

Short Communication

CUTANEOUS ONCHOCERCIASIS IN GOATS SLAUGHTERED IN KADUNA STATE, NIGERIA

SAMBO¹, S.J, OLADELE¹, S.B IBRAHIM¹, N.D.G, ESIEVO¹, K.A.N., HAMBOLU², J.O. and NZALAK², J.O.

¹Department of Veterinary Pathology and Microbiology, ²Department of Veterinary Anatomy, Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria, Nigeria

Correspondence: Email: sohnapsj@yahoo.com, Tel: +2348080365294

INTRODUCTION

Onchocerciasis in animals is known to be endemic in Africa, Australia and North America (Soulsby, 1982; Georgi and Georgi, 1990; Achikwi *et al.*, 2004). The disease shares the same vector with the human blinding onchocerciasis (Anosike and Onwuliri, 1995; Mario *et al.*, 1995; Achikwi *et al.*, 2004). Affected hosts harbor the worms in connective tissues, especially in the subcutaneous tissues of the hump, neck, ear or ventral abdomen (Soulsby, 1982). According to Georgi and Georgi (1990), *O. gutturosa* may be found in nuchal ligament and *O. lienalis* in the connective tissues between the rumen and spleen. Intradermal nodules and subcutaneous tissues of the ventral regions, such as abdomen, udder and scrotum are said to be the usual predilections of *O. ochengi* (Bwangamoi, 1968), while *O. dukei* inhabits the perimuscular and subcutaneous tissues of the thorax and thighs (Soulsby, 1982).

The prevalence of onchocerciasis could be high in both humans and animals in Nigeria (Anosike and Onwuliri, 1995). Although onchocerciasis could be reduced by treatment with ivermectin (Tripis *et al.*, 1990; Rao *et al.*, 1992; Kassa *et al.*, 1994; Brian *et al.*, 1995; Gilbert, 1995) and control of the vector population (Bissan *et al.*, 1995), information on the prevalence of the disease in goats within Kaduna State appears to be scarce. Therefore, the present study was carried out to record the prevalence of cutaneous onchocerciasis in goats within the State in order to have insights into its control measures.

KEY WORDS: Onchocerciasis, Prevalence, Goats, Kaduna State, Nigeria

MATERIALS AND METHODS

Two hundred and twenty-six Kano brown goats of ages one to five years old, presented for slaughter at the slaughter slabs in Anchau, Giwa and Soba were examined for skin lesions (Table I). The study period was from November, 2001 to June, 2004. The gross lesions observed on the skin were recorded and tabulated for each of the goats examined.

Skin specimens were collected after slaughter from 145 goats, comprising 103 goats found with gross lesions and 42 apparently normal ones. The specimens were immediately fixed in 10% buffered neutral formalin until the time of processing. Each sample was processed, sectioned at 5µm thickness and stained with Haematoxylin and Eosin as described by Luna (1968). The sections were examined for *Onchocerca spp* using the light microscope.

TABLE 1: Sources and number of goats examined for gross lesions during the survey

Source	Females	Males	Total
Anchau	68	69	137
Giwa	40	18	58
Soba	23	8	31
Total	131	95	226

The data generated were summarized as percentages of population samples. The percentage of *Onchocerca* positive cases were calculated based on the 145 goats whose skin samples were examined microscopically.

RESULTS AND DISCUSSION

The postmortem examinations of skins revealed gross lesions on 103(45.6%) goats (Table II).

