

U. E. Uche *¹ | **Incidence of microfilaria in dogs in**
 E. B. K. Odunze ¹ | **Southern Nigeria**

UCHE (U. E.), ODUNZE (E. B. K.). Fréquence des microfilaries canines dans le Sud du Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1988, 41 (4) : 375-379.

Une étude a été conduite sur la fréquence des microfilaries dans le sang des chiens présentés à la consultation du centre hospitalier vétérinaire de l'Université de Nsukka et de la clinique vétérinaire d'Enugu. Elle a révélé que 9 des 200 chiens examinés étaient infestés, soit 4,5 p. 100. *Dirofilaria repens* et *Dipetalonema reconditum* ont été identifiés. L'infestation était très sévère chez les mâles et chez les sujets âgés de 1 à 2 ans. Les Doberman Pinscher étaient les plus touchés, les chiens nigériens locaux l'étant le moins. Compte tenu de la pénurie d'informations en provenance du Sud Nigeria sur ce sujet, ces résultats s'inscrivent bien dans la ligne de l'importance croissante de la filariose canine, tant au point de vue clinique que comme zoonose. *Mots clés* : Chien - Microfilarie - *Dirofilaria repens* - *Dipetalonema reconditum* - Zoonose - Nigeria.

INTRODUCTION

Canine filariasis is becoming increasingly important worldwide not only for its effect on dogs (1, 13) but more for its zoonotic value (5, 7).

In most veterinary clinics in Southern Nigeria the usual emphasis on the more common canine diseases like trypanosomiasis, helminthiasis, babesiosis to mention a few, tends to mask or de-emphasize the importance of some rare but very important diseases like canine filariasis during diagnosis (unpublished observation).

It is also not unusual to find veterinarians treating sick dogs, especially in the rural areas, based purely on the clinical signs presented, and their experience of dog diseases in the locality without any laboratory examination. This type of practice based on mere historic assumptions and minimal laboratory examination could lead to a wrong diagnosis of rare but very important diseases such as filariasis, which amongst other things could present clinical signs that simulate those of the routine dog diseases in a particular locality.

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This type of error in judgement could have very costly consequences not only on the animal patients but also their owners and other healthy animals in the same vicinity.

Suspecting that some of the dogs routinely treated unsuccessfully for some common conditions could after all be patients of one of the unpopular diseases like filariasis, it was decided to find out how many dogs presented at UNVTH and Enugu Veterinary Clinic, Enugu, Southern Nigeria had microfilaria in their blood.

MATERIALS AND METHODS

Two hundred dogs presented at the University of Nigeria Veterinary Teaching Hospital (UNVTH), Nsukka, and Enugu Veterinary Clinic were examined from January to May, 1985.

The age, sex, breed and general examination results including the presence of ectoparasites were recorded for each dog.

Three ml of blood were collected from each dog, after normal antiseptic precaution via a cephalic venepuncture, into a « bijou » bottle containing EDTA (disodium ethylenediamine tetra-acetic acid).

The time of blood collection, usually between 8 a.m. and 8 p.m., was recorded. Night blood collections were from hospitalized animals. All samples were examined immediately after collection although most blood samples were seen to contain motile microfilariae even after 18-24h storage in the refrigerator.

Three methods viz, the wet mount (13), capillary haematocrit tube (4) and modified Knott's technique (9) were adopted for the analysis of all samples. One of the dogs that was in a very bad clinical state in addition to having high microfilariaemia of *Dirofilaria* species was euthanized and necropsied. Positive dogs were treated with Ketrax™, ICI, England (Levamisole).

RESULTS

Nine (4.5 p. 100) of the 200 dogs examined had circulating microfilariae in the blood; 5 (55.6 p. 100) and 3 (33.3 p. 100) of the positive cases had microfilariae of *Dipetalonema reconditum* and *Dirofilaria repens* respectively while the remaining positive case was a mixed infection of the two species.

