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Study on the Prevalence of Skin Infections and their Antibiogram in Canines in Visakhapatnam (Urban)

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Abstract

Skin scrapings and tape impression smears were collected from dogs of different age group, sex and season. All samples were subjected for isolation, identification and Antibiotic Sensitivity Test for etiological agent. A total of 664 samples were collected in Visakhapatnam city for a period of 3 years and analysed. A total of 218 samples were found positive for parasitic (71), yeast (68), bacterial infections (21) and no concurrent infection (?)

Keywords: Skin Scrapings, Mange, Demodectic, Malassezia- Bacterial Infections.

In Canines a variety of different skin infections are common and it is important to know what they are and effective measure to control them. It is one of the common health issues in dogs faced by petowners. Present study was taken up to know the various etiological agents causing skin problems in dogs for a period of three years in and around Visakhapatnam city.

Materials and Methods

Present study was carried out in the veterinary polyclinic, Sri Venkateswara Veterinary University and Regional Animal Disease Diagnostic Laboratory, Visakhapatnam during the period from April 2020 to March 2023. Samples were collected from dogs showing skin lesions. Deep skin scrapings were collected by the method of Soulsby (1982) and tape impressions were also collected. Examination of tape impression smears with methylene blue were carried out as per the method described by Bruner and Blakemore (1999). Examination of skin scrapings for mangemites was done by 10% Sodium hydroxide solution. Tape Impression smears were stained with Loefflers Methylene blue and examined under microscope. The bacterial organisms were isolated, identified on the basis of morphology, cultural and biochemical characteristics as per Cruick Shank *et.al.*(1975).

Results and Discussion

A total of 664 skin scraping samples were received from Veterinary Polyclinic Sri Venkateswara Veterinary University, Visakhapatnam during the years 2020-2023. Out of which 218 samples were found positive (32.8%) for different infections. Scott *et al. (*2001) and Hill *et al*.(2006) reported that prevalence of skin disorders ranging from 15 - 25% in dogs.In the present study the incidence of dog skin infections was more reported due to poor management. Incidence of skin infections for the years 2020-2021 to2022-23

Among positives, the incidence of different pathological agents were categorised as below:

In the present study parasitic dermatitis was reported as 32.5% similar findings on clinicopathological studies in canine dermatitis by Singh *et al.(*2012) reported the occurrence of parasitic dermatitis (34.82%), Lodh and Das (2014) 28.01%, Ayodhya *et al*. (2006) 36.53% and Sharma *et al*.(2009)33.33%.Above studies shows that the incidence of parasitic dermatitis varies from area to area basedon weather conditions prevailed in that area and managemental practices. It was observed that the incidence of

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demodectic mange was 23.8% among parasitic diseases same reported by Shirk (1983) as 21.2%, in canines. The occurrence of bacterial skin infections in the present study was about 9.7% most predominantly staphylococci organisms (7.3%) which was close agreement with Singh *et al*.(2012) 13.61%,UdayaSree and Usha (2005) reported canine pyoderma as 12.71%.In this study mixed infection was 10.5% and it is in correlation with occurrence of canine skin disorders and its Heaemato biochemical alterations by Gitanjali and Samar (2018) where they recorded 12.82%.

Malassezia was occupied second highest (31.2%) of canine dermatitis which is a normal inhabitant of healthy skin Bond *et al*.(1995). Burner and Blacke more *et al*.(1999) considered any organisms readily identified from clinical affected area as potentially pathogenic. Present study where the sample found positive for Malasseziawere collected from dogs which were clinically affected. Though the organism was normal inhabitant of skin but it requires special treatment for complete cure. Non-specific skin infections in canines comes around 10.6% which includes nutritional deficiency, hormonal imbalance and allergy. These findings were closely related by Gitanjali and Samar., (*loc.cit*.) where they reported 14.28% and 7.14% of non-specific and nutrition deficiency respectively.

Present study comparison was made on testing skin scraping with NaOH and with tape impression smear examination by methylene blue. It was observed that examination of skin scraping with tape impression smear by methylene blue was more sensitive when compared to testing skin scrapings with NaoH. The percentage of positivity is more in tape impression. Similar findings were observed on Malassezia pachydermatis in a dog by Ramprabhu et al.,(2003) All the samples which were positive for both bacteria and fungi

