

Short Communication

Loa loa and *Mansonella perstans* Infections in Ijebu North, Western Nigeria: a Parasitological Study

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SUMMARY: The prevalence and intensity of *Loa loa* and *Mansonella perstans* were studied in three villages of the Ijebu north area in Ogun State, western Nigeria. Blood samples were collected by finger-pricking from 373 (181 males, 192 females) subjects with an age range of 4 to 55 years. The blood samples were examined microscopically for the presence of microfilariae (mf). *L. loa* and *M. perstans* were present in the blood samples in 39 (10.5%) and 12 (3.2%) of the subjects, respectively. Neither of the infections were found to be sex-dependent. The geometric mean of the *L. loa* intensity was 1.8 mf per 50 μ l of blood, while that of *M. perstans* was 1.5 mf per 50 μ l. The prevalence of mixed infections of both *L. loa* and *M. perstans* was 1.0%.

Despite the continued deforestation and indiscriminate bush-burning that threaten the lives of vectors of *Loa loa* and *Mansonella perstans*, recent reports of the occurrence of these infections in tropical Africa, including Nigeria, have been made (1-4).

In the Ijebu division of western Nigeria, *L. loa* infection was reported by Ogunba in 1971 and 1972. There has been no further investigations in the area, although the current study sights were not included in Ogunba's study areas. Also, there

has been no previous record of *M. perstans* infection in the Ijebu division of western Nigeria. The present study was therefore initiated to determine the current prevalence and intensity of *L. loa* and *M. perstans* infections in some communities of the Ijebu north area of western Nigeria.

The study area consisted of Abata, Awori-Jeje, and Mamu villages in the Ijebu North Local Government Area of Ogun State, western Nigeria (Fig. 1). Abata, Awori-Jeje and Mamu are approximately 8, 10, and 20 km, respectively, from Ago-

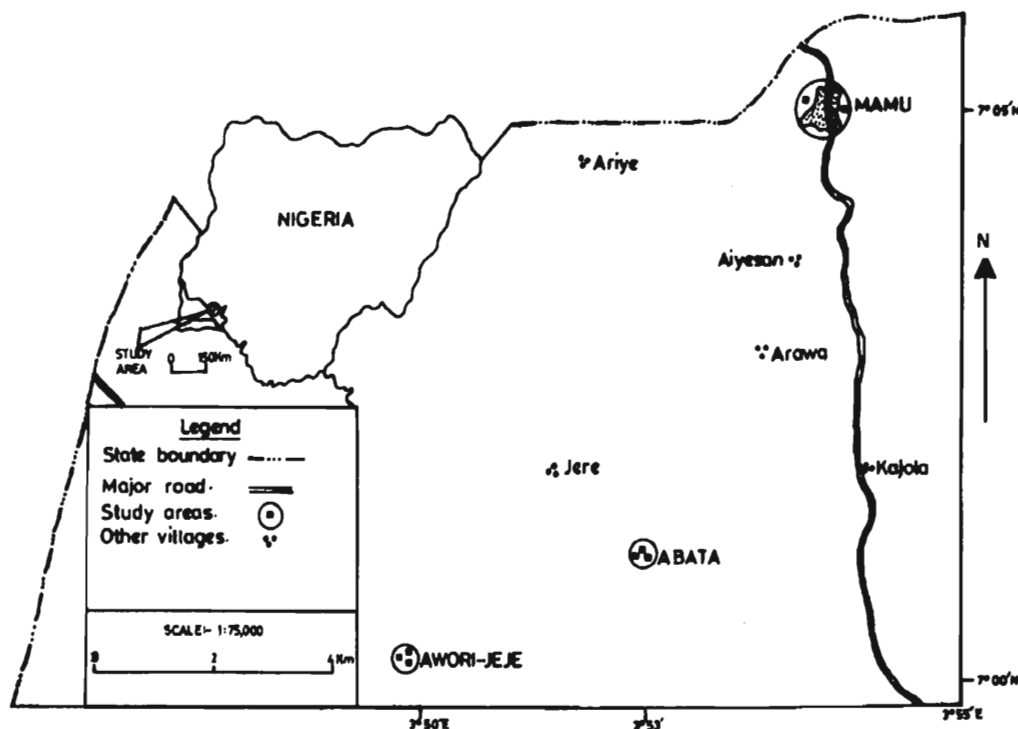


Fig. 1. Map showing the study area.
Source: Federal Surveys, Lagos

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Table 1. Prevalence of *L. loa* and *M. perstans* microfilariae according to sex

Village	No. examined			No. positive for <i>L. loa</i> (%)			No. positive for <i>M. perstans</i> (%)		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Abata	25	33	58	2 (8.0)	4 (12.1)	6 (10.3)	1 (4.0)	2 (6.1)	3 (5.2)
Awori-Jeje	38	38	76	9 (23.7)	4 (10.5)	13 (17.1)	0	0	0
Mamu	118	121	239	10 (8.5)	10 (8.3)	20 (8.4)	5 (4.2)	4 (3.3)	9 (3.8)
Total	181	192	373	21 (11.6)	18 (9.4)	39 (10.5)	6 (3.3)	6 (3.1)	12 (3.2)

Iwoye (the Ogun State University town). The study area is located between latitudes 7°00' and 7°05' N, longitudes 3°50' and 3°55' E, and is covered by a thick rain-forest vegetation. Abata, Awori-Jeje, and Mamu currently have estimated human populations of approximately 250, 350 and 2,000, respectively. The inhabitants of the villages are primarily subsistence farmers, with a few traders at Mamu. Prior to commencement of the study, permission and ethical consent were obtained from health personnel and heads of the communities as well as from participating individuals.