Four (15.4 p. 100) of the pure breed dogs were positive with Doberman Pinscher and the Terrier accounting for 75 p. 100 and 25 p. 100 of the infections respectively. No infections were recorded in the Alsatians examined. Only 1 (1.03 p. 100) of the Nigerian local dogs screened had circulating microfilaria (Table I).

TABLE I Incidence of microfilariae and types in dogs examined according to breed.

Breed	No. of dogs examined	<i>Dirofilaria repens</i>	<i>Dipetalonema reconditum</i>	<i>D. repens</i> & <i>D. reconditum</i> (mixed infection)	Infections p. 100
Local	97	1	—	—	1.03
Cross	77	1	2	1	5.19
Alsatian	19	—	—	—	—
Doberman	4	1	2	—	75.00
Terrier	3	—	1	—	33.33
Total	200	3	5	1	4.50

No infections were observed in dogs between one month to one year of age while those between one to two years and above two years had 9.61 p. 100 and 5.48 p. 100 infections respectively (Table II). 6.32 p. 100 of the males and 2.86 p. 100 females were positive (Table III).

TABLE II Incidence of microfilariae and types in dogs examined according to age.

Age of dogs	No. of dogs examined	<i>Dirofilaria repens</i>	<i>Dipetalonema reconditum</i>	<i>D. repens</i> & <i>D. reconditum</i> (mixed infection)	Infections p. 100
1 month to 1 year	75	—	—	—	—
1 year to 2 years	52	2	2	1	9.61
Above 2 years	73	1	3	—	5.48
Total	200	3	5	1	4.50

TABLE III Incidence of microfilariae and types in dogs examined according to sex.

Sex	No. of dogs examined	<i>Dirofilaria repens</i>	<i>Dipetalonema reconditum</i>	<i>D. repens</i> & <i>D. reconditum</i> (mixed infection)	Infections p. 100
Males	95	2	3	1	6.32
Females	105	1	2	—	2.86
Total	200	3	5	1	4.50

Ectoparasites identified on the bodies of the positive cases include *Rhipicephalus sanguinus* and *Ctenocephalide canis*. One of the Doberman Pinscher dogs had a lot of myiasis on its body.

Adult *Dirofilaria repens* were recovered sub-cutaneously by the Veterinary Parasitology Department, University of Nigeria, Nsukka from the necropsied dog.

No further attempts were made at confirming infections by *Dipetalonema reconditum* through the recovery of the adult worms, as none of the clients was ready to part with his/her dog. This notwithstanding experimental work is in progress with this species.

All the positive cases were obtained between 10 a.m. to 12 noon. A doubling of the microfilaria blood count was observed between 7.00 and 8.00 p.m. in two dogs that were followed up.

The wet mount and the improved Knott's techniques did appear, in our hands, to be most reliable for the diagnosis of microfilaria. These were followed by the capillary haematocrit tube method which had the problem of poor visibility of the worms at the « buffy coat »/plasma interphase.

DISCUSSION

The identification of microfilariae of *Dipetalonema reconditum* (Fig. 1a, 1b) and *Dirofilaria repens* (Fig. 2a, 2b) was based on standard criteria (6, 13).

The apparently low incidence of 4.5 p. 100 recorded may be attributed to the time this work was conducted, much of which was during the dry season (2), a period of low prevalence of the principal vectors of these parasites (3). It may not be wrong to anticipate a higher incidence during the rainy season.

Another probable factor that may be responsible for this apparent low incidence may be the time of blood collection most of which were during the morning hours, when the clinics were operative, which are known to be periods of low microfilariaemia (11).



Fig. 1a : Anterior end of *Dipetalonema reconditum* . x 500. C : cephalic hook.



Fig. 2a : Anterior end of *Dirofilaria repens*. x 1250. Note the absence of cephalic hook.

