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Retrospective Prevalence Study of Mange Cases in Dogs Presented with Skin Lesions/Conditions at the Veterinary Teaching Hospital, University of Ibadan, Ibadan, Nigeria (2007 to 2019)

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ABSTRACT

Canine mange is a skin disease caused by mites that causes itching, alopecia, crusted lesions, and erythema. Studies on canine mange have been carried out in various countries, but in Nigeria, there is a dearth of studies regarding the prevalence of mange in dogs with skin lesions/conditions. The present study was aimed at determining the prevalence of mange cases in dogs presented with skin lesions/conditions at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, between 2007 and 2019 (a twelve-year period). A total of 179 cases of skin lesions/conditions were retrieved from clinical case files of dogs presented to the Veterinary Teaching Hospital, with age, breed, and sex being part of the records considered. Descriptive statistics were used in calculating prevalence, while a chi square was used to test for association. Of the 179 cases, mange was the most prevalent (87.2%; 95% CI: 82.1%–91.6%). Out of these cases of mange, 92.9% (95% CI: 89.1%–96.8%) had scabies, while 7.1% (95% CI: 3.2%–10.9%) had demodicosis. There was no significant association (P > 0.05) between mange and breed or sex. The prevalence of mange was highest in old dogs (96.2%) and lowest in adult dogs (78.3%). There was a significant association between the prevalence of mange and age (P < 0.05). Canine mange is highly prevalent in dogs with skin lesions/conditions presented to the Veterinary Teaching Hospital. Dog owners should spray or dip their pets with an acaricide solution on a frequent basis to reduce mange cases. Fumigation of dog kennels and homes will also help reduce the recurrence.

Keywords: Mange, Demodicosis, Scabies, Canine

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INTRODUCTION

Skin has been described as the largest organ of the body and its protective role against external insults of all forms cannot be overemphasized [1]. Skin conditions in dogs, particularly mange, are among the most difficult problems that veterinarians face in small animal medicine [2]. Skin lesions/conditions are not generally fatal, but they can be chronic in nature and cause significant discomfort, making them a serious welfare concern for dogs [3]. Mange is a parasitic mite-caused skin infection in animals that causes itching, alopecia, crusted lesions, and erythema [4]. *Sarcoptes scabiei* and *Demodex canis* are the mites that cause sarcoptic and demodectic mange in dogs, respectively. Sarcoptic mange causes severe itching, and as a result of scratching, dogs suffer hair loss, open sores, and scabs. Demodectic mange is uncommon and is exclusively transmitted between mothers and their puppies [5].

Mange infestations are diagnosed based on clinical signs; however, they might be confused with other infestations such as ringworm and flea allergies. As a result, confirmation requires laboratory diagnosis by microscopic detection of eggs, nymphs, and adults from skin scrapings [6].

Amitraz rinse and macrocyclic lactones are the most commonly used therapies [7]. Doramectin and ivermectin are the choice of treatment because they are very effective, have rare side effects, and are cost-effective. In dogs with less severe disease, a spot-on solution comprising 10% moxidectin and 2.5% imidacloprid had a greater success rate. Fluralaner, afoxolaner, lotilaner, and sarolaner are members of a new class of ectoparasiticides known as isoxazolines [8].

Several studies on canine mange have been conducted in various countries [6, 9, 10, 11], but there is a dearth of studies regarding the prevalence of mange in dogs with skin lesions/conditions in Nigeria. The present study was aimed at determining the prevalence of mange cases in dogs presented with skin lesions/conditions at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, between 2007 and 2019 (a twelve-year period). The information can be helpful to both canine practitioners and dog owners.

MATERIALS AND METHODS

Study Area

The study was carried out at the Veterinary Teaching Hospital (VTH), University of Ibadan, Ibadan. The VTH is a key animal health delivery facility situated at latitude 7.4417°N and longitude 3.9000°E. The VTH was founded in December 1981, with approval from the University Development Committee and the Senate, to provide clinical training for students at the University of Ibadan's Faculty of Veterinary Medicine. The facility's ongoing expansion, increased numbers of professionals across specialities, and growing popularity as a result of improved patient treatment have resulted in an increase in clients and case referrals from surrounding cities and states.

