

Onchocerca gutturosa (Neumann, 1910) in sudanese cattle

I. The microfilariae

by SABIR ELBIHARI (*) and H. S. HUSSEIN (*)

RÉSUMÉ

Onchocerca gutturosa (Neumann, 1910) chez des bovins soudanais
I. Les microfilaires

La répartition des microfilaires d'*Onchocerca gutturosa* chez des bovins soudanais est différente de celle observée chez les bovins européens.

On les trouve au milieu du dos et plus particulièrement sur la bosse. Elles sont absentes des oreilles et de la région ombilicale. Le taux d'infestation d'*O. gutturosa* dans un troupeau constitué d'animaux de tous âges a été déterminé *ante mortem* comme étant de 27 p. 100. Ce taux augmente nettement avec l'âge.

INTRODUCTION

Onchocerca gutturosa is known from many parts of the world including some countries on the African continent neighbouring the Sudan (6) ; Ethiopia (1) ; Chad (7) ; Central African Empire (8) ; Uganda (2). The first published record of *O. gutturosa* in the Sudan was made by MOHAMED in 1931 (11). HUSSEIN *et al.* (9) studied the prevalence of *O. gutturosa* in slaughtered animals and found adult worms in 170/248 animals examined.

No precise information is as yet available regarding the skin distribution of the microfilariae in zebu cattle in Africa although HUSSEIN *et al.* (9) found microfilariae in the ears and udders ; however the assumption made by the latter authors that the pattern is similar to that seen in European cattle has not been supported by sampling of other areas of the body.

The purpose of this paper is to report the detailed skin distribution of the microfilariae as well as the prevalence of infection in a herd in the Khartoum area.

MATERIALS AND METHODS

Ten complete hides were obtained from the local slaughter house. It was ascertained that hides were complete including the skin of the head, ears, tail and limbs. The hides were sampled in accordance with our previous method (4, 5) and the sampling sites were shown in figure 1 ; in every case the samples taken are of the same surface area (approximately 50 mm²) and numbered from 100 to 200 samples.

Samples of microfilariae were fixed and stained in a solution containing 0.05 p. 100 methylene blue in 2 p. 100 formalin.

Nuchal ligaments containing worms were obtained from the slaughter house ; fragments of female worms were removed to normal saline and microfilariae released by teasing the uteri of

(*) Department of Microbiology and Parasitology, Faculty of Veterinary Science, P. O. Box 32, Khartoum North, Sudan.

worms in slaughtered animals. The discrepancy between the prevalence rate reported here and that of the latter authors may be because they were detecting at least some of the prepatent and postpatent infections as well as patent ones. HUSSEIN *et al.* stated neither the age of the slaughtered animals nor the locality in which they originated and, since there is no published information concerning prevalence rates in different parts of the country, it would not be possible to rule out rates of occurrence in other parts of the country being higher than in the Khartoum area.

Microfilariae of *O. gutturosa* recovered from both skin and uteri of worms in this study were slightly longer than previously reported. The figures obtained here are 206-280 μm and 208-256 μm for skin and uterine microfilariae respectively. EICHLER (1) found that microfilariae of *O. gutturosa* of English cattle measured 175 to 240 μm long for umbilical skin forms and 180 to 275 μm for uterine forms. MELLOR (10) working in England reported that the length of skin microfilariae of *O. gutturosa* ranged from 182 to 218 μm . The uterine microfilariae in this study had the same length as those reported by EICHLER (3) but the skin forms are somewhat longer although the lower limit of the range well fits into that reported by EICHLER (3).

The most interesting finding in this study is the pattern of skin-distribution of the microfilariae

which contrasts sharply with the distribution reported for English and European cattle (3). The microfilariae were found in the upper part of the body and the hump (fig. 1). None were found in the umbilical region and only an occasional microfilaria in the ears. This is in disagreement with the work of HUSSEIN *et al.* (9) who reported a pattern in sudanese cattle similar to that in european animals. However, these latter authors did not sample entire hides and examined only ears, scrotums and udders. This difference in the spatial distribution of microfilariae between temperate European and tropical zebu cattle is difficult to explain at the present time. It probably reflects differences in the feeding behaviour and may be even the identity of the vectors in the two regions. The vector of *O. gutturosa* in England and Europe is *Simulium ornatum* but no information is as yet available about the vector in the Sudan or in neighbouring African countries. Until more information about the vector(s) and their biting behaviour is available speculation would not be justified.

