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Study on prevalence of certain dermatological conditions in canines in Garividi region of Andhra Pradesh

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Abstract

The present study was taken to determine the prevalence of dermatological disorders in canines based on clinical presentation, examination of skin scrapings and hemato-biochemical tests that were presented to Veterinary Clinical Complex, College of Veterinary Science, Garividi during the period from March 2022 to August 2022. The overall prevalence of dermatological disorders in dogs was 33.4%. The highest prevalence was recorded in male dogs (58.3%) and among breeds Labrador retriever has highest incidence of 30.8%. The prevalence was high in less than one-year-old dogs (42.3%). Alopecia, Pruritis and Erythema were the significant clinical manifestations. Whole blood and serum were collected for hemato-biochemical tests. The various etiologies included were ectoparasites (ticks, mites and fleas) with highest prevalence of 37.8% of which Demodex Spp., has the highest incidence followed by pyoderma (23.1%) and lowest incidence was recorded in dogs with atopic dermatitis (4.5%).

Keywords: Prevalence, dermatological conditions, canines, skin, etiology

Introduction

Skin problems are one of the most common presented issues in dogs, with a wide range of causes, from external parasites like fleas and mites to allergies and serious endocrine disorders. Several clinical studies have indicated that dermatological disorders make up a large proportion of the small animal patients. It has been estimated that from 20.00% to 75.00% of the cases seen in the average small animal practice have skin problems as a chief or concurrent owner complaint (Javad., *et al.* 2013) [8].

A precise diagnosis of the causes of a skin disease requires a detailed history, physical examination and appropriate diagnostic tests *viz.*, detailed examination of skin which includes microscopic analysis of skin scrapings and hair, cultures of hair or skin swabs, specialized skin tests, blood tests and biopsies. Many skin diseases have similar signs and an immediate diagnosis may not be possible. Therefore, the present study was carried out to determine the prevalence of different skin diseases in dogs that were presented to Veterinary Clinical Complex, Garividi, Andhra Pradesh and to look for epidemiological factors associated with their occurrence.

Materials and Methods

The present study was carried out in the Veterinary Clinical Complex, College of Veterinary Science, Garividi during the period from March 2022 to August 2022. Dogs presented with clinical signs suggestive of dermatological conditions were included in the study. History, clinical signs, age, sex, breed and other clinical parameters were recorded. The data so collected was analyzed as per Snedecor and Cochran (1994) [19] to determine epidemiological pattern of various skin disorders in dogs. Skin scrapings from the dogs suspected for mite infestation were collected and examined by the method of Soulsby (1982) [20]. The scrapings were collected from the 'recently rubbed' or 'appeared raw' lesions. Examination of skin scrapings for the mite was done by direct method and by using 10% potassium hydroxide solution. Whole blood was collected for evaluation of packed cell volume (PCV), hemoglobin (Hb), total leucocyte count (TLC), total erythrocyte count (TEC) and differential count by standard methods and serum for estimation of total protein, globulin and thyroid levels (in suspected cases).

Results and Discussion

A total of 467 dogs were presented with the various clinical illness to the Veterinary Clinical Complex, Garividi during March 2022 to August 2022 of which 156 animals were presented with dermatological problems with a prevalence rate of 33.4%. Raja, *et al.* 2018^[14] reported prevalence of 32.56% of dermatological disorders (Fig.1). Praveen and Sudhanshu (2020)^[13] reported 27.26 per cent of prevalence of dermatological diseases. Prevalence of skin disorders ranging from 15- 25% in dogs had earlier been reported by Scott., *et al.* 2001^[17] and Hill., *et al.* 2006^[7]. Increasing trend of dermatological disorders observed in this study may probably be due to updated knowledge in diagnosis of skin diseases, increasing population of pets, increased awareness among pet owners or due to change in climate conditions (Rajesh, *et al.* 2016)^[15].

The sex wise prevalence of dermatological disorders showed highest prevalence in male dogs with 58.3 per cent (91 dogs) and in females, the prevalence is 41.7% (65 dogs) with non-significant difference of $p < 0.05$ (Fig.2). The findings of the present study is similar to that of Javad, *et al.* 2013^[8], Pratibha, *et al.* 2000^[12] and Khurana, *et al.* 2016^[9] who reported that male dogs were found to suffer from various skin diseases more as compared to female dogs. The occurrence in the present study according to the sex isn't drawing any conclusion as more number of male dogs were presented to the clinics or the people in this particular region prefer male dogs over females.