Data Collection

A total of 179 cases of skin lesions/conditions were retrieved from the clinical case files of dogs presented to the Veterinary Teaching Hospital (VTH), University of Ibadan, Ibadan, between 2007 and 2019 (a twelve-year period). The mange cases were diagnosed in the hospital based on a case history, physical examination, and clinical manifestations. Skin scraping was used in the laboratory to confirm cases using a light microscope. Highly competent and experienced veterinarians performed clinical diagnoses on each dog, while veterinary laboratory scientists performed laboratory examinations. The records analysed include age, breed, and sex.

Age was classified as young (< 6 months), adult (6 months to 5 years), and old (> 5 years). The breed was classified into local and exotic breeds. Sex includes male and female.

Data Analysis

The collected data were summarised using descriptive statistics to calculate prevalence and presented in tables. A Chi-square test was used to test for an association between the prevalence of mange cases and age, breed, and sex. Confidence intervals of 95% were calculated, and values of $P < 0.05$ were considered significant. All statistical tests were conducted using the statistical package for social sciences (SPSS) version 26 (SPSS Inc., Chicago).

RESULT

Of the 179 cases of skin lesions/conditions presented to the Veterinary Teaching Hospital, University of Ibadan, Ibadan, Nigeria, mange was the most prevalent (156; 87.2%; 95% CI: 82.1%–91.6%), while skin abrasion was the least prevalent (2; 1.1%; 95% CI: 0.0%–2.8%). The other skin conditions include myiasis (13; 7.3%; 95% CI: 3.9%–11.2%), bacterial skin infection (5; 2.8%; 95% CI: 0.0%–2.8%), and dermatitis (3; 1.7%; 95% CI: 0.0%–3.9%) (Table 1).

Table 1: Prevalence of mange cases and other cases of skin lesions/conditions in dogs presented at the Veterinary Teaching Hospital, University of Ibadan, Nigeria between 2007 and 2019

Skin condition	Number of cases	Percentage	95% CI
Mange	156	87.2%	82.1% - 91.6%
Myiasis	13	7.3%	3.9% – 11.2%
Skin abrasion	2	1.1%	0.0% – 2.8%
Bacterial skin infection	5	2.8%	1.1% – 5.0%
Dermatitis	3	1.7%	0.0% – 3.9%
Total	179	100%	100% - 100%

Of the 156 mange cases, 145 (92.9%; 95% CI: 89.1%–96.8%) had scabies, while 11 (7.1%; 95% CI: 3.2%–10.9%) had demodicosis (Table 2).

Table 2: Prevalence of demodicosis and scabies cases in dogs presented with skin lesions/conditions at the Veterinary Teaching Hospital, University of Ibadan, Nigeria between 2007 and 2019

Types of mange cases	Number of cases with skin lesion	Prevalence (%)	95% CI
Scabies cases	145	92.9	89.1% – 96.8%
Demodicosis cases	11	7.1	3.2% – 10.9%
Total	156	100	100% – 100%

Regarding breed, 88% (44/50) of the local breeds had mange, while 86.8% (112/129) of the exotic breeds had mange. There was no significant association between the prevalence of mange and breed (X^2 (1) = 0.045, P > 0.05). The prevalence of mange in female dogs (88.6%; 62/70) was higher than in male dogs (86.2%; 94/109). There was no significant association between the prevalence of mange and sex (X^2 (1) = 0.207, P > 0.05). The prevalence of mange was highest in old dogs (96.2%; 25/26) and lowest in adult dogs (78.3%; 54/69). There was a significant association between the prevalence of mange and age (X^2 (2) = 8.281, P < 0.05) (Table 3).

