dixon (2001) [5], Beaver and Haug (2003) [1], Raja *et al.* (2021) [20] reported that male and female dogs were equally susceptible to hypothyroidism and Dixon *et al.* (1999) [4] and Ghodasara *et al.* (2013) [8] documented that gender had no influence on the prevalence of hypothyroidism.

Breed-wise Incidence of Canine Hypothyroidism

The present study revealed that the higher incidence of the disease was in pure-bred dogs (94.12%) compared to non-descript dogs (5.88%).

In breed wise prevalence study, the highest prevalence of Canine hypothyroidism was noted in Labrador retriever (47.62%), followed by Golden retriever (29.41%), Spitz (11.76%), Pug (11.76%) and in the non-descript (5.88%) the incidence was lowest. Results of the study were in accordance with Srikala (2010) [22], Gulzar *et al.* (2014) [9], Gupta (2016) [10], Roopali *et al.* (2020) [21], Kour *et al.* (2020) [12], they reported highest incidence in Labrador retriever followed by other breeds of dogs, whereas, Panciera (1994) [18], Dixon *et al.* (1999) [4], Daminet *et al.* (2003) [2], Lathan (2012) [13], Das *et al.* (2013) [3] reported that Golden retrievers and Doberman pinscher as most prone breed to hypothyroidism. In contrary Lewis *et al.* (2018) [14], O'Neill *et al.* (2022) [17] documented that occurrence of hypothyroidism was highest in mixed breed and crossbreed dogs.

In this study higher prevalence of hypothyroidism is could be due to limited number of dogs screened for the disease and it was the most common breed presented to clinics during the study period. Mooney (2011) [16] reported that breed predisposition in hypothyroidism is mainly due to hereditary and many genetic risk factors responsible for development of disease.

Conclusion

Incidence study of the disease guides to know the occurrence and pattern of a disease among the animal population. From the present study it is concluded that an overall incidence of Canine Hypothyroidism was recorded to be 0.38 per cent in Bidar, Karnataka. Incidence of hypothyroidism was found to be highest in dogs aged between 4-6 years. Hypothyroidism was more prevalent in female dogs as compared to male dogs with Labrador breed dogs to be more susceptible to hypothyroidism.

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