Prevalence of amphistomes of cattle in Thailand

P. PRASITIRAT¹, T. CHOMPOOCHAN¹, S. NITHIUTHAI², S. WONGKASEMJIT¹, T. PUNMAMOAMG¹, P. PONGRUT¹, S. CHINONE³ and H. ITAGAKI³

¹ NIAH, Kaset Klang, Jatujuk, Bankok, Thailand
² Faculty of Veterinary Science, Chulalongkorn University Bankok, Thailand
³ Department of Parasitology, Azabu University, Kanagawa Ken, Japan

(Received 23 March, 1997)

Abstract: An epidemiological investigation of amphistome flukes of cattle was carried out in Thailand from 1991 to 1995 by examination of faecal samples and the presence of flukes in the forestomachs. During the period of 1992 to 1995, 4,122 and 3,087 faecal samples were collected from dairy and beef cattle in 17 and 2 provinces, respectively. Faecal examinations were performed by the beads technique and flotation method. The results revealed that the prevalence of amphistomes was obviously higher in beef cattle than in dairy cattle. The prevalence of infection in dairy cattle was 35.8, 14.0, 17.4 and 21.1% in 1992, 1993, 1994 and 1995, respectively. Eggs per gram of faeces (EPG) count ranged from 1 to 1,896. Other concurrent parasitic infections were caused by Fasciola spp. (2.9, 0.3, 3.8 and 4.1% in the years of study, respectively), Moniezia spp. (0.4, 0.1, 0.1, 0.9%), gastrointestinal strongyles (4.7, 2.8, 3.0, 5.7%), coccidia (0.6, 1.3, 0.4, 0.4%) and other parasites. The prevalence of amphistomes in beef cattle was 74.4, 72.7, 63.3 and 80% in 1992, 1993, 1994 and 1995, respectively, with EPG counts ranging from 1 to 2,152. Other current parasitic infections were due to Fasciola spp. (21.2, 14.6, 13.1, 3%), Moniezia (0.5, 2.4, 2, 1%), gastrointestinal strongyles (16.3, 7.3, 16.6, 42%), coccidia (1.5, 0, 3.8, 2.3%), and other parasites. Adult amphistome flukes were looked for at the abattoir in Nonthaburi Province from 1991 to 1995, and the prevalence of was found to be 46, 41, 39, 30 and 50% in those years, respectively.

Key words: Amphistomes, cattle, prevalence, Thailand

INTRODUCTION

The occurrence of infections caused by adult flukes of the superfamily Paramphistomoidea has been investigated in sheep, goats, cattle and buffaloes in many countries of the world. The disease, amphistomosis, caused by massive infection of the small intestine by immature amphistomes, and no information is available on the association of adult flukes with the clinical signs. Amphistomosis causes sporadic outbreaks characterised by acute
gastroenteritis with high morbidity and mortality rates, particularly in young animals, and is mainly confined to Africa, Asia, Australia, Eastern Europe and Russia (Boray 1959, Horak 1962, Boray 1969, Horak 1971, Gupta et al. 1978, Nikitin 1979, Hanna et al. 1988). It has been considered that all cases of amphistomosis are caused by certain species of the parasite. In Australia and New Zealand the species of amphistomes affecting cattle and sheep are *Calicophoron calicophorum* and *Paramphistomum ichikawai* (Brotowidjoyu and Copeman 1979). In Asia, according to information available from India and Ceylon, intestinal amphistomosis in cattle, buffalo, sheep and goat has been identified. The flukes most frequently responsible for the disease are *Gastrothylax crumenifer, Cotylophoron cotylophorum, Paramphistomum cervi, Fishoederius elongatus* and *Explanatum explanatum* (Boray 1959, Katiyar and Garg 1965, Rolfe and Boray 1987, Hanna et al. 1988, Sey 1989). Brotowidjoyu and Copeman (1979) assessed the prevalence and intensity of immature and mature flukes in cattle at abattoirs in North Queensland, using high, moderate and low intensity categories of > 20, 10-20 and < 10, respectively. The species of amphistomes obtained was *Calicophoron calicophorum*. In Thailand, the occurrence of amphistome infections has been reported (Chethanon et al. 1985).

The objective of this study is to describe the general trend in the prevalence rates of amphistome infections in beef and dairy cattle in Thailand between 1991 and 1995.

**MATERIALS AND METHODS**

Identification of amphistome infections by detection of eggs in the faeces

In the period from April 1992 to August 1995, faecal samples were obtained from 4,122 dairy cattle and 3,087 beef cattle in 17 (Bankok, Chaing mai, Nonthaburi, Prachin buri, Nakhon ratchasima, Saraburi, Ratchaburi, Nakhon nayok, Phetchaburi, Ayuthaya, Suphanburi, Chonburi, Nakhonpathom, Samuttsakhon, Chanthaburi, Srakaeo, Singhburi) and 2 (Singhburi, Chainat) provinces of Thailand as illustrated in Fig. 1. Faecal examination was performed by the beads technique (Taira 1985) to determine the prevalence rate of amphistome infections and by simple flotation method to detect concurrent infections.

