



Prevalence of *Cysticercus tenuicollis* cysts in sheep slaughtered at Sokoto abattoir, Sokoto state, Nigeria

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Abstract

A prospective study was conducted based on the principle of post mortem examination on sheep slaughtered at Sokoto abattoir for the presence of *Cysticercus tenuicollis* cysts. A total of 261 sheep were examined with 34 (13.03%) infected. Prevalence of infection increased with the age of the animals. Males had relatively higher prevalence than females. Infection was recorded in several visceral organs with omentum having the highest prevalence (35.29%) and the lungs the least (11.76%). The results suggest that *C. tenuicollis* is common and may constitute a health problem in sheep and a source of economic loss in the meat industry, thus emphasizing the need for proper meat inspection and handling of offals in the study area.

Keywords: *Cysticercus tenuicollis*, sheep, slaughter, sokoto, n igeria.

Introduction

Livestock may act as the intermediate hosts for the tapeworms of humans and other animals. Cestodes of the family *Taeniidae* which infect the dog (definitive host) are transmitted to a range of intermediate host species where they may cause hydatidosis, cysticercosis or coenurosis (Flisser *et al.*, 1982; Eckert *et al.*, 1984; Thompson & Lymbery, 1995). The larval tapeworms (metacestodes) develop as fluid-filled cysts that may act as space-occupying lesions and cause organ condemnation at meat inspection (Radostits *et al.*, 2007).

The mature tapeworm, *Taenia hydatigena*, lays eggs which pass out in the faeces of the host and are ingested by the ruminant intermediate host during grazing. Ingested eggs hatch in the small intestine and later migrate to reach the liver and other visceral organs like the, lung, heart, kidney and intestines of the intermediate host in which they may not be a major cause of concern. There may be only signs of abdominal pain, colic, loss of appetite, emaciation and unthriftiness (Singh *et al.*, 2003) although the migration of cysticerci in the liver may also cause hepatitis cysticercosa leading to haemorrhagic and fibrotic tracts and serofibrinous peritonitis (Soulsby, 1982; Blazek *et al.*, 1985) and in very heavy infections, the migrating larvae destroy the hepatic cells with eosinophilic infiltration and severe inflammation that may prove to be fatal. *Cysticercus tenuicollis* infection may constitute a health problem to

sheep and thus a source of economic loss in the meat industry (Flisser *et al.*, 1982; Abidi *et al.*, 1989).

Previous studies suggest that inspection of sheep at abattoirs represent one of the perfect and accurate methods of diagnosis of metacestodes infections (Gracey *et al.*, 1999).

Materials and methods

The study was conducted in Sokoto state, Nigeria. The state shares borders with Niger Republic to the North, Kebbi state to the South, and Zamfara state to the East. Sokoto abattoir serves Sokoto town and neighboring villages with meats.

A total of 261 sheep comprising 183 males and 78 females were examined postmortem for the detection of *C. tenuicollis* cysts during slaughter and evisceration at the abattoir. Heart, esophagus, diaphragm, liver, kidneys, lungs, masseter muscle (internal and external), the peritoneal cavity and skeletal muscles were examined, palpated and incised for detection of *C. tenuicollis*. Positive samples were taken to Public Health and Preventive Medicine laboratory, Faculty of Veterinary Medicine, Usmanu Danfodiyo University, Sokoto for examination.

The samples collected were confirmed to be *Cysticercus*

tenuicollis cysts using their predilection sites, size and morphology. Pictures of the cysts were captured using digital Camera (Sony, Carl Zeisis, Optical Zoom 4X, 7.2 megapixels), modified and resized using computer program Microsoft office (2007 version).

Results

Post mortem inspection of 261 sheep carcasses at Sokoto abattoir revealed *Cysticercus tenuicollis* cysts in 34(13.03%) of the animals. Out of 184 male and 78 females examined, 25(13.66%) and 9 (11.54%) were respectively infected. Among age groups, the prevalence of infection was 10.17%, 11.18% and 24.39% for sheep aged 6-12 months, 12-24 months and above 24 months respectively. Prevalence of cysts at various sites were liver, 11(32.35%); omentum, 12(35.29%); mesentery, 7(20.59%) and lungs, 4(11.76%) (Table 1).

Table 1: Prevalence of *Cysticercus tenuicollis* in sheep slaughtered at Sokoto, Nigeria

		Number examined	No. (%) infected
All animals		261	34 (13.03)
Sex	Male	183	25 (13.66)
	Female	78	9 (11.54)
Age (months)	< 12	59	6 (10.17)
	12 - 24	161	18 (11.18)
	> 24	41	10 (24.39)

Table 2: Prevalence of *Cysticercus tenuicollis* in different organs of sheep (n=261)

Omentum	Liver	Mesentery	Lungs	Total no. of positive animals (%)
No. positive (%)	No. positive (%)	No. positive (%)	No. positive (%)	
12(35.29)	11(32.35)	7(20.59)	4(11.76)	34(13.03)



Plate I: *C. tenuicollis* in mesentery of sheep (arrow).

