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Epidemiological study of bacterial dermatitis in dogs of Wayanad district

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Abstract

A survey was undertaken to determine the epidemiology of bacterial dermatitis in dogs presented at the Teaching Veterinary Clinical Complex (TVCC), College of Veterinary and Animal sciences Pookode, from April 2017 to June 2018. Dogs of all age groups, breeds and both sexes with clinical signs of dermatitis were included in the study. Sterile swabs were used to collect samples aseptically from the dogs that showed clinical lesions of canine bacterial dermatitis. Samples were taken for culture and isolation of bacteria was done. There was no statistically significant difference among different age groups, however the highest occurrence was observed among dogs between 1-3 years (39.44 %) and out of 71 animals, 39 (54.93 %t) male dogs were positive for bacterial dermatitis, but no statistically significance among different sexes was observed. Among the various breeds studied, the highest occurrence was noticed in Labrador retrievers (23.94 per cent) when compared to other breeds but no statistically significance difference among different breeds was observed. Identification of bacterial isolates was done based on colony character, Gram's staining, oxidase test, catalase test, oxidative fermentative test and growth in specific media. A total of 71 bacterial isolates were obtained. Bacterial isolates obtained were Staphylococcus species (84.51 %), Streptococci (7.04%), Micrococci (5.63 %), and Pseudomonas species (2.82 %).

Keywords : *Epidemiology, bacterial dermatitis, Staphylococci, Streptococci, Micrococci, Pseudomonas*

Pyoderma is one of the most frequently encountered skin diseases presented to veterinary dermatologists and may account for 20 to 75 per cent of cases at Veterinary hospitals (Stegemann *et al*., 2007). In dogs, secondary bacterial infection may arise consequent to local trauma, scratching, poor grooming and resultant contamination, seborrhoea, parasitic infestation, hormonal factors, local irritants and allergies (Bajwa, 2016). Among different dermatological disorders the

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incidence of canine pyoderma was found to be 12.71 per cent and it was the third most frequently diagnosed skin disorder (Udayasree and Usha,2005). Staphylococcal pyoderma can also cause secondary complication with fungal infection and Malasseziosis (Daniel *et al.,* 2021).

The purpose of this study was to understand the influence of age, sex and breed on the occurrence of canine pyoderma and to identify organisms that caused bacterial dermatitis in dogs in Wayanad district.

Materials and methods

Samples

The present study was carried out at the Teaching Veterinary Clinical Complex (TVCC), College of Veterinary and Animal sciences Pookode, from April 2017 to June 2018. Dogs with clinical signs suggestive of bacterial dermatitis were included in the study. On presentation of the animal to the University Hospital, information on history, age, sex, breed, clinical signs *etc.,* were recorded. Before collecting samples, hair around the lesion was clipped and the area was shaved, swabbed with 70 per cent ethanol and air dried. Samples were collected using sterile cotton swabs kept in a screw capped tube. In the case of pustules, these were first swabbed and then opened using a sterile scalp or needle and touch swabs from the exudates were collected. In the case of crusty lesions, the crust was lifted and touch swabs were collected from beneath the crust. Samples collected were brought to the laboratory as early as possible for culture.

Isolation of bacterial organisms

Isolation of bacteria was attempted from pus by direct streaking on to Brain Heart Infusion agar (BHIA) followed by incubation of the plates at 37 ˚C for 24 hours. Plates were examined after 24 to 48 hours. Isolated colonies were selected and a representative sample was streaked on to BHIA slants for further identification. The isolates were stained by Gram's Method and depending on the preliminary characters, selective media were used. The isolates were identified based on morphology, cultural characteristics and biochemical tests as per Barrow and Feltham (1993) and Quinn *et al*. (2013).

Statistical analysis was done using SPSS version 24. Variables with $p<0.05$ were considered as statistically significant.