Three hundred and seventy-three volunteers, with an age range of 4 to 55 years, including 181 males and 192 females, participated in the study, which took place between October 1997 and July 1998. Blood samples were collected from the volunteers by the finger-pricking method between 11:00 a.m. and 2:00 p.m. Thick blood smears were made and stained with buffered Giemsa solution (pH 7.2) for microfilariae (mf) detection, identification, and counting. In each infected subject, the mf intensity of each infection was evaluated by the number of mf per 50 µl of blood. The chi-square test (χ^2) was used to determine significant differences and was tested at a 0.05 level of significance.

The prevalence of *L. loa* and *M. perstans* mf according to sex in the study area are summarized in Table 1. Of the 373 subjects examined, 39 (10.5%) and 12 (3.2%) had *L. loa* and *M. perstans*, respectively, in their blood samples. The prevalences of *L. loa* infection among the three villages visited were not significantly different. Similarly, the prevalences of *M. perstans* in Abata and Mamu were not significantly different. The total prevalences of *L. loa* and *M. perstans* among males and females were not significantly different. Thirty-eight (97.4%) and 11 (91.7%) of the subjects with *L. loa* mf and *M. perstans* mf, respectively, were 20 years old or younger.

The microfilarial intensity of *L. loa* in the study area ranged from 1-20 mf per 50 µl of blood, while that of *M. perstans* was from 1-2 mf per 50 µl of blood. The geometric mean intensity of *L. loa* in each of the categories (males, females, and total [males + females]) was 1.8 mf per 50 µl of blood. The geometric mean intensity of *M. perstans* among males (1.4 mf/50 µl blood) was not significantly different from that among females (1.7 mf/50 µl blood). The total geometric mean intensity of *M. perstans* was 1.5 mf per 50 µl of blood.

Three (1.0%) cases of mixed infection of *L. loa* and *M. perstans* were recorded in the study area. Two of the mixed infections occurred in males, both of whom were 10 years old. The other was in an 11-year-old female. In each male with mixed infection, *L. loa* and *M. perstans* had the same microfilarial intensities of 2 mf per 50 µl of blood.

The current prevalence of *L. loa* infection in the study area was similar to previous findings of Ogunba (5,6) among school children and adults in another part of the Ijebu division, western Nigeria. This finding indicates similar levels of

endemicity between the present study area and the area studied by Ogunba. The presence of *Chrysops silacea* and *C. dimidiata* (the vectors of *L. loa*) in some parts of the Ijebu division has previously been documented (5). Similarities in the prevalences of *L. loa* among villages in the present study indicate similar rates of transmission in the villages. In addition, similar prevalences among males and females show that both sexes have been equally exposed to the infection, which is similar to the finding of Mommers et al. (7). Efforts are currently in progress to collect *Chrysops* spp. and to determine their vectorial capacities in the present study area.

An important finding of the present study was the occurrence of *M. perstans* infection in the study area. *M. perstans* has previously been reported in other parts of Nigeria (1-3), but this is the first time that it has been reported in the Ijebu division of western Nigeria. A preliminary 6-month study has revealed the presence of *Culicoides* spp. with a filarial infection rate of 8.6% in the study area (unpublished data). Similar prevalence of *M. perstans* infection among males and females have indicated equal exposure of both sexes. In this study, both *L. loa* and *M. perstans* infections were primarily restricted to subjects 20 years of age or younger, the reasons for which may be investigated further in a future study.

The recorded microfilarial intensity of *L. loa* in the study area was low, as has previously been reported by Ufomadu et al. (1) regarding central Nigeria. Also the microfilarial intensity of *M. perstans* in the study area was low, which agrees with findings of Mommers et al. (7) in southern Cameroon.

The detection of mixed infection of *L. loa* and *M. perstans* in the study area was another important finding, and is similar to previous findings from other areas such as central Nigeria (1) and southern Cameroon (7).

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REFERENCES

1. Ufomadu, G. O., Nwoke, B. E. B., Akoh, J. I., Sato, Y., Ekejindu, G. O. C., Uchida, A., Shiwaku, K., Tunbau, M. and Ugomo, K. K. (1991): The occurrence of loiasis, mansonellosis and wuchereriosis in the Jarawa River Valley, Central Nigeria. *Act. Trop.*, 48, 137-147.
2. Anosike, J. C. (1994): The status of human filariasis in north-western zone of Bauchi State, Nigeria. *Appl. Parasitol.*, 35, 133-140.
3. Anosike, J. C. and Onwuliri, C. O. (1994): Studies on filariasis in Bauchi State, Nigeria. II. The prevalence of human filariasis in Darazo Local Government Area. *Appl. Parasitol.*, 35, 242-250.

4. Gbakima, A. A. and Sahr, F. (1996): Filariasis in the Kaiyamba chiefdom, Moyamba district, Sierra Leone: an epidemiological and clinical study. *Public Health*, 110, 169-174.
5. Ogunba, E. O. (1971): Loiasis in Ijebu division, West Nigeria. *Trop. Geogr. Med.*, 23, 194-200.
6. Ogunba, E. O. (1972): Ecology of human loiasis in Nigeria. *Trans. R. Soc. Trop. Med. Hyg.*, 66, 743-748.
7. Mommers, E. C., Dekker, H. S., Richard, P., Garcia, A. and Chippaux, J. P. (1995): Prevalence of *Loa loa* and *Mansonella perstans* filariasis in southern Cameroon. *Trop. Geogr. Med.*, 47, 2-5.