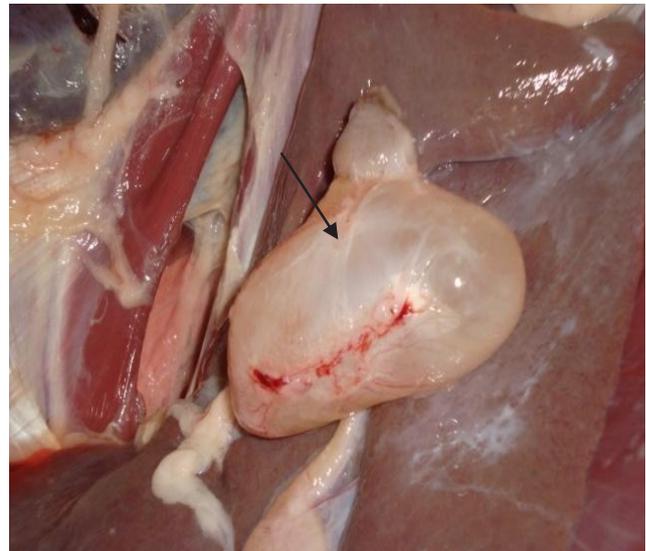


Plate II: *C. tenuicollis* in lungs capsule of sheep (arrow).

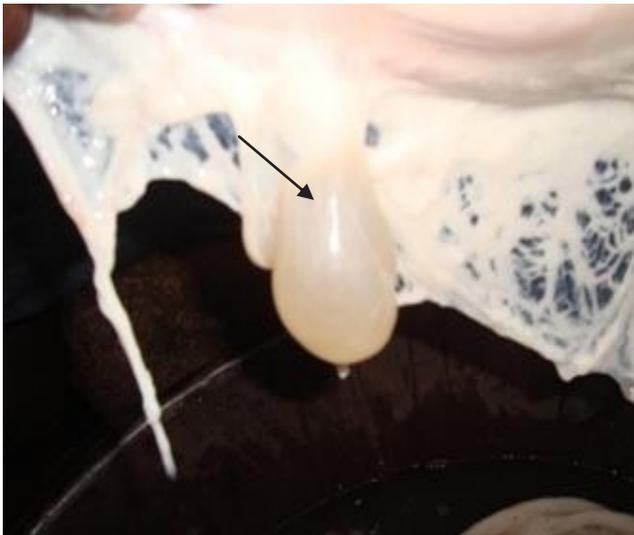


Plate III: *C. tenuicollis* in omentum of sheep (arrow).

Discussion

The prevalence of 13.03% recorded in this study is relatively high probably because most sheep in the study area are reared in company of dogs the definitive hosts of the parasite. Dada & Belino (2006) recorded a higher prevalence of 21.4% in Kano in essentially the same geographical zone as the study area. Also, relatively higher prevalence of 16.7% and 23.27% were respectively reported from Turkey (Hasslinger and Weber-Werrington, 1988) and Egypt (El-Masry, 1986). On the other hand, similar or lower prevalence of 12.8% and 1.25% were respectively recorded in sheep in Iran (Radfar *et al.*, 2005) and Saudi Arabia (El – Metenawy, 1999). As observed by Radfar *et al.* (2005), the grazing behavior and management system of the animals may be responsible for the differences in prevalence between this and the other studies. The present study suggest that the prevalence of infection increases with age of the animals, thus agreeing with the findings of Abu-Elwafa *et al.* (2009) which showed higher prevalence in aged than young animals. However, in the

present study, there was no significant difference in prevalence between the sex groups.

Although *C. tenuicollis* is not zoonotic, it may be an important cause of economic loss in the meat industry since viscera harbouring them may be rejected for aesthetic reasons (Jibat *et al.*, 2008). The threat these parasite poses to the small ruminants meat industry in Nigeria is evident due to the present situation of improper disposal of offal at abattoirs and backyard slaughter. The presence of freely roaming stray dogs on grazing land and the deep rooted habit of feeding dogs with ruminant offal, including are important risk factors. This may lead to the perpetuation of infection in the environment (Jibat *et al.*, 2008). The financial loss from condemnation in the abattoir is considered high. The results of this study suggest that infection of sheep with *Cysticercus tenuicollis* is common in Sokoto, Nigeria and that this may constitute economic and health problems in the meat industry.

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