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LIVER FLUKE *Fasciola gigantica* IN AFRICAN BUFFALO AND ANTELOPES IN UGANDA, EAST AFRICA

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Abstract: The liver fluke *Fasciola gigantica* was recovered from 58 percent of 82 African buffalo (*Syncerus caffer*), 47 percent of 103 Uganda kob (*Adenota (Kobus) kob*), and 47 percent of 47 Jackson's hartebeest (*Alcelaphus buselaphus jacksoni*) examined in the West Acholi District of Uganda in 1965-67. None of 22 oribi (*Ourebia ourebi*) was infected. There was no significant difference in prevalence between males and females or between host age groups except in Jackson's hartebeest. In this host the prevalence was higher in older animals.

In 5 percent of the infected hartebeest, 17 percent of the infected kob, and 69 percent of the infected buffalo, flukes were recovered only from the gall bladder. The importance of examining the gall bladder in addition to the bile ducts to detect *F. gigantica* is emphasized.

INTRODUCTION

Fasciola gigantica Cobbold, 1855 is the common liver fluke of domestic and wild ruminants in Eastern Africa.^{2,4} In the West Acholi District of Uganda it was commonly recovered from African buffalo and two species of antelope which were harvested as part of a game cropping project. The large number of animals examined in 1965-67 permitted an evaluation of the prevalence of *F. gigantica* in each species of host.

METHODS

Animals were collected by shooting, after which they were field dressed or transported to a central abattoir. The liver was removed, sectioned at 1 cm intervals, and massaged to force any flukes from the bile ducts. The gall bladder was opened, drained and inspected for flukes. The liver was usually examined within ½-1 hour after death.

RESULTS

African Buffalo

The livers of 82 buffalo were examined from April, 1966 to April, 1967. *F. gigantica* was found in the bile ducts or gall

bladder of 48 (58%). The mean number of flukes was 8.4 (range: 1-66).

Flukes were recovered from the liver of 16 (70%) of 23 female buffalo and from 32 (54%) of 59 males. Differences in the prevalence of flukes in the two sexes and in the different age groups (Table 1) were not significant (chi square, $p > .05$).

Uganda Kob

The livers of 103 Uganda kob were examined from June, 1966 to March, 1967. *F. gigantica* was found in the bile ducts or gall bladder of 48 (47%). The mean number of flukes recovered from the bile ducts and gall bladder was 4.8 (range: 1-17).

The small number of female kob examined precluded comparison of the incidence in the two sexes. Differences in the incidence of flukes in the different age groups (Table 1) were not significant (chi square, $p > .05$).

Jackson's Hartebeest

The livers of 47 Jackson's hartebeest were examined from July, 1966 to September, 1967. *F. gigantica* was found in the bile ducts or gall bladder of 20 (47%).

TABLE 1. Occurrence of *Fasciola gigantica* in African buffalo, Uganda kob, and Jackson's hartebeest according to host age.

Host	Host Age	No. of Livers Examined	Per Cent Infected	Mean No. of Flukes Recovered
African buffalo	1-4 years	14	50	7.0
	5-8 years	41	63	7.5
	9+ years	18	61	12.9
Uganda kob	Immature	9	44	4.7
	Mature	65	45	4.3
	Old	10	50	8.8
Jackson's hartebeest	11-19 months	7	0	—
	21 months	5	40	1.0
	Mature	25	48	5.0
	Old	6	67	3.2

The mean number of flukes recovered was 4.3 (range: 1-21).

Flukes were recovered from the liver of seven (58%) of 12 female hartebeest and from 15 (43%) of 35 males. Whereas this difference is not significant, the difference in prevalence of *F. gigantica* between the youngest hartebeest examined and the mature animals is significant (chi square, $p < .05$) and between the youngest and oldest animals is highly significant (chi square, $p < .01$) (Table 1).

Oribi

The livers of 22 oribi were examined from October, 1965 to March, 1967. None was infected with *F. gigantica*.

DISCUSSION

The prevalence of *F. gigantica* in West Acholi District, Uganda, as determined by the examination of both bile ducts and gall bladder, was higher in African buffalo (58%), than in Uganda kob (47%) and Jackson's hartebeest (47%). Similarly the mean number of flukes recovered was higher in buffalo (8.4) than in these two species of antelope (4.8 and 4.3 respectively). These results suggest that kob and hartebeest, which have similar

habitat preferences and grazing habits, may have a similar degree of exposure to *F. gigantica* metacercariae. The higher prevalence in buffalo may indicate greater exposure to infection resulting from their utilization of grass in low moist areas and around wallows.

Although the present-day range of game populations does not appear to overlap with the range of cattle in West Acholi District, it is likely that there was considerable contact between game and cattle in the past. The prevalence of liver fluke in cattle in areas adjacent to the study area is in the order of 80 percent¹ and the possibility that cattle were involved in the propagation of fascioliasis in buffalo and antelopes cannot be discounted.

The most obvious pathological changes observed in the liver of cattle infected with *F. gigantica* are cirrhosis and calcification of the bile ducts.³ These changes are responsible for the condemnation of numerous livers from abattoirs in Uganda.^{2,3} Similar changes were observed in some heavily infected livers of African buffalo and Uganda kob in this study and they constitute an important consideration when game populations such as these are managed for meat production.

The examination of the gall bladder in this study yielded surprising results (Table 2). Whereas 95 percent of the hartebeest

TABLE 2. Prevalence of *Fasciola gigantica* according to site of recovery.

	Bile Ducts Only Infected Per Cent of Infections	Gall Bladder Only Infected Per Cent of Infections	Both Bile Ducts and Gall Bladder Infected Per Cent of Infections	Site Not Recorded Per Cent of Infections
African buffalo	12	69	15	4
Uganda kob	77	17	4	2
Jackson's hartebeest	90*	5	5	—

* In two of these infections flukes were also recovered from the duodenum.

infections and 81 percent of the kob infections would have been detected by examination only of the bile ducts, only 27 percent of the buffalo infections would have been detected by this method. Flukes were found only in the gall bladder in 69

percent of the infected buffalo. These results clearly demonstrate the importance of examining the gall bladder as well as the bile ducts for the detection of *F. gigantica* in African buffalo under these conditions.

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LITERATURE CITED

1. BINDERNAGEL, J. A. 1968. Game cropping in Uganda. Canadian International Development Agency, Ottawa. 200 pp. (Mimeographed).
2. BWANGAMOI, O. 1968. Helminth parasites of domestic and wild animals in Uganda. Bull. epizoot. Dis. Afr. 16: 429-454.
3. COYLE, T. J. 1956. Liver fluke in Uganda. Bull. epizoot. Dis. Afr. 4: 47-55.
4. ROUND, M. C. 1962. The helminth parasites of domesticated animals in Kenya. J. Helminth. 36: 375-449.
5. ROUND, M. C. 1968. Checklist of helminth parasites of African mammals. Tech. Com. No. 38, Comm. Bureau of Helminthology.

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