RETROSPECTIVE STUDY ON THE PREVALENCE OF CANINE MYIASIS IN JOS – SOUTH LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA.

[*1]Ogo, I, N., [2]Mwansat, G. S., [3]Jambalang, A., [2]Ogo, M. F., [1]Onovoh, E., [3]Ogunsan, E. A., [1]Dogo, G. I., [3]Banyigyi, S., [4]Odoya, E. M., [3]Chukwu O. O. C., [2]Yako, A. B., and [2]Inyama, P.U.

[1]Parasitology Department, [3]Epidemiology Unit, National Veterinary Research Institute, Vom. [2]Applied Parasitology and Entomology Unit, Zoology Department, University of Jos Plateau State. [4]Nigerian Institute for Trypanosomiasis Research, Vom.

Received 7th October 2004, Accepted 5th August 2005.

Abstract: An evaluation of veterinary clinical records from Jos- South L.G.A of Plateau State, Nigeria between January 1998 and December, 2003 to determine the seasonal and age/ prevalence of canine myiasis was conducted. Of the 43,734 dogs presented during the period of the investigation, 2,674 (6.11%) were positive for myiasis. 2,026 (75.80%) of the positive cases occurred during rainy season, while dogs of less than 6 months had the highest number of infestation 2072 (77.50%). The public health significance of the infestation pattern is discussed.

Key words: Canine myiasis, Jos, Nigeria.

INTRODUCTION

Myiasis refers to the infestation of live human and vertebrate animals with the larvae (maggots) of dipteran flies. Within the host, these larvae feed on dead or living tissues, ingested food or liquid body substances (Zumpt, 1965). Myiasis has been known to occur in various animals and various sites of the body such as eyes, nose, mouth, intestine, and urino-genital tract (James, 1947; Forse, 1999).

Myiasis in dogs, just like in other animals could be facultative in that the larvae are linked with bacteria contaminated skin wounds and / or faeces- matted hair coat as seen in larvae of *Calliphora spp* and *Sarcophaga spp*; or obligatory, where the larvae invades fresh and uncontaminated skin wounds as in infestation caused by the larvae of *Chrysomyia bezziana* (Merk's Veterinary Manual, 1998). Cases of canine myiasis have been known to occur regularly the world over. Zumpt (1965) stated that dogs and small rodents are the most important reservoir hosts for *Cordylobia anthropophaga* larvae amongst other dipteran fly larvae.

In the West African sub-region, Pampiglione *et. al.,* (1993) have incriminated *C. anthropophaga* as the main cause of myiasis, especially where it is endemic. Clinical signs observed in canine myiasis include numerous erythematous and furunculoid skin lesions which ooze out with serous fluid through a pore. Applying pressure on such lesions may lead to expulsion of the larva(e) with liquefied tissues which could be haemorrhagic or purulent (Coles, 1967; Merk's Veterinary Manual, 1998). Thus, the extraction and laboratory identification of the typical larva(e) is the definitive diagnosis of the infestation.

In Plateau State of Nigeria and elsewhere around the world, dogs play an important role as reservoir for the development of these dipteran flies. However, despite the

potential public health significance of canine myiasis, there are few published reports of its age prevalence and seasonality in this part of Nigeria.

This retrospective study have been carried out to establish the seasonality and prevalence of canine myiasis over a six year period (1998 – 2003) in Jos – South L.G.A. of Plateau State, Nigeria.

MATERIALS AND METHODS

This study is based on the evaluation of epidemiological data collected from veterinary clinics in Jos- South L.G.A of Plateau State, Nigeria. The data collected was for a period of six years (1998 – 2003), and involved cases involving dogs that presented to the clinics for several diseases or routine check up, amongst which positive myiasis cases where identified. Such positive cases involved dogs with boil – like swelling on parts of their bodies, which on digital pressure led to the expulsion of larva(e) (maggots). Forty-three thousand seven hundred and thirty four cases presented to the clinics within the period under review.

Rainfall data for the period of the study was collected from the National Root Crop Research Institute, Vom, Jos- South L.G.A, Plateau – State, Nigeria.

Data was analysed according to the method of Snedecor and Conchran (1969). Also Epiinfo computer software (2002) was used in the analysis.