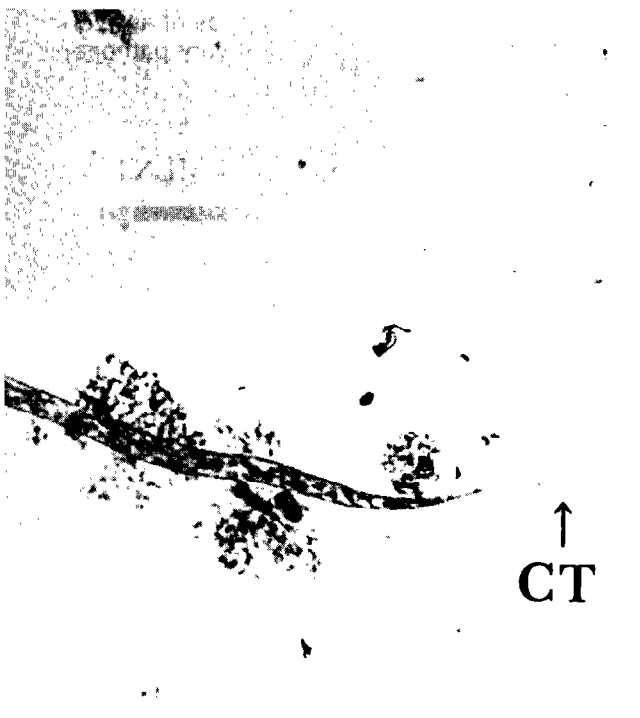


Fig. 1b : Posterior end of *Dipetalonema reconditum*. x 500. CT : curved tail.

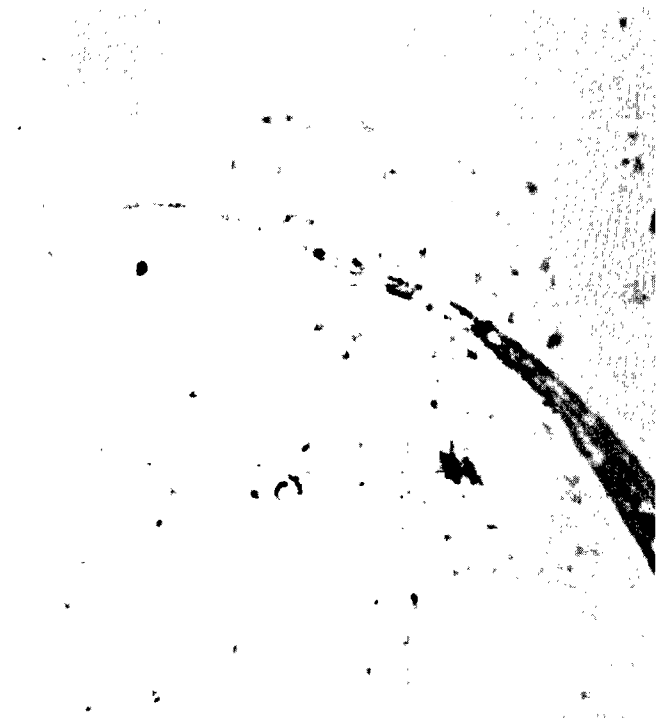


Fig. 2b : Posterior end of *Dirofilaria repens*. x 1250. Note the straight tail.

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The procurement of all positive cases between 10 a.m. and 12 noon and the doubling of microfilarial blood counts in two dogs between 7.00 p.m. and 8.00 p.m. are important clinical preliminary information about the probable migratory behaviour of these parasites in these areas since periodicity is a well established phenomenon of microfilaria (11, 13). It was not possible to follow up the experiment further into the night due to some technical problems. It is not unlikely that more blood microfilarial counts may be obtained later in the night, an observation that has been confirmed by several authors (15).

