

Short Communication

Tapeworm control practices by sheep farmers in Northern Ireland

C. McMahon^a, H.W.J. Edgar^b, J.P. Barley^b, R.E.B. Hanna^b, G.P. Brennan^a, I. Fairweather^{a,*}^a Parasite Therapeutics Research Group, School of Biological Sciences, Medical Biology Centre, The Queen's University of Belfast, 97 Lisburn Road, Belfast, BT9, 7BL, United Kingdom^b Veterinary Sciences Division, Agri-Food and Biosciences Institute (AFBI) Stormont, Belfast BT4 3SD, United Kingdom

ARTICLE INFO

Article history:

Received 2 September 2016

Received in revised form 27 October 2016

Accepted 5 December 2016

Available online 7 December 2016

Keywords:

Moniezia expansa

Questionnaire

Diagnostic data

Anthelmintics

Northern Ireland

ABSTRACT

A questionnaire to obtain information on tapeworm control practices was sent to 252 sheep farmers in Northern Ireland (NI) in 2012. Replies were received from 228 flock owners. Most farmers considered that tapeworm infections had less impact on productivity than gastrointestinal nematodes, flukes and ectoparasites. The majority of respondents (61.8%) did not treat for tapeworms. Of those that did, the average number of treatments given per year was 2.3, with some owners treating up to 6 times a year. The highest percentages of treatments were given over the period May–July. Benzimidazole compounds were the predominant class of drugs used (48.2%), followed by macrocyclic lactones (MLs) (31.2%). Levamisole, oxclozanide, closantel and Monepantel were also used; together with MLs, their combined use accounted for 51.9% of all treatments given, and represents inappropriate product choice.

Diagnostic data for tapeworm infections in NI over the period 2007–2014 was retrieved from the database held by the Veterinary Sciences Division at Stormont. Positive diagnoses remained low throughout this period: the highest recorded figure was 3.1%, in 2007. Despite there being little-to-no justification for treating sheep for *M. expansa* on the basis of any likely benefit to the health or production of the animals, many farmers in NI do treat for tapeworm and often with ineffective products. This is of concern, in that it could lead to the inadvertent development of anthelmintic resistance in nematode and trematode parasites.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

A variety of cestode, or tapeworm, parasites infect sheep around the world: e.g. *Thysanosoma* spp. across the Americas; *Avitellina* spp. in Asia and Africa; and *Stilesia* spp. in the Americas and Asia. *Moniezia* spp. have a global distribution and *Moniezia expansa* is the commonest tapeworm species present in young lambs in the UK (Abbott et al., 2012). Sheep are also the intermediate hosts to the larvae (or metacestodes; names in parenthesis) of certain dog tapeworms, viz. *Taenia hydatigena* (*Cysticercus tenuicollis*), *Taenia ovis* (*Cysticercus ovis*), *Taenia multiceps* (*Coenurus cerebralis*) and *Echinococcus granulosus*.

Moniezia is largely considered to be a parasite of low pathogenicity (Aitken, 2007) and worms are usually eliminated after approximately 18 months (Worley et al., 1974). Moreover, it has been proposed that many claims of the importance of monieziasis have been inflated or are unsubstantiated, more so than any other parasite (Elliott, 1984). These claims, not supported by direct evidence or controlled experiments, include assertions that *M. expansa* in lambs

may cause ill-thrift (Thomas, 1962; Moore, 1966; Lloyd-Evans, 1978); diarrhoea (Moore, 1966; Lloyd-Evans, 1978); and increased susceptibility to enterotoxaemia (Thomas et al., 1956; Thomas, 1962; Moore, 1966), to trace elements and mineral deficiencies (Porter, 1953) and to blowfly-strike (Heath et al., 1983).

The active ingredients of current commercial anthelmintics licensed for use against tapeworms (NOAH, 2015) include albendazole (Albenil®, Albex®, Endospec®, Ovispec®), levamisole (LV) plus praziquantel (PZ) (Levitape®), mebendazole (MEB) plus closantel (CLOS) (Mebadown®, Supaverm®) and ricobendazole (Allverm®, Rycoben®). Any identified use of products not listed above may be indicative of incorrect target choice for the target species, which is considered to be highly selective for the development of anthelmintic resistance (Abbott et al., 2012). Such products would include the macrocyclic lactones (MLs), specifically all the avermectins (AVMs) and moxidectin (MOX), as well as the amino-acetonitrile derivative (AAD), Monepantel.

A (limited) prevalence study was conducted in Northern Ireland (NI) some considerable time ago; it showed that *M. expansa* was the only tapeworm parasite species recovered from viscera collected from abattoirs between October 1970 and November 1971 (Taylor and Cawthorne, 1972). The percentage incidence of *M. expansa* was 4.5% (present in 15/334 of small intestines examined). No prevalence studies have been conducted in NI for tapeworm since that time.

* Corresponding author at: Parasite Therapeutics Research Group, School of Biological Sciences, Medical Biology Centre, The Queen's University of Belfast, 97, Lisburn Road, Belfast BT9 7BL, United Kingdom.

E-mail address: i.fairweather@qub.ac.uk (I. Fairweather).