RESULTS

Out of the 43,734 dogs that presented at clinics during the six year period under study, 2,674 (6.11%) were positive for myiasis. An evaluation of the monthly positive cases shows that there was an appreciable increase in the number of recorded cases at the onset of the rains in April of each year. 247 (6.05%), and also at the end of rains 260 (7.62%) in October, with peak number of infestation occurring cumulatively in June, 417 (11.2%), Table1.

Of the positive cases, the number of canine myiasis that occurred within the rainy season period of April to October was 2,026; a prevalence of 75.80% while the dry season period of November to March had 648 positive cases; a prevalence of 24.23%. Statistically, the differences in the mean number of positive cases during the months given in Table 2 were highly significant ($P < 001$).

The months of June had the most significantly high number of positive cases though it was statistically the same with those of May and July. The positive cases in May and July were higher, but statistically at par with those of October which in turn was not significantly different from the cases in the months of April, July and August though the number of positive cases was higher in October. The months of March ranked next in number of positive cases and was statistically the same as the cases in April,

August and September. The months of November, December and January had the least number of positive cases in that order of ranking though they were all

Table 1 : Cases of canine myiasis recorded in Jos-South Local government Area of plateau state from 1998 - 2003

Month	Number of cases brought to the clinics/ month	Year of Study								
		A*	B	C	D	E	F	Total Number Positive	Mean Positive number	% Prevalence
Jan	3710	18	13	14	30	11	30	116	19.3	3.13
Feb	3704	14	17	11	12	26	22	102	17.0	2.75
March	4094	23	26	22	42	28	20	161	26.8	3.93
April	4085	32	55	38	54	41	27	247	41.2	6.05
May	4472	30	29	69	79	84	52	343	57.2	7.67
June	3725	39	49	42	115	212	51	417	69.5	11.20
July	3507	51	27	51	77	76	47	329	54.8	9.38
Aug.	3358	23	43	45	47	40	43	241	40.2	7.18
Sept.	3031	22	19	31	45	33	39	189	31.5	6.24
Oct.	3413	47	19	43	66	46	39	260	43.3	7.62
Nov.	3270	16	23	31	21	30	19	140	23.3	4.28
Dec.	3365	7	31	23	32	13	23	129	21.5	3.83
Total	43734	322	351	420	620	549	412	2674		6.11

*A=1998, B=1999, C=2000, D=2001, E=2002, F=2003

statistically the same. By age grouping, result showed that of the 2, 674 positive cases, the following infestation rate was observed; > 6 months, (77.50%); 6 – 12 months, (14.36%); 13 – 24 months, (4.60%); 25 – 36 months (1.57%); 37 – 48 months, (0.56%); 49 – 61 months, (0.41%); and > 62 months, (1.00%). (Table 3).

DISCUSSION

This study has established that canine myiasis occurs in Jos – South L.G.A. of Plateau State, Nigeria throughout the year, with an increase in prevalence (75.80%) during the rainy season period of April to October. This finding is similar to that reported in

camels by Ajogi and Desbordes (1995) in Sokoto State, Nigeria, where the prevalence rate was 85.4% for the rainy season period of June to October.

Table 2: Mean Monthly Canine Myiasis in Jos-South Local Government Area of Plateau State. 1998-2003.

Month	Mean Positive Number
January	19.3g
February	17.0g
March	26.8ef
April	41.2cde
May	57.2ab
June	69.5a
July	54.8abc
August	40.2cdef
September	31.5def
October	43.3bcd
November	23.5g
December	21.5g

*Means followed by the same letter(s) within the same column are not significantly different at 5% level of probability using LSD.

Table 3: Distribution of Canine myiasis according to age group (in months) for the years 1998 – 2003 in Jos-South Local government area of Plateau State, Nigeria

Year	< 6 (%)	6 – 12 (%)	13-24 (%)	25-36	36-48	49-61	>62 (%)	Total positive
1998	197 (61.18)	81 (25.16)	22 (6.83)	12 (3.73)	2 (0.62)	4 (1.24)	4 (1.24)	322
1999	248 (70.66)	64 (18.23)	32 (9.12)	4 (1.14)	0 (0.00)	0 (0.00)	3 (0.85)	351
2000	379 (90.24)	29 (6.90)	1 (0.24)	9 (2.14)	1 (0.24)	0 (0.00)	1 (0.24)	420
2001	494 (79.68)	78 (12.58)	19 (3.06)	12 (1.94)	7 (1.13)	1. (0.16)	9 (1.45)	620
2002	428 (77.96)	84 (15.30)	22 (4.01)	2 (0.04)	4 (0.73)	0 (0.00)	9 (1.64)	549
2003	326 (76.13)	48 (11.65)	27 (6.55)	3 (0.73)	1 (0.24)	6 (1.46)	6 (0.24)	412
	2072 (77.50)	384 (14.36)	123 (4.60)	42 (1.57)	15 (0.56)	11 (0.41)	27 (1.00)	2674