The low incidence of 1.03 p. 100 recorded in the Nigerian local dogs (Table I) which constitute 48.5 p. 100 of all the dogs screened is surprising in view of their straying habits that should expose them more to infections (12). This may not be unrelated to the breed resistance to most diseases to which the exotic breeds succumb easily in our environment (unpublished observation).

The relatively higher incidence in pure bred dogs (Table I) especially the Doberman Pinscher, the number screened notwithstanding, is interesting, as the dogs were obtained from different locations. This finding may be indicative of a higher breed susceptibility.

The total absence of infection in the Alsations examined may be connected with the privileged health/management care often provided them by their enlightened and usually wealthy owners (10). Some of this privileged care includes routine deworming with drugs like Ketrax™ and Piperazine compounds which are known microfilaricides (6).

Highest incidence in dogs above one year and none in the puppies (Table II) agree in part with the reports of WALLENSTEIN and TIBOLA (14). This high incidence which was also observed in the males may be due to their high straying tendency in search of food and mates.

The relatively lower incidence of 5.48 p. 100 in dogs

UCHE (U. E.), ODUNZE (E. B. K.). Incidence of microfilaria in dogs in Southern Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1988, 41 (4) : 373-379.

A study of the incidence of microfilaria in blood of dogs presented at the University of Nigeria Veterinary Teaching Hospital (UNVTH) Nsukka, and Enugu Veterinary Clinic showed that nine (4.5 p. 100) of the 200 dogs examined were positive. Microfilaria identified were those of *Dirofilaria repens* and *Dipetalonema reconditum*. Infections were highest in male dogs, and in dogs between one to two years of age. The Doberman Pinscher had the highest infection and the Nigerian local dogs the least. These findings are pertinent in view of the increasing clinical/zoonotic importance of canine filariasis and the dearth of information on this subject from Southern Nigeria. *Key words* : Dog - Microfilaria - *Dirofilaria repens* - *Dipetalonema reconditum* - Zoonosis - Nigeria.

above two years is thought to be related to resistance which often develops with age and previous infection experience, a phenomenon that is common with some helminth infections in animals (8).

The inability of associating specific clinical signs with microfilarial infection in this work, some of the positive cases being healthy dogs brought to the clinic for routine vaccination, highlights the importance of haematological examination for all dogs presented to veterinary clinics.

The identification of ticks and fleas (*Rhipicephalus sanguinus* and *Ctenocephalide canis*) on the bodies of dogs that were infected is an important information that could lead to the incrimination of these as possible vectors of canine filariasis in this zone. The possible relationship of myiasis to canine filariasis is difficult to explain but the finding probably would open an area for further investigation.

CONCLUSION

Finally, from the results of this work one could possibly speculate, that human beings and dogs do not face serious dangers of canine filariasis in Southern Nigeria. This is based on the fact that the species identified are not known to be of any zoonotic importance (5, 7) and are also not very pathogenic to dogs (12, 15).

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UCHE (U. E.), ODUNZE (E. B. K.). Incidencia de las microfilarias caninas en el sur del Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1988, 41 (4) : 373-379.

Un estudio sobre la incidencia de las microfilarias en la sangre de los perros reconocidos en el hospital veterinario de la Universidad del Nigeria (UNVTH) en Nsukka y en la clínica veterinaria de Enugu mostró que 9 (4,5 p. 100) de 200 perros estaban positivos. Eran las microfilarias identificadas : *Dirofilaria repens* y *Dipetalonema reconditum*. Las infecciones eran más importantes en los machos y en los perros de 1 a 2 años de edad. Se encontraba la infección más importante en los Doberman Pinsher y la menos importante en los perros nigerianos de raza local. Habida cuenta de la escasez de las informaciones sobre dicha parasitosis en el sur Nigeria, estos resultados corresponden bien al aumento de la importancia de la filariosis canina desde el punto de vista clínico y como zoonosis. *Palabras claves* : Perro - Microfilaria - *Dirofilaria repens* - *Dipetalonema reconditum* - Zoonosis - Nigeria.

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