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Strategic Treatment of Fascioliasis in an Integrated Dairy Farm in Kaduna State, A Clinical Experiment

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Abstract: An experimental study on strategic treatment of bovine fascioliasis was conducted on 180 white Fulani x Friesians cross of various ages and sex. All the animals are on semi intensive management system. The animals were divided into 3 groups of 60 lactating, 60 dry cows and 60 young stocks (heifers and bulls). All animal in farm were screened for fascioliasis. The lactating animals and the young stock were treated with Ivomec super® at a dose rate of 1 mL/50 kg body weight at the beginning of the dry season (December) while the dry cows were excluded. 20 faecal samples were collected randomly from each group every end of the month throughout the dry season (December-April respectively) and analyzed by sedimentation technique for *Fasciola* egg(s). None of the treated animals were positive at the end of December to April. 16, 19, 24, 26, 29% of dry animals were positive for Fasciola eggs throughout the experimental period (December-April). In conclusion, a single injection of Ivomec super® administered in mid-December may be used as a protocol to effectively control the incidence of bovine fascioliasis in the tropic.

Key words: Friesians, Ivomec super®, sedimentation, white fulani

INTRODUCTION

Helminthic infestations accounts for a great deal of losses in a dairy farm as far as milk yield is concern. Fascioliasis caused by *Fasciola gigantica* is the most economically important helminthic disease of animals in Northern Nigeria (Schillhorn van Veen *et al*., 1980). Its peak prevalence is seasonal (dry season) with possible complications associated with *Clostridium novyi* (Mas-Coma *et al*., 2005). Several factors account for the prevalence fascioliasis, for instance, wet lands, marshy areas and stagnant water favours the multiplication of the intermediate host (snail), moreover, the free grazing in those areas exacerbate the problem allowing the fasciola to complete its lifecycle by passing from the snail to the final host (cattle) (Iqbal *et al*., 2007). Muhammad *et al*. (2008) reported that mixed farming of small and large ruminants contribute to the prevalence of fascioliasis. Bovine fascioliasis may manifest clinically either as acute or chronic disease depending on the amount of metacercariae ingested (Behm and Sangster, 1999), in the dry season when only the wetlands are likely to have fresh grass, the chances of cattle ingesting very large quantities of metacercaria is very high, the pathology caused by the immature fluke in the liver may be observed as anemia, hypoalbuminemia and marked eosinophilia (Dubinsky, 1993). Poor performance of animals infected with *fasciola* is associated with liver damage which is evident by elevation of liver enzyme activities, such as Glutamate Dehydrogenase (GLDH), Gamma-Glutamyl Transferase (GGT) and Lactate dehydrogenase (LDH) (Sykes *et al*., 1980; Anderson *et al*., 1981). Clinically, dairy cattle with fascioliasis suffer loss of weight especially during lactation, drop in milk production; anemia and diarrhoea may develop at the chronic stage of the disease (Radostits *et al*., 1995). Muhammad *et al*. (2008) reported a drop in milk total solid in liver fluke infected dairy cows.

This study was designed to determine the critical period for the treatment of fascioliasis in order to prevent snail infestation.

MATERIALS AND METHODS

This study was conducted in 2010 at Raudah integrated dairy farm in Kaduna State, Nigeria. A white Fulani-Friesian crossed of 180 cattle of various ages and sex kept on semi intensive management system were divided into 3 groups of 60 animals each.

Group classification:

A. Lactating cows - Cows in active lactation producing milk on a daily bases.

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B. Dry cows - Non lactating cows both pregnant and open.
C. Young stock - Weaner bulls, weaner heifers and young bulls and young heifers.

Seasonal classification: For the purpose of this experimental field study, the following was adopted:

- December was considered as beginning of dry season. The period of feed scarcity for the animals actually begins in December when fields must have dried up and the animals are forced to depend only on wet lands for any green leaf or grass.
- May was considered as the beginning of rainy season with feed availability

Sampling: Faecal samples were collected in polytene bags, labeled using the animal's ear tag number and transported on ice packs to the Helminthology Laboratory of the Veterinary Teaching Hospital of the Ahmadu Bello University, Zaria.

20 faecal samples of about 2g each were collected randomly every end of month from each group of animals and analyzed by sedimentation technique as describe by Soulsby (1982) for presence or absence of *Fasciola* eggs.

Group treatment: All positive animals in each group (A and C) except the dry cows group (B) were treated with Ivomec super® (Ivermectin and Clorsulon) at a dose rate of 1ml/50kg B.W. at the beginning of the dry season (December).

RESULTS

The Fasciola egg excretion rate in the two group of animals (milking animal n = 60 and young stock n = 60) was reduced from 15 to 0% and 13 to 0% respectively within two weeks of treatment using Ivomectin super at a dose rate of 1ml per 50 kg body weight. The dry cows (n = 60) untreated however continue to shed fasciola egg in their feaces throughout the period of the studies (Table 1). All the animals in the dry cow group were kept under intensive management system, they were not allow to go on free range grazing to minimize pasture and stream contamination with their faeces.

DISCUSSION

From the results, all the groups had positive cases for *Fasciola* eggs in early December (13, 15 and 16% of young stock, milking animals and dry cows, respectively) before the commencement of treatment. This is due to the previous infection acquired during the last dry season grazing period. The high prevalence of the disease in all the 3 groups (A, B and C) in early December necessitated the need for early intervention in the clinical management of fascioliasis. The inability for the animal in the milking and young stock groups to pick fresh infection as observed in this study may be due to the residual effects of the drug used in the treatment. It has been shown in the field (personal experience) that animals treated with ivomec super® on monthly bases don't come down with helminthiasis. From the result of our study, the prevalence of the disease appears to be more during the dry season period this observation is in agreement with the report of Schillhorn van Veen *et al*. (1980) in their studies of prevalence of fascioliasis in northern Nigeria. Similarly the finding in this study is also in consonance with the report of Srikitjakarn (1986) in buffalo cows in the Northeast of Thailand. Thus the best time to repeat treatment against liver fluke will be around April.

Table 1: Percentage positive for *Fasciola* eggs in the 3 groups in dry season (December - April) following administration of ivomec super® in mid- December

Months	No. of milking animals (+ or -) (n = 60)	No. of Young Stock (+ or -) (n = 60)	Dry cows positive (%) (n = 60)
December[a]	15% +ve	13% +ve	16
December[b]	All –ve	All –ve	17
January	All –ve	All –ve	19
February	All –ve	All –ve	24
March	All –ve	All –ve	26
April	All --ve	All –ve	29

[a]: Early December; [b]: End of December

CONCLUSION

From the study, a single injection of Ivermectin Super administered in December and a repeat treatment in April respectively when used as a protocol may effectively control the incidence of bovine fascioliasis. In addition, mechanical destruction of the intermediate hosts (snails) may be of value alongside chemotherapy.

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