Determination of amphistome infections by detection of adult flukes in the rumen

A total of 3,000 beef cattle were examined for rumen flukes from June 1991 to November 1995 at local abattoirs from 7 provinces (Sukhothai, Nakhonpathom, Prachuapkhirikhan, Lopburi, Chonburi, Phetchaburi, Rayong) as illustrated in Fig. 1. to determine the prevalence of adult amphistome infections.

![Fig. 1. Map of Thailand and study areas of amphistome infections in dairy and beef cattle](image-url)
RESULTS

The prevalence of parasitic infections in dairy and beef cattle, as determined by faecal examination in the period between 1992 and 1995, is shown in Fig. 2. The prevalence was obviously higher in beef cattle than in dairy cattle. Parasites found in the faeces of those animals comprised protozoan oocysts and eggs of nematodes, cestodes and trematodes including amphistomes. A higher percentage of beef cattle was found to be infected by amphistomes as compared to dairy cattle (Figs 3 and 4). The prevalence of amphistome infection ranged from 14.0 to 35.8% in dairy cattle while it was as high as 63.3 to 80.0% in beef cattle, and the eggs per gram of faeces (EPG) ranged from 1–1,896 and 1–2,152, respectively. The amphistome-infected animals were concurrently infected with other parasites such as Fasciola spp., strongyles, Moniezia sp. and coccidia (Figs 5 and 6). Of these parasites, liver flukes and strongyles showed a high prevalence throughout the years of study. In dairy and beef cattle without amphistome infection the prevalence of strongyles was rather high (Figs 7 and 8). Concurrent parasites except Strongyloides sp. and Trichuris spp. found in these groups of cattle were similar to those found in the animals infected by amphistomes.

The prevalence of adult amphistomes in beef cattle examined at an abattoir from 1991 to 1995 was 46, 41, 39, 30 and 50%, respectively (Fig. 9).

DISCUSSION

Muangyai (1989) reviewed the parasites of cattle and buffaloes and listed economically important parasites which included amphistomes. Intestinal amphistomosis has been described as an important disease of young stock in endemic areas (Boray 1959, Horak 1962, Boray 1969, Hanna et al. 1988, Sey 1989). Clinical disease usually develops only when there are massive numbers of immature amphistomes parasitic in the duodenum, causing acute enteritis. The diagnosis may be easily missed because the immature flukes, which cause the clinical signs, do not yet lay eggs. The adult egg-laying flukes appear to exert very little effect on the host animals, and eggs can be usually detected by the faecal sedimentation method.
Fig. 4. Prevalence of amphistome and other parasitic infections in beef cattle from 1992 to 1995

Fig. 5. Prevalence of concurrent parasitic infections found in amphistome-infected dairy cattle from 1992 to 1995

Fig. 6. Prevalence of concurrent parasitic infections found in amphistome-infected beef cattle from 1992 to 1995

Fig. 7. Prevalence of other parasitic infections found in dairy cattle not infected by amphistomes between 1992 and 1995

Fig. 8. Prevalence of other parasitic infections found in beef cattle not infected by amphistomes between 1992 and 1995

Fig. 9. Prevalence of adult amphistome infection in beef cattle examined at abattoirs between 1991 and 1995

A = Amphistomes, Lf = Liver fluke, S = Strongyles, C = Coccidia, M = Moniezia, T = Trichuris, St = Strongyloides
The results presented here show that the prevalence of amphistome infection was rather high throughout the experiment. The maximum EPG was 2,152. The maximum prevalence was clearly higher in beef than in dairy cattle. The difference in prevalence may be due to ingestion of amphistome metacercariae by dairy cattle during grazing on less contaminated pastures. Contrarily, the high prevalence of amphistomes in beef cattle indicates that the animals may be kept on heavily infected pastures where the intensity of egg contamination is high and snail intermediate hosts occur in large numbers.

Attempts to prevent grazing cattle from becoming infected by amphistomes are economically unfeasible, as almost all beef cattle were found to be infected and since an unusual combination of environmental conditions may lead to an outbreak of the disease. Since the disease is not often diagnosed, economic losses associated with amphistomosis are still unrecognised and underestimated in Thailand. In many fatal cases the immature flukes could not be found and identified due to their very small size. Young animals originating from endemic areas should be inspected carefully at postmortem examination. Also, the detection of intermediate host snails from pastures or water sources may be a useful aid to diagnosis.

ACKNOWLEDGEMENT

The authors would like to thank the farmers and the members of NIAM for their help in sample collection. Thanks are due to R. Inthararuksa, P. Tanajalearnwat and L. Sukteenthai for assistance and to Dr. S. Soonthornchad for his technical help with the figures.


REFERENCES