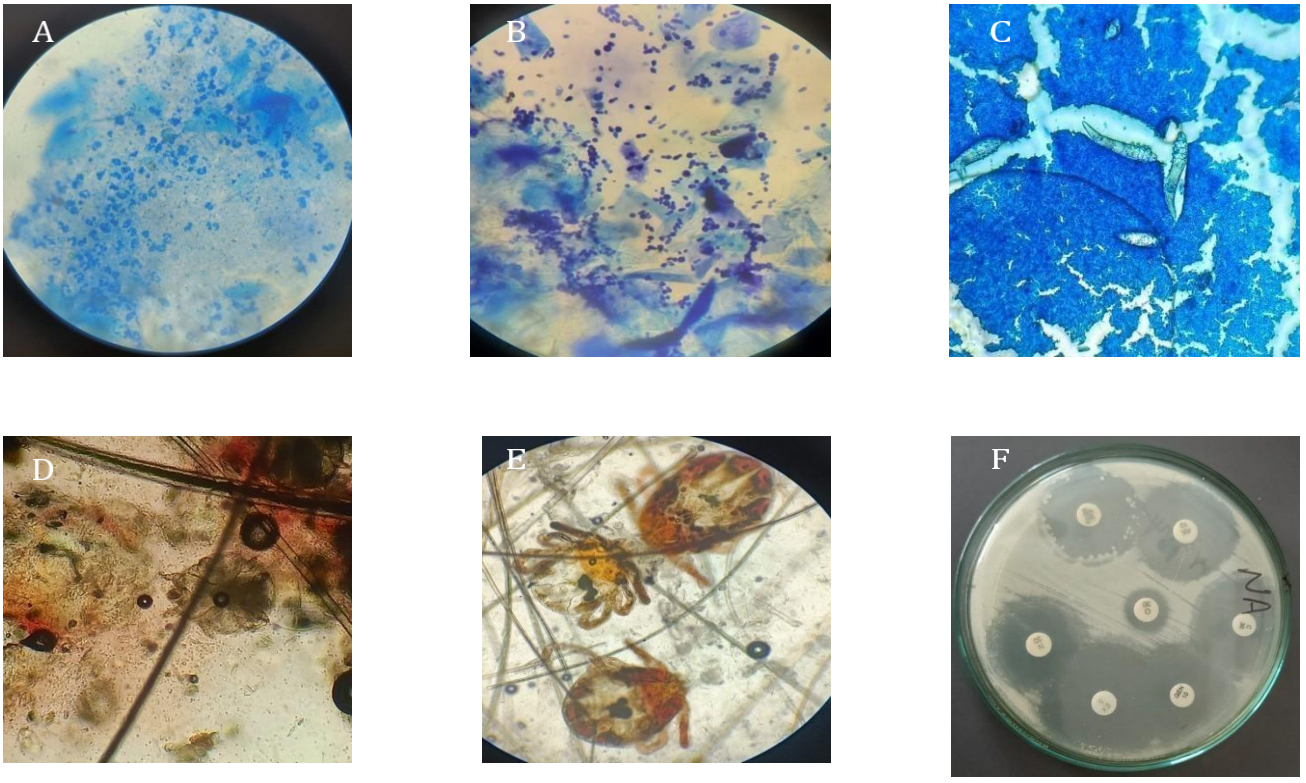
S.No.	Name of the Antibiotic	Sensitive	Resistant
1	Gentamicin	100%	0
2	Doxycycline	100%	0
3	Amikacin	87.5%	12.5%
4	Enrofloxacin	37.5%	87.5%
5	Ampicillin,tetracycline,ceftriaxome,cephalexin,ceftriaxome+sulbactum,cotrimoxazole	0	100%

It was observed skin infections with Staphylococcal organisms were highly sensitive to gentamicin & doxycycline followed by amikacin & enrofloxacin. Present findings were contradictory to findings observed by Prameela *et al*., (2020)

Antibiotic sensitivity pattern for mixed infections (Staphylococci+Malassezia) organism in canine dermatitis. (Number of isolates-23):

S.NC	Pathological agent	Percentage
1	Demodectic mange	23.8%
2	Psoroptic mange	1.4%
3	Sarcoptic mange	7.3%
4	Malassezia	31.2%
5	Fungal	5.5%
6	Staphylococci	7.3%
7	Corynebacterium	2.4%
8	Mixed infection	10.5%
9	Others (Non specific	10.6%

S.No.	year	No. of specimens examined	positives	sarcoptes	psoroptes	Demodex	Malassezia	Staphylococci	Fungal	Mixed	Coryne bacterium	others
1	20-21	138	20	2	0	9	5	3	0	1	0	0
2	21-22	186	102	9	1	24	32	8	12	16	0	0
3	22-23	340	96	5	2	19	31	5	0	6	5	23
	Total	664	218	16	3	52	68	16	12	23	5	23



(A). *Staphylococci sp.* & neutrophil infiltration (B). *Malassezia sp.* (C). *Demodex sp.* (D). *Sarcoptes sp.* (E). Nymphal stage of tick (F). ABST Antibiotic sensitivity pattern for Staphylococci organismin canine Dermatitis. (Number of isolates-32)

Organisms were sensitive for gentamicin, amikacin, ketoconazole and resistant for ampicillin, tetracycline, ceftriaxome+sulbactum, ceftriaxome and cephalexin

Antibiotic sensitivity pattern for Malassezia infections in canine dermatitis.(Number of solates-68): Organisms were sensitive forketoconazole (88%) itraconazole (81.5%) and fluconazole (72%).

Summary

Study showed incidence of parasitic diseases were more common in canines compared to bacterial and fungal infections. For bacterial infections gentamicin and doxycycline antibiotics were very effective in treating skin infections in our study group.

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