In an effort to gain more up-to-date information on control of sheep parasites in NI, a number of investigations have been carried out recently and the results published (McMahon et al., 2013a,b,c, 2016; Hanna et al., 2015). The total sheep population size in NI is 1,989,700, with 938,600 breeding ewes (DAERA, 2016). Sheep and beef meat together represent the largest sector of the Agri-Food Industry in NI, which makes a major contribution to the economy of NI, in terms of its gross value added (GVA) and size of labour force. The economy of NI is more dependent on agriculture than any other region of the UK (Anon, 2010), so maintaining the health and productivity of the sheep population is important. The survey data published to date did not deal with tapeworm parasitism. Therefore, a questionnaire was sent to those farmers who had already collaborated in previous anthelmintic resistance (AR) investigations, to elicit data on control measures for tapeworms. This data is important, as inappropriate or inefficient drug use for these parasites may exacerbate AR in nematodes and liver fluke. In addition, the Laboratory Information Management Systems (LIMS) archive database of veterinary diagnoses held by the Veterinary Sciences Division of the Agri-Food and Biosciences Institute, Stormont, NI, was interrogated for diagnoses of tapeworm eggs/segments in faecal samples submitted during the period 2007–2014. The results of the two investigations are presented in this communication.

2. Materials and methods

2.1. Questionnaire

A province-wide questionnaire survey of parasite control measures was carried out in 2011 (for details, the reader is directed to McMahon et al., 2013a,b). Originally, Questionnaires were distributed to 1000 farmers and the respondents to that survey were sent a set of supplementary questions in March 2012. The questions were presented in 3 sections, namely, control of *Nematodirus* spp. (Section 1), control of ectoparasites (Section 2) and control of tapeworm (Section 3). This communication is only concerned with the responses to questions in Section 3. Descriptive statistics were calculated using Microsoft® Excel 2007.

2.2. Diagnostic data

Diagnosis of tapeworm infections was based on faecal egg counts (FECs) carried out by experienced veterinary diagnosticians on ovine

faeces samples submitted to the Veterinary Sciences Division, Stormont (Belfast) and Omagh, Northern Ireland between 2007 and 2014. Information retrieved from the database was limited to recorded diagnoses of tapeworm eggs or tapeworm segments. The data were filtered to remove samples received from independent researchers, other research institutes, pharmaceutical companies and “in-house” animals on VSD premises. The month of submission was recorded in the LIMS database, but not the exact date.

3. Results

3.1. General

Supplementary questionnaires were sent to 252 farmers, of whom 228 replied, which represented a return rate of 90.5%.

3.2. Perceived impact of parasites on productivity

Respondents were asked to rank (from 1 to 5) the importance of gastrointestinal nematodes, liver fluke, rumen fluke, tapeworm and ectoparasites in terms of their effect on productivity (Fig. 1). Gastrointestinal nematodes and liver fluke were deemed to be the most detrimental to production (52.6% and 44.7%, respectively).

From the responses received, 39.5% of farmers deemed tapeworm infestations to have the least significant effect on production, with a further 32.9% ranking it behind rumen fluke, liver fluke and gastrointestinal nematodes, but ahead of ectoparasites. Therefore, consideration on treatment timing is largely restricted to their bearing on other helminth species.

3.3. Treatment timing

The majority (61.8%) of respondents indicated that no treatments were given for tapeworm infestations in sheep. Routine treatments were given by 15.8% of farmers and 22.4% would treat only sometimes. The highest percentages of treatments given during the year were administered over the period of May, June and July (17.3%, 15.4% and 19.2%, respectively) (Fig. 2). Between August and October, 30% of all treatments were given (10% per month); this was followed by a sharp decline in treatments during the winter months (Fig. 2).

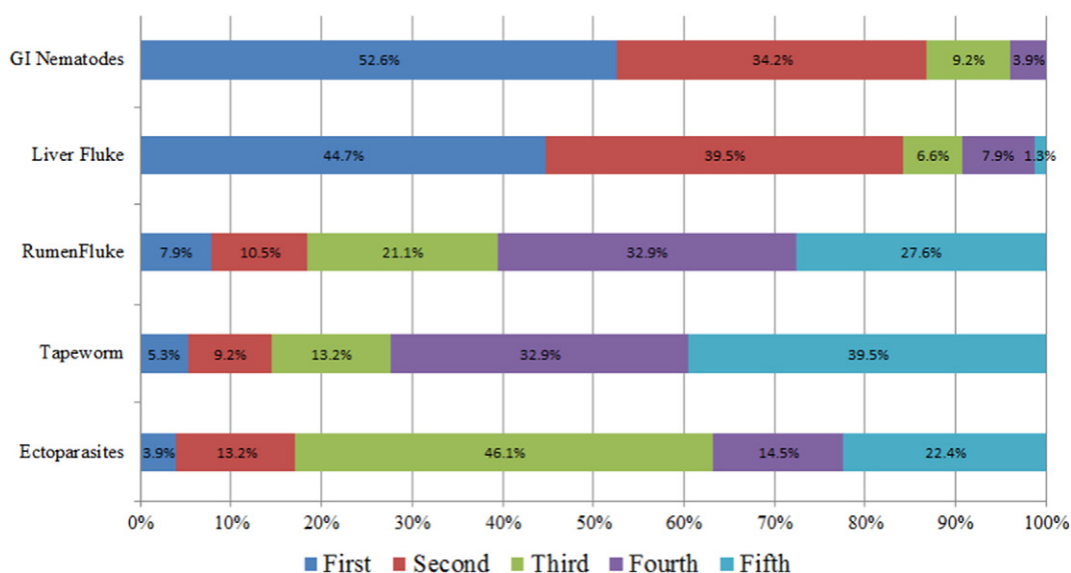


Fig. 1. The perceived importance of nematodes, trematodes, cestodes and ectoparasites in terms of production efficacy to sheep farmers in Northern Ireland.

Download English Version:

<https://daneshyari.com/en/article/5546068>

Download Persian Version:

<https://daneshyari.com/article/5546068>

[Daneshyari.com](https://daneshyari.com)