Table 3: Prevalence of mange cases based on breed, age, and sex in dogs presented with skin conditions at the Veterinary Teaching Hospital, University of Ibadan, Nigeria between 2007 and 2019

Variable		No. of cases with skin conditions	No. of mange cases	Prevalence (%)	X^2 value	df	P value
BREED							
	Local breed	50	44	88.0	0.045	1	0.833
	Exotic breed	129	112	86.8			
SEX							
	Male	109	94	86.2	0.207	1	0.649
	Female	70	62	88.6			
AGE							
	Young (< 6 months)	84	77	91.7	8.281	2	0.016*
	Adult (6 months to 5 years)	69	54	78.3			
	Old (> 5years)	26	25	96.2			

* = Statistically significant

DISCUSSION

This particular study engaged an approach of using case files of animal presented to the Veterinary Teaching Hospital for a period of 12 years retrospectively. This is similar to the earlier work of Abiola *et al.* [12], who also conducted a retrospective study for a period of ten years in the same location. Because our study included dogs brought to the clinic from various parts of Ibadan and its environs, the skin lesions or conditions encountered are likely to be the major ones in the region. The high prevalence of mange cases (87.2%) among cases with skin lesions/conditions shows that integumentary lesions caused by mite infestation are highly prevalent. This might be due to dog owners being unaware of the need for mite control programmes.

However, a lower prevalence (7.41%) of mange was reported in Maiduguri, Nigeria, in all the dogs presented to the clinic [13]. The difference in prevalence could be because our study only covered dogs with skin lesions/conditions.

In the present study, scabies (92.9%) was more prevalent than demodicosis (7.1%). This is understandable given that scabies is widespread, infectious, and may spread quickly among dogs [10]. The high prevalence of scabies is reason for worry since it poses a substantial health risk to people due to the fact that scabies may be transferred to humans [14]. The low prevalence of demodicosis might be attributed to the fact that it is not contagious to other dogs under normal conditions. Demodicosis is especially common in animals who are immunocompromised owing to other diseases or are undergoing immunosuppressive therapy [15]. da Silva *et al.* [11] observed a larger number of cases of demodicosis, which they attributed to risk factors such as malnutrition, parturition, and lactation.

Our study shows no significant association between mange and breed, indicating that local and exotic breeds of dogs kept under similar conditions were equally predisposed to mange. This is also consistent with previous literature [10, 16].

There have been no reports that sex is associated with either scabies or demodicosis [17, 18], and the data found in this study support this finding, with both female and male having almost the same prevalence.

Our study shows that there is an association between mange and age, with a higher prevalence in old dogs, followed by young and adult dogs. The cause for this might be the underdeveloped immune system in young dogs and a lower immune status in old dogs compared to adult ones. Other studies on scabies and demodicosis support the findings of this study [3, 19].

In conclusion, canine mange is highly prevalent (87.2%) in cases of skin lesions/conditions presented to the Veterinary Teaching Hospital, University of Ibadan, Nigeria, between 2007 and 2019 (a twelve-year period). To reduce cases of mange, dog owners should spray or dip their pets with an acaricide solution on a regular basis. Fumigation of dog kennels and dwellings will also aid in reducing the reoccurrence.