Results and discussion

Clinical signs

Dogs presented had generalised lesions, primary lesions and secondary lesions. Primary lesions included papules, pustules, nodules, erythema and alopecia. Secondary lesions were scales, crust, epidermal collarette, hyperpigmentation and pruritis. Similar lesions were observed in a study by Borio *et al.* (2015).

Age wise occurrence

The analysis of data on the occurrence of bacterial dermatitis revealed that this condition was observed in 28 dogs (39.44 per cent) between the age group 1-3 years followed by 18 dogs (25.34 per cent) below 1 year and the least occurrence of this condition was in dogs above 6 years (12.67 per cent) (Table 1). There was no statistically significant difference among the different age groups. The results were in close accordance with the observations of Shyma and Vijayakumar (2012).

Sex wise occurrence

Out of the 71 animals infected, 39 animals were male and 32 animals were female (Table 2). Though male dogs were affected to a greater extent, when compared to female dogs this difference was not statistically significant. The results were in concordance with those reported by Khurana *et al*. (2016).

Breed wise occurrence

The highest occurrence of bacterial dermatitis was noticed among Labrador Retrievers (23.94 per cent) followed by the German Shepherd (16.91 per cent), Pug (12.67 per cent), Rottweiler (11.27 per cent), Dachshund (8.44), Doberman (7.04 per cent), non-descript dogs (5.63 per cent), the Spitz

Table 1. Age wise occurrence of bacterial dermatitis in dogs

Sl. No.	Age Group	Number of infected dogs	Per cent (%)
1	Less than 1 year	18	25.35^{ns}
2	1-3 years	28	39.44^{ns}
3	3-6 years	16	22.54^{ns}
4	Above 6 years	9	12.67^{ns}
Total		71	100

ns – non- significant P<0.05

Table 2. Sex wise occurrence of bacterial dermatitis in dogs

Sl. No.	Sex	Number of infected dogs	Per cent (%)
1	Female	32	45.07^{ns}
2	Male	39	54.93^{ns}
Total		71	100

ns – non-significant P<0.05

Table 3. Breed wise occurrence of bacterial dermatitis in dogs

Sl. No.	Breed	Number of infected dogs	Per cent (%)
1	Boxer	1	1.41^{ns}
2	Dachshund	6	8.44^{ns}
3	Doberman	5	7.04^{ns}
4	Dalmatian	2	2.82^{ns}
5	German Shepherd	12	16.91^{ns}
6	Great Dane	2	2.82^{ns}
7	Labrador Retriever	17	23.94^{ns}
8	Non-descript	4	5.63^{ns}
9	Pug	9	12.67^{ns}
10	Pitbull	1	1.41^{ns}
11	Rottweiler	8	11.27^{ns}
12	Spitz	3	4.23^{ns}
13	Siberian Husky	1	1.41^{ns}
Total		71	100

ns – non-significant P<0.05

(4.23 per cent), Great Dane, Dalmatian (2.82 per cent) and the Siberian Husky, Boxer and Pitbull (1.41 per cent) (Table 3). There was no statistically significant difference among different breeds. The findings agreed closely with those made by Reddy *et al*. (2010).

Isolation and identification

The bacterial isolates obtained from clinical cases of dermatitis revealed that in 84.51 per cent samples *Staphylococcus* spp. was obtained while in 7.04 per cent, 5.63 per cent and 2.82 per cent of samples, *Streptococci*, *Micrococci* and *Pseudomonas* spp. (Table 4) were observed. The results obtained were similar to the findings of Shah *et al.* (2017).

Based on Gram's staining, catalase and oxidase test, 60 isolates were positive for *Staphylococcus* spp. followed by *Streptococci* (5 isolates), *Micrococci* (4 isolates) and *Pseudomonas* spp. (2 isolates) (Table 4). *Staphylococci* were grown in mannitol salt agar for confirmation. *Pseudomonas species* gave greenish yellow coloured colonies and Micrococci were observed as dark yellow coloured colonies in nutrient agar. The biochemical test was carried out as per Quinn *et al*. (2013) (Table 5).