Acknowledgements

We are grateful for the assistance rendered by the staff of the Department of Microbiology and Parasitology. This study was partly financed by a grant to the senior author from the Research Committee of the Faculty of Veterinary Science.

SUMMARY

Onchocerca gutturosa (Neumann, 1910) in Sudanese cattle

I. The Microfilariae

The skin distribution of microfilariae of *Onchocerca gutturosa* in Sudanese cattle is different from that reported from European cattle. Microfilariae are found in the midline of the back, the highest densities being in the region of the hump. Microfilariae did not occur in the ears or umbilical region.

The prevalence rate of *O. gutturosa* in a Khartoum herd containing all age-groups was determined antemortem and found to be 27 p. 100; prevalence distinctly increased with age.

RESUMEN

Onchocerca gutturosa (Neumann, 1910) en los bovinos sudaneses

La repartición de las microfilarias de *Onchocerca gutturosa* en bovinos sudaneses es diferente de la observada en los bovinos europeos. Se encuentran en medio de la espalda y más particularmente en la giba. No ocurren en las orejas y en la región umbilical.

Se determinó ante mortem la tasa de infestación de *O. gutturosa* en un rebaño constituido por animales de todas edades; fué de 27 p. 100. Dicha tasa aumenta mucho con la edad.

BIBLIOGRAPHY

1. BERGEON (P.). Report to the government of Ethiopia on a veterinary parasitology survey. Rome, F. A. O., 1968, 38 p. (n° 2458).
2. BWANGAMOI (O.). *Onchocerca gutturosa* in cattle in Uganda. *Vet. Rec.*, 1970, **86** (10) : 286.
3. EICHLER (D. A.). Studies on *Onchocerca gutturosa* (Neumann, 1910) and its development in *Simulium ornatum* (Meigen, 1818). 4. Systematics of *O. gutturosa*. *J. Helminth.*, 1973, **47** (1) : 89-96.
4. ELBIHARI (S.), HUSSEIN (H. S.). The location of the microfilariae of *Onchocerca armillata*. *J. Parasitol.*, 1975, **61** : 656.
5. ELBIHARI (S.), HUSSEIN (H. S.). Distribution and redescription of the microfilariae of *Onchocerca armillata*. *Sudan J. vet. Sci. anim. Husb.*, 1976, **17** (2) : 77-85.
6. FAIN (A.), HERRIN (V.), THIENPONT (D.). Filarioses des bovidés au Ruanda-Urundi. III. Etude parasitologique. B : Filaires des genres *Setaria* et *Onchocerca*, et microfilaires sanguines et dermiques. *Anals. Soc. belge. Med. trop.*, 1955, **35** : 555-583.
7. GRABER (M.). Helminthes parasites de certains animaux domestiques et sauvages du Tchad. *Bull. Epiz. Dis. Afr.*, 1969, **17** : 409-428.
8. GRABER (M.), BOUCHET (A.), FINELLE (P.), DESROTOUR (J.) et collab. Le parasitisme du zébu dans l'Ouest de la République Centrafricaine. 2. Parasitisme des bouvillons et des adultes. *Rev. Elev. Méd. vét. Pays trop.*, 1969, **22** (4) : 509-519.
9. HUSSEIN (M. F.), NUR (O. A.), GASSOUMA (M. S.), NELSON (G. S.). *Onchocerca gutturosa* (Neumann 1910) infection in sudanese cattle. *Br. vet. J.*, 1975, **131** : 76-84.
10. MELLOR (P. S.). Studies on *Onchocerca cervicalis* Railliet and Henry, 1910 : 3. Morphological and taxonomic studies on *Onchocerca cervicalis* from British horses. *J. Helminth.*, 1974, **48** : 145-153.
11. MOHAMED (A. S.). The transmission of bovine and human onchocerciasis. *Anals. trop. Med. Parasit.*, 1931, **25** : 509-519.