Rough hair coats were the most prevalent in affected goats 58(19.9%). Irregularly shaped areas of alopecia were found on the skin of 30(13.3%) goats. There were firm nodules of variable sizes of 0.4 to 0.8cm in diameter around the pelvic area and on the udder of 1(0.4%) goat encountered at Anchau. These nodules were suspected to have been caused by an *Onchocerca spp.*

TABLE II: Prevalence of gross skin lesions in goats slaughtered at Anchau, Giwa and Soba (November, 2001 – June, 2004)

Skin lesions	Number	%
Rough hair coat	58	25.7
Hair loss/alopecia	30	13.3
Crusty lesions around the mouth	4	1.8
Tick infestation only	10	4.4
Nodules	1	0.4
Skin lesions (total)	103	45.6
Normal	123	54.4
Total	226	100.0

Under the light microscope, sections of *Onchocerca spp* were found in the dermis of 5(3.4%) female goats from Anchau area of Kaduna State (Table III). The positive cases confirmed were all among those that had alopecia, while the goat that had the nodules was negative for the parasite. The presence of the *Onchocerca* did not stimulate infiltration of any inflammatory cells into the dermis of the goats (Fig. 1).

TABLE III: Sources and number of the goats examined for microscopic lesions

Source	Females	Males	Total
Anchau	58	44	102
Giwa	25	13	38
Soba	2	3	5
Total	85	60	145

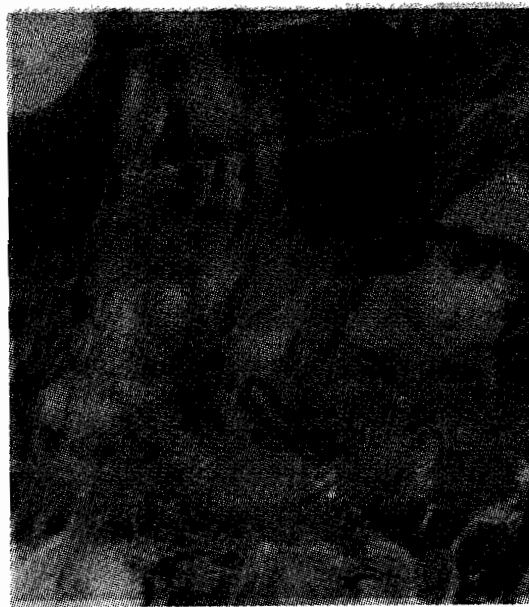


Fig. 2: Scanned colored photomicrograph of skin section of a goat. Note the *Onchocerca spp* (arrow) in the dermis. H & E stain. 400

Cutaneous onchocerciasis is always associated with the formation of nodular lesions (Soulsby, 1982). On the contrary, the positive cases among the goats in the present study were those which had alopecia. The only goat which had nodules on the skin was negative for the parasite.

The prevalence of 3.4% caprine cutaneous onchocerciasis was observed in goats from Anchau area of Kaduna State (Table IV). The observed prevalence is lower than the 84.5% reported by Shillhorn and Robl (1975) on bovine

onchocerciasis in Zaria, but similar to the 3.5% incidence rate reported among sheep in Kenya (Bwangamoi, 1970). Variations in prevalence rates of onchocerciasis in this study and previous studies could be due to different vector activities in the affected areas. It is not, however, clear why all the goats affected with the disease in this study were all from Anchau area, but it is possible that the goats presented for slaughter at the market could have been purchased by several dealers from different locations before reaching the slaughter slabs.

TABLE IV: The prevalence of cutaneous caprine onchocerciasis in Kaduna State , Nigeria

Location	Number sampled	Number positive	%
Anchau	102	5	3.4
Giwa	38	0	0
Soba	5	0	0
Total	145	5	3.4

CONCLUSION

This study has shown that goats in some areas of Kaduna State are still at the risk of being infected by *Onchocerca species*. Therefore, measures at preventing the spread of onchocerciasis to other animals and humans should be implored by relevant stakeholders in the State.

REFERENCES

ACHIKWI, M.D., HARNETT, W., BRADLEY, J. and RENZ, A. (2004): *Onchocerca ochengi* acquisition in Zebu Gudali cattle exposed to natural transmission: parasite population dynamics and IgG antibody subclass responses to Ov 10/Ov11 recombinant antigens. *Vet. Parasitol.*, **122**: 35-49.