Though infestation is all year round, an overview of the result shows a gradual increase in the number of positive cases starting from March, with a peak infestation in June before a gradual fall in other months (Table 1). The differences in the mean number of positive cases during the months were highly significant ($P< 0.01$). The

month of June had the most observable significant number of positive cases though statistically there was no difference between those of May and July, thus canine myiasis has the relative risk of occurring 4.45 times in June than in any other month. Studies in other parts of Africa such as Kenya have put seasonal prevalence of the disease as the rainy season peak of March - April (Roberts *et. al.,* 1982), and the autumn months of October and November in Libya (Gabaj *et. al.,* 1989; FAO, 1989). But in this study, April – October had the highest rates, which strongly suggest that the rains may play an important role in its prevalence since there is an appreciable increase in the number of positive cases within the rainy season as compared to dry season.

In terms of the prevalence in relation to age, it was observed that the very young dogs of less than 6 months were highly infested; with a prevalence of 77.50% of the total number positive, while the least positive age group was those 49 – 61 month (4 – 5 years). Reasons for the tilt towards the younger age group cannot be immediately adduced since a more practical evaluation of the disease is required. Even though the extent to which man acquires this disease in the area of study has not been established, and since dogs serve as reservoir host for the furunculoid myiasis due to *Cordylobia sp* amongst other myiasis causing flies, it becomes imperative to educate people of the area on the need to prevent the occurrence of this infestation in their dogs because of the close association between man and dogs, also the unsanitary environments such as presence of heaps of rubbish around homes, improper disposal of dead carcasses of both animals and man, surface effluents, faeces and other decomposing materials which dogs and man are exposed to have been identified as breeding sites for myiasis causing flies.

REFERENCES

Ajogi, I and Desbordes, C.K (1995); Seasonal Prevalence of *Cephalopina titillator* myiasis in camels (*Camelus dromedaries*) in Sokoto State, Nigeria *Bulletin of Animal Health & Production in Africa.* 43: 295-297.

Coles, E.H. (1967): *Veterinary Clinic Pathology* W.B. Saunders Company Philadelphia and London. 455 pp.

Epi Info (2002): *Revision 2 "Access 2000 Format"* Computer Software Programme. © Centers for Disease Control and Prevention, and World Health Organization.

FAO (1989): *Screwworm Information*, No 7. Animal Production & Health Division, Food and Agriculture Organisation of the United Nations, Rome, Italy. 5 pp

Forse, B. (1999): *Where there is No Vet* Macmillan Press. London and Oxford. 380pp.

Gabaj, M.M., Wyatt, N.P., Pont, A.C., Beesley, W.N., Awan M.A.Q., Gusbi, A.M., and Benhaj, K.M., (1989). *The Screwworm fly in Libya*: A threat to the Livestock industry of the old World. *Veterinary Record.* 125, 347-349

James, M.T., (1947): *The flies that cause myiasis in Man.* Department of Agriculture Miscellaneous Publications 631

Merck Veterinary Manual 8th edition. Merck and Co.Inc. Whitehouse stations, N.J.USA. 2305 pp

Pampiglione, S., Bettoli, V., Cestari, G., and Staffa, M.m (1993). Furuncular myiasis due to *Cordylobia anthropophaga* endemic in the same locality for over 130 years. *Annals of Tropical Medicine and Parasitology 87:*217 -220

Roberts, L.W., Boyce, W.L., Layerly, W.H., (1982): *Cordylobia anthropophaga* (Diptera: Calliphoridae) Myiasis in an infant and Dog, and a technique for larval rearing. *Journal of Medical Entomology* 19 (3): 350-351

Snedecor, G.W., Cochran, W.G., (1969): *Statistical Methods*. 6thedition. IOWA State University Press. 10 WA U.S.A 607 pp.

Zumpt, F. (1965): *Myiasis in Man and Animals in the Old World*. London, Butterworth.