In the present study less than one year dogs showed highest prevalence with 42.3% followed by 1 to 2 years (24.4%), 2 to 4 years (18.6%), 4 to 6 years (10.9%) and lowest (3.8%) in more than 6 years old dogs (Fig.3). A very similar finding was noticed by Geetanjali and Samar (2018)^[6], and Singh, *et al.* 2012^[18] who reported the highest occurrences of dermatitis in dogs in the age group of <1 year (36.54% and 40.90%) followed by 1-2 years (26.92% and 22.44%), 2-3 years (20.51 and 21.08%) and the lowest in the age group 3-4 years (16.03% and 4.28%), respectively. and Khurana, *et al.* 2016^[9] also reported maximum occurrence of dermatological problem in canines at the age group of below 1 year (40.90%) followed by the age group of 1-2 years, 2-4 years and the least in the age group of above 4 years of age. This might be due to early weaning of puppies, poor juvenile immune system which is unable to produce specific and sufficient antibodies to protect skin infection from different factors (Ardeth, 2002)^[2] and might be attributed to constant exposure to the pathogen. High nutrition demand and vagaries in the climate may also increase the susceptibility of young animals to skin infection.

Labrador Retriever was the breed with highest prevalence of 30.8% with dermatological disease followed by Spitz (23.07%), Non Descriptive (19.9%) and German Shepherd (13.5%) and the lowest prevalence was recorded in Rottweiler (4.5%), Dachshund (3.2%), Lhasa Apso (2.6%) and Terriers (1.92%) with the least prevalence in Chow Chow (0.64%) (Fig.4). Sarma, *et al.* 2013^[16] and Geetanjali and Samar (2018)^[6] reported breed predisposition to the dermatological disorders with highest incidence in Spitz followed by Labrador, Pomeranian and Non-descriptive. Abhishek and Haque, 2015 also reported highest prevalence in Spitz followed by the native dogs and German shepherd. However, the difference in the findings might be due to the popularity of a certain breed in an area as stated by Pocta and Svoboda (2007)^[11]. The popularity of the particular breed in the examined area can affect the results of the breed predilection to dermatological disorders.

Among the dogs presented with various skin lesions the

predominant clinical signs noticed were Pruritis, erythema, alopecia, papules, pustules, crusts, scabs as localized and generalized lesions.

The hemato-biochemical investigation of the dermatological problems in the present study revealed decreased level of hemoglobin, PCV and TEC with non-significant difference ($p < 0.05$). The total leucocyte counts in the dermatologically affected dogs showed elevated values with significant difference ($p < 0.05$). Neutrophilia and eosinophilia was highly evident findings in the dogs affected with skin diseases. The mean serum protein values were increased with decrease in serum albumin with non-significant difference ($p < 0.05$). In five dogs, a marked decrease in T3 and T4 were noticed with an increased level of TSH contributing to hypothyroidism with chronic dermatological lesions. The findings were similar to that of Geetanjali and Samar (2018)^[6] and Lodh and Das (2014)^[10]. Decreased PCV and TEC indicating anaemia in infected dogs might be due to loss of skin protein due to excessive scratching and stress arising from the diseases (Deb, *et al.* 2000)^[4] and also due to less food intake caused by clinical illness and discomfort. Neutrophilia might be due to the injury to the cells which causes the release of substances like leukotoxins and leukocytosis promoting factors from the blood to the site of injury resulting in the release of more neutrophils in the blood stream as stated by Lodh and Das (2014)^[10]. Increase in the level of eosinophil might be due to irritation of the skin tissues which stimulated the mast cells to release more histamine and since histamine is chemotactic for eosinophils, eosinophilia develops (Aujla, *et al.* 2000)^[3]. Increased serum protein in the present study might be due to the increased inflammatory responses produced by various pathogens involved in skin disorders. The antigens were trapped in the Langerhan's cells, which were the prominent antigen presenting cells of the skin immune system and presented the antigens to T- lymphocytes (Devi and Vijayakumar, 2013)^[5].

However, in the present study 8.0% of the cases were diagnosed with no laboratory investigation as either the owners didn't report on time or the dog is not cooperative.