ANOSIKE, J.C. and ONWULIRI O.E. (1995): Studies in filariasis in Bauchi state, Nigeria. 1. Endemicity of human onchocerciasis in Ningi Local Government Area. *Ann. Trop. Med. Parasitol.*, **89**: 31-38.

BISSAN, Y., HOUGARD, J.M., DOUCOURE, K., AKPOBOUA, A., BACK, C., POUDIOUGO, P., SIB, A.P., COULIBALY, Y., GUILLET, P., SESAY, I. and QUILLVERE, D. (1995): Drastic reduction of populations of *Simulium sirbanum* (Diptera: Simuliidae) in central Sierra Leone after 5 years of larviciding operations by the onchocerciasis control programme. *Ann. Trop. Med. Parasitol.*, **89**: 63-72.

BRIAN, O.C.D., GUILLERMO, Z., JULIO, C., EDDIE, W.C. and BREATRIZ, M. (1992): Effects of three month doses of ivermectin on adult *Onchocerca volvulus*. *Am. J. Trop. Med. Hyg.*, **46**: 189-194.

BWANGAMOI, O. (1968): The incidence of skin diseases of cattle in Uganda. *Bull. Epizoot. Dis. Afr.*, **16**: 115-119.

BWANGAMOI, O. (1970): A survey of skin diseases of domestic animals and defects which down grade hides and skins in East Africa. III. *Bull. Epizoot. Dis. Afr.*, **18**: 243-246.

GILBERT, B. (1995): Ivermectin treatment of Onchocercal skin lesions: observations from a placebo controlled, double blind trial in Malawi. *Am. J. Trop. Med. Hyg.*, **52**: 270-276.

GEORGI, J. R. and GEORGI, M. E. (1990): *Parasitology for Veterinarians*, 5th edition. W.B. Sanders Company, Philadelphia; 204-206.

KASSA, D., JOCHEN, T., CHRISTOPHER, E., MICHEAL, L., MATHIAS, N., KIVABLAH, A., and DIETRICH W.B. (1994): Evaluations of ultra-sonography for the detection of drug induced changes in onchocercal nodules. *Am. J. Trop. Med. Hyg.*, **51**: 800-808.

LUNA, L.G (1968): *Manual of Histologic Staining Methods of the Armed Forces Institute of Pathology*, 3rd Ed. McGraw-Hill Book Company, New York; 34-36.

- MARIO, A.R., MARIO, H.R., HECTOR, M., MARGELI, P. and ADRIAN R.R. (1995): Effects of semi-annual treatments of Ivermectin on the prevalence and intensity of *Onchocerca volvulus* skin infection, ocular lesions, and infectivity of *Simulium ochraceum* populations in Southern Mexico. *Am. J. Trop. Med. Hyg.*, 52: 429-434.
- RAO, U.R., VICKERY, A.C., HWA, B.H. and NAYAR, J.K. (1992): Brugia Malawi: Ivermectin inhibits the exsheathment of microfilaria. *Am. J. Trop. Med. Hyg.*, 46: 183-188.
- SCHILLHORN, V.V. and ROBL, M.G. (1975): Aortic onchocerciasis in cattle in Zaria (Nigeria). *Rev. Elev. Vet. Med. Trop.*, 8:305-310.
- SOULSBY, E.J.L. (1982): Helminths, Arthropods and Protozoa of Domestic Animals, 6th Ed. Bailliere Tindall, London; 323-327.
- TRIPIS, M. CHILDS, J.E., FRYAUFF, D.J., GREENE, B.M., WILLIAMS, P.N., MUNOZ, B.E., PACQUE, M.C., and TAYLOR H.R. (1990): Effect of mass treatment of a human population with ivermectin on transmission of *Onchocerca volvulus* by *Simulium yahense* in Liberia, West Africa. *Am. J. Trop. Med. Hyg.*, 42: 148-156.