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A preliminary observation on the pathogenicity of *Fasciola gigantica* in pregnant West African Dwarf ewes

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RÉSUMÉ

Observation préliminaire sur la pathogénicité de *Fasciola gigantica* chez des brebis gestantes de race naine d'Afrique de l'Ouest

Trois brebis de la race naine de l'Afrique de l'Ouest en état précoce de gestation et une non-gestante ont reçu, chacune, 75 kystes de *Fasciola gigantica*. Les 3 gestantes sont mortes entre 8 et 10 semaines après leur infection alors que la 4e devait être abattue pour étude comparative *post mortem*. L'auteur suggère que l'état de gestation augmente la pathogénèse due à *Fasciola gigantica*.

INTRODUCTION

Fasciola gigantica infection is of considerable economic importance in the animal industry in Nigeria. However, apart from a few pioneering experiments (7) little is known about the pathogenicity of the infection among indigenous breeds of animals. Nutritional status, splenectomy or corticosteroid treatment and intercurrent infections have been shown to determine pathogenicity of the infection (6).

There is experimental evidence indicating that fasciolasis reduces reproductive performance of ewes and that specific anthelminthic treatment abolishes this effect (2). There is also evidence that pregnancy enhances the pathogenicity of *Fasciola hepatica* at high parasite burdens (9). Acute fascioliasis, which is here reported, is known to occur at about 8 weeks when 800-2 500 flukes are usually present in the liver (5).

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MATERIALS AND METHODS

As part of a larger experiment on fasciolasis, four female West African Dwarf sheep aged between 12-18 months, three of which were in early pregnancy were used for the experiment. The sheep were initially screened for fascioliasis by repeated faecal examination and found to be negative. They were housed in the Small Animal Unit, University of Ibadan farm.

Fasciola gigantica metacercariae were produced in laboratory reared *Lymnaea natalensis* in the conventional manner. 75 metacercariae were counted unto filter papers which were then folded and enclosed in gelatin capsules. These were later given orally to the sheep. Following the death or slaughter of some animals, the remaining animal in the experimental group was slaughtered. Terminal haematological values of the slaughtered animals were obtained.

Post-mortem examination and parasite recovery were done as described (8).

TABLE 1 - Haematological values and parasite recovery rates.

Identification	Sex	N°. of parasites recovered	Terminal haematological values		
			Pcv	Hbgm/100ml	Hbc x 10^6
T 1163	F	12 (16)		ND	
T 104	F	2 (2.6)		ND	
T 110	F	8 (10.6)	18.8	8.0	6.5
T 106	F (NP)	6 (8.0)	18.0	10.6	7.3

( ) p.100 parasite recovery ; ND - Not determined ; NP - Non-pregnant.

RESULTS

Two of the pregnant sheep died approximately 8 weeks post-infection. The third gradually lost condition, became recumbent and comatose. It was slaughtered at 10 weeks post-infection. All animals had evidence of liver damage as shown by migrating tracts of immature flukes and typical hepatic pathology. Terminal haematological indices were similar between the pregnant and non-pregnant infected animals. Parasite recovery rates were also similar (table I).

DISCUSSION

Although sheep are generally considered the most susceptible of domestic animals to fascioliasis, acute fascioliasis is normally thought to occur when parasites recovery of *F. hepatica* is between 800-2 500. However, *F. gigantica* is probably more pathogenic to sheep than *F. hepatica* (4). Several observations appear consistent with the latter view (3, 10).

Pregnancy is reported to enhance pathogenicity of *Fasciola hepatica* leading to earlier maturation of worms and higher infection rates (9). It has been reported that degenerative and biochemical changes occur in hepatic cells in advancing pregnancy in sheep (1). The latter may have contributed to the pathogenicity of the infection, although the hormonal changes which accompany pregnancy could also influence the pathogenicity of the parasite.

Fig. 1. — Eight week old *F. gigantica* showing anterior and ventral suckers.

SUMMARY

Three pregnant ewes were used in an experiment designed to determine the level of *Fasciola gigantica* infections pathogenic to West African Dwarf (WAD) sheep. All were exposed to 75 metacercariae each and death occured after a maximum period of 10 weeks.

Conceptuses were carried till death and no abortion or still birth occured. The low level metacercariae dose was not lethal to other non-pregnant litter mates at this period. It is suggested that pregnancy enhanced the pathogenicity of *F. gigantica* in ewes.

RESUMEN

Observación preliminar sobre la patogenicidad de *Fasciola gigantica* en ovejas en gestación de la raza enana de Africa del oeste

Tres ovejas en gestación y una no en gestación recibieron cada una 75 metacercarios de *Fasciola gigantica.*

Las tres primeras murieron entre 8 y 10 semanas despues de su infestación mientras la última fue matada para estudiarla *post mortem* en comparación.

El autor sugiere que el estado de gestación aumente la patogenesis causada por *Fasciola gigantica.*

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