The etiology contributing to the present study was grouped as ectoparasites (ticks, mites and fleas), Pyoderma, Malasseziosis, Mixed infection, Hypothyroidism, Atopic dermatitis and Others (Nutritional deficiency/food allergies etc.). The highest prevalence was recorded in Ectoparasite infestation (37.8%) of which Demodex Spp., has the highest incidence (54.23% of ectoparasites) followed by pyoderma (23.1%) and Mixed infections (14.1%). Malassezia infection contributed to 11.53% and 5.8 per cent was recorded in other infections. Atopic dermatitis was causative factor in 4.5% cases and the least prevalence was observed in hypothyroidism with 3.2 per cent (Fig.5). The findings were similar with Singh, *et al.* (2012)^[18] who reported highest prevalence of parasitic dermatitis (34.82%) followed by bacterial (25%), fungal (18.75%), non-specific (14.28%) and nutritional (7.14%). Geetanjali and Samar (2018)^[6] also reported dermatological problems due to parasitic (30.78%) followed by bacterial (28.85%), fungal (18.58%), mixed skin infections (12.82%) and 8.97% were of the non-infectious type which might be due to hypothyroidism, nutritional deficiencies or canine atopic dermatitis. However, Javad, *et al.* (2013)^[8] reported that the main dermatological problems in dogs encountered were superficial bacterial folliculitis, flea infestation/allergy, tick infestation, atopic dermatitis, scabies, unspecified dermatoses, otitis, furunculosis and food allergy. The variation in the prevalence of etiologies might be due to endemic nature of particular skin diseases in that area and cases presented to the hospital.

All the dermatological disorders were treated with the specific therapeutic plan for that specific etiologies with nutraceuticals that owed to the good clinical outcome.