REFERENCE

1. Akpan MO, Olaogun SC, Rahmon MO. Distribution and histological features of sebaceous and sweat glands in different regions of the skin of tree squirrels in Ibadan, Nigeria. *European Journal of Pharmaceutical and Medical Research.* 2022; 9(10):01-07.
2. Scott DW, Miller WH, Griffin CE. Canine demodicosis. In: Muller & Kirk's Small Animal Dermatology, Philadelphia, PA: WB Saunders 6th ed. pp. 2001; 457-476.
3. Feather L, Gough K, Flynn RJ, Elsheikha HM. A retrospective investigation into risk factors of sarcoptic mange in dogs. *Parasitology Research*. 2010; 107:279-283.
4. Pence DB, Ueckermann, E. Sarcoptic manage in wildlife. *Revue scientifique et technique (International Office of Epizootics).* 2002; 21(2):385-398.
5. Beugnet F, Halos L, Larsen D, de Vos, C. Efficacy of oral afoxolaner for the treatment of canine generalised demodicosis. *Parasite*. 2016; 23.
6. Ali A, Hameed K, Mohsin M, Khan W, Rafiq N, Iqbal MA, Kabir M, Hassan HU, Usman T, Kamal M. Prevalence and risk factors assessment of mange mites in livestock of Malakand Division, Pakistan. *Saudi Journal of Biological Sciences*. 2021; 28(11):6480-6487.
7. Parwari M, Mandali GC, Parmar JM. Comparative Efficacy of Different Treatment Regimens of Miticidal Drugs in the Clinical Management of Canine Generalized Demodicosis. *Indian Journal of Veterinary Sciences & Biotechnology*. 2022; 18(1):13-16.
8. McTier TL, Chubb N, Curtis MP, Hedges L, Inskeep GA, Knauer CS, Menon S, Mills B, Pulllins A, Zinser E, Woods DJ, Meeus P. Discovery of sarolaner: A novel, orally administered, broad-spectrum isoxazoline ectoparasiticide for dogs. *Veterinary Parasitology.* 2016; 222:3-11.
9. Aujla RS, Singla LD, Juyal PD, Gupta PP. Prevalence and pathology of mange-mite infestations in dogs. *Journal of Veterinary Parasitology*. 2000; 14(1):45-49.
10. Scott DW, Miller WH. A retrospective study of 350 dogs suspected of having scabies (1988–1998). *The Japanese Journal of Veterinary Dermatology*. 2013; 19(1):3-9
11. da Silva TRM, Schimmunech MS, Pott PJK, Alves-Sobrinho AV, de Oliveira PG, do Amaral AVC, Saturnino KC, Romani AF, de Souza Ramos DG. Mange skin diseases in dogs and cats in Jataí, Brazil: A retrospective study with notes on zoonotic aspects. *Research, Society and Development.* 2021; 10(1):e10610111417-e10610111417
12. Abiola OJ, Olaogun SC, Emedoh OM, Olalekan TJ. A retrospective study of ruminant cases presented between 1996 and 2005 at the Veterinary Teaching Hospital, University of Ibadan, Ibadan Nigeria. *International Journal of Livestock Research*. 2016; 6(7):16-23.
13. William A, Chaudhari SUR, Atsandac NN. Prevalence of some diseases of dogs and cats at the state government veterinary clinic in Maiduguri (Nigeria). *Pakistan Veterinary Journal.* 2002; 22(2):56-58
14. Aydıngöz İE, Mansur AT. Canine scabies in humans: a case report and review of the literature. *Dermatology.* 2011; 223(2):104-106.
15. Mueller RS, Rosenkrantz W, Bensignor E, Karaś-Tęcza J, Paterson T, Shipstone MA. Diagnosis and treatment of demodicosis in dogs and cats: Clinical consensus

guidelines of the World Association for Veterinary Dermatology. *Veterinary Dermatology*. 2020; 31(1):4-e2.

16. Rahman M, Bostami MB, Datta A, Sabuj AAM, Rana EA, Mannan A, Hossain MMA, Chowdhury MYE. Estimation of the prevalence and determination of risk factors associated with demodicosis in dogs. *Journal of advanced veterinary and animal research*. 2021; 8(1):116.
17. Kim SK, Kim S. Canine demodicosis-a ten-year retrospective study. *Journal of Veterinary Clinics*. 1997; 14:136-139.
18. Nayak DC, Tripathy SB, Dey PC, Ray SK, Mohanty DN, Parida GS, Biswal S. Das M. Prevalence of canine demodicosis in Orissa (India). *Veterinary Parasitology*. 1997; 73(3-4):347-352.
19. Kumar A, Das AK, Sinha M, Arya SK, Kumar A, Kumar B. Study on the prevalence of demodectic mange in dogs in and around Patna. *International Journal of Current Microbiology and Applied Sciences*. 2018; 7:4216-21.