Table 4. Number of bacterial organisms isolated from dogs skin

Sl. No.	Organisms Isolated	No. of isolates	Per cent (%)
1	*Staphylococcus* spp.	60	84.51
2	*Streptococci*	5	7.04
3	*Micrococci*	4	5.63
4	*Pseudomonas* spp.	2	2.82
Total		71	100

Table 5. Differentiation of bacterial isolates obtained

Sl. No.	Organisms	Gram's staining	Catalase	Oxidase	O/F test
1	*Staphylococcus* spp.	+ve cocci in clusters	+ve	-ve	F
2	*Streptococci*	+ve cocci in chains	-ve	-ve	F
3	*Micrococci*	+ve cocci in packets of four	+ve	+ve	O
4	*Pseudomonas* spp.	-ve rods	+ve	+ve	O

Conclusion

The present study revealed that age, sex, and breed of the dog had no statistical influence on the occurrence of canine pyoderma. However, among different breeds, the highest occurrence was observed among the Labrador Retrievers. Among the different age groups, dogs of three years of age were the most affected. Among the different bacterial organisms isolated, *Staphylococcus* spp was the predominant etiological agent.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

Bajwa, J. 2016. Canine superficial pyoderma and therapeutic considerations. *Can. Vet. J.* **57**: 204-206.

Barrow, C. I. and Feltham, R. K. A. 1993. *Cowan and Steel's Manual for the Identification of Medical Bacteria*. (3rd Ed.). Cambridge University Press, Great Britain.331p.

Borio, S., Colombo, S., La Rosa, G., De Lucia, M., Damborg, P. and Guardabassi, L., 2015. Effectiveness of a combined (4% chlorhexidine digluconate shampoo and solution) protocol in MRS and non-MRS canine superficial pyoderma: a randomized, blinded, antibiotic-controlled study. *Vet. Dermatol*. **26**: 339-344.

Daniel, A.K., David, V.P., Ravisankar, C., Sindhu, O.K. and ajithkumar.S.2021. Diagnosis and therapeutic management of malasseziosis in dogs. *J. Vet. Anim. Sci.* **52:** 262-266.

Hill, P.B., Lo, A., Eden, C.A., Huntley, S., Morey, V., Ramsey, S., Richardson, C., Smith, D.J., Sutton, C., Taylor, M.D., Thorpe, E., Tidmarsh, R. and Williams, V. 2006. Survey of the prevalence, diagnosis and treatment of dermatological conditions in small animals in general practice. *Vet. Rec.* **158**: 533-539.

Khurana, R., Kumar, T., Agnihotri, D. and Sindhu, N. 2016. Dermatological disorders in Canines-A detailed epidemiological study. *Haryana Veterinarian.* **55**: 97-99.

Quinn, P., Markey, B., Carter, M. and Carter, G.R. 2013. In: *Clinical Veterinary Microbiology*. (2nd Ed.) Mosby, St. Louis.514p.

Shah, B., Mathakiya, R., Rao, N. and Nauriyal, D.S. 2017. Organisms recovered from cases of canine pyoderma and their antibiogram pattern. *J. Anim. Res.***7**:1067-1073.

Shyma, V.H. and Vijayakumar, K. 2012. Epidemiological studies on bacterial skin infections in dogs. *J. Vet. Anim. Sci*. **43**: 49-51.

Stegemann, M.R., Coati, N., Passmore, C.A. and Sherington, J. 2007. Clinical efficacy and safety of cefovecin in the treatment of canine pyoderma and wound infections. *J. Small Anim. Pract.* **48**: 378-386.

Sudhakara Reddy, B. 2010. *Diagnostic and therapeutic studies on recurrent pyoderma in dogs*. *Ph.D Thesis*, Sri Venkateswara Veterinary University, Tirupati.166p.

Udayasree. V.J. and Usha. N.P. 2005. Epidemiology and symptomatology of canine pyoderma. *J. Vet. Anim. Sci.* **36:** 136-140. ■