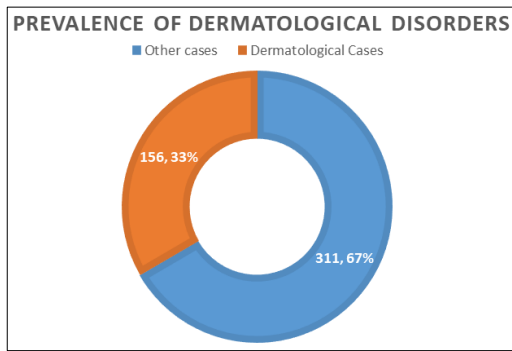


Fig 1: Prevalence of Dermatological Disorders in Dogs

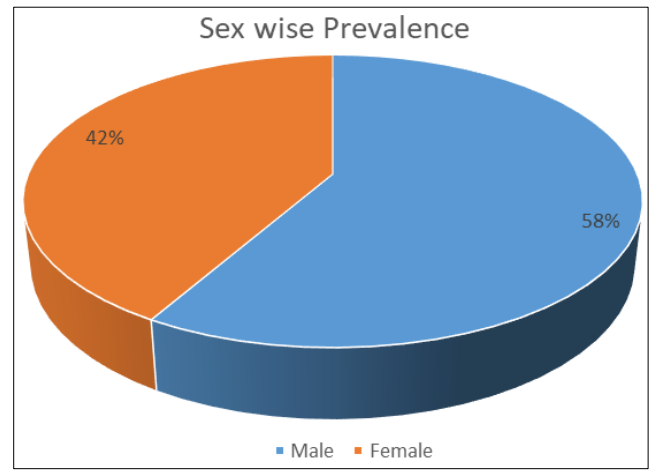


Fig 2: Sex wise dermatological conditions in dogs

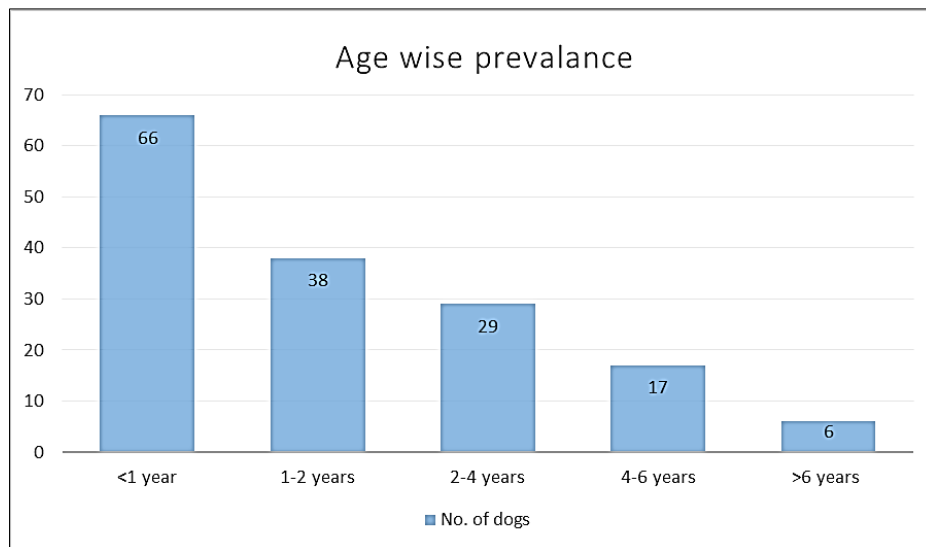


Fig 3: Age wise prevalence of dermatological disorders

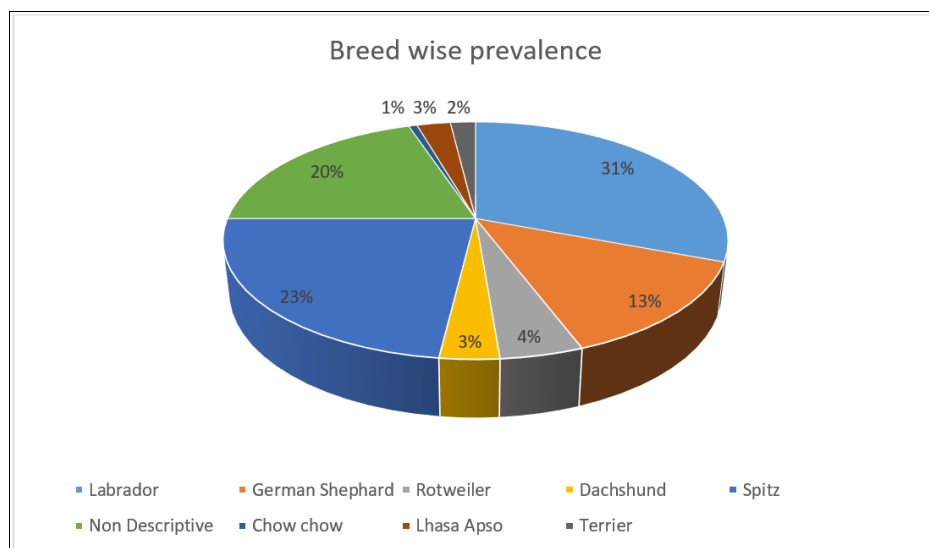


Fig 4: Breed wise prevalence of dermatological disorders

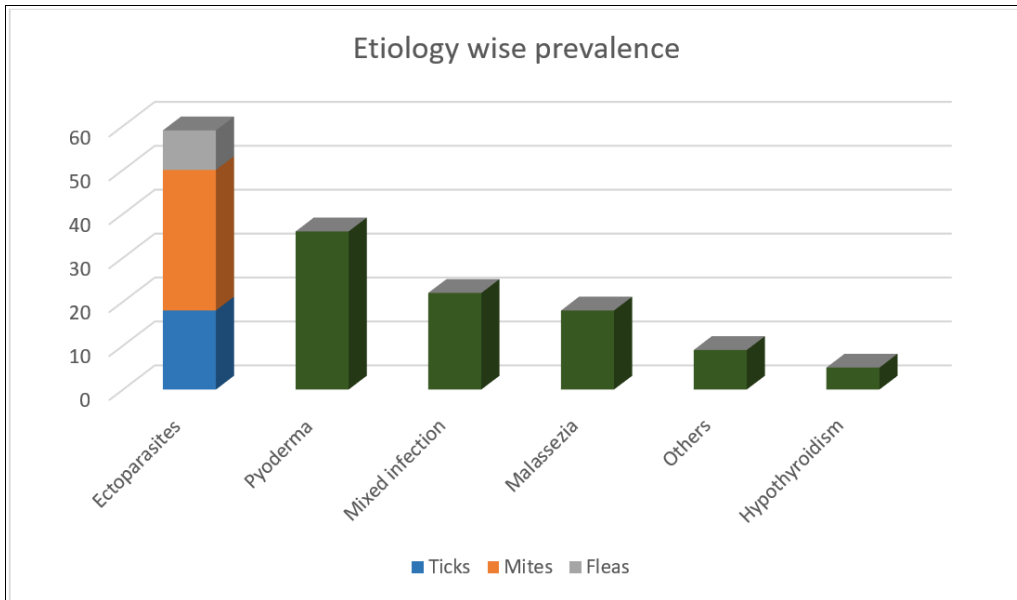


Fig 5: Etiological Prevalence of Dermatological Disorders



Plate 1: Demodicosis affected dog



Plate 2: Mixed infection (Demodicosis with pyoderma)



Plate 3: Pyoderma in a dog



Plate 4: Malassezia infected dog



Plate 5: Hypothyroidism in a dog



Plate 6: Demodex Spp., in Skin scraping

Conclusion

In the present study, dermatological disorders had prevalence of 33.4% with highest prevalence in less than one-year-old age group, male and with breed predisposition in Labrador breed. Detailed examination, clinical signs, laboratory evaluation of blood and skin scrapping along with culture of bacteria or fungi/yeast played a pivotal role in diagnosing skin disorders. Dermatitis related with ectoparasites mainly of demodectic mange, pyoderma followed by mixed infection is of major and chief worry to canine species. The epidemiological data along with hemato-biochemical parameters helps to improve the case administration, maintain a strategic distance from significant confusions and accelerate the anticipation.

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