Parasite Epidemiology and Control 1 (2016) 124–130

Contents lists available at ScienceDirect

Parasite Epidemiology and Control

journal homepage: www.elsevier.com/locate/parepi

Survey of gastrointestinal parasites, liver flukes and lungworm in feces from dairy cattle in the high tropics of Antioquia, Colombia

Jenny J. Chaparro [a,*], Nicolás F. Ramírez [c], David Villar [a], Jorge A. Fernandez [c], Julián Londoño [d], Camila Arbeláez [a], Laura López [a], Mónica Aristizabal [a], Jaime Badel [e], Luis G. Palacio [c], Martha Olivera [b]

[a] Grupo Vericel, Escuela de Medicina Veterinaria, Facultad de Ciencias Agrarias, Universidad de Antioquia UdeA, Calle 70 No. 52-21, Medellín, Colombia
[b] Grupo Biogénesis, Escuela de Medicina Veterinaria, Facultad de Ciencias Agrarias, Universidad de Antioquia UdeA, Calle 70 No. 52-21, Medellín, Colombia
[c] Grupo Centauro, Escuela de Medicina Veterinaria, Facultad de Ciencias Agrarias, Universidad de Antioquia UdeA, Calle 70 No. 52-21, Medellín, Colombia
[d] Vecol, Empresa Colombiana de Productos Veterinarios S.A., Bogotá, Colombia
[e] Investigador de Skandha EIT S.A.S., Colombia

ARTICLE INFO

Article history:
Received 16 February 2016
Received in revised form 12 May 2016
Accepted 12 May 2016
Available online 14 May 2016

Keywords:
Dairy
Cattle
Prevalence
Parasites
Colombia

ABSTRACT

A cross sectional study was undertaken to determine the prevalence and intensity of parasitic infections in dairy cattle in the high tropics of Colombia. A total of 1003 rectal samples were collected from dairy cows at 29 farms between May and June 2014 to represent the number of farms, age groups, and size of the 65,000-cow population in the municipality of San Pedro de los Milagros. Coprological techniques were used to detect gastrointestinal nematodes, liver flukes, coccidian oocysts, and first larval stage counts of *Dictyocaulus viviparus*. In order of decreasing prevalence, the following parasites were detected: coccidial oocyst (36.7%; 95% CIs, 31.6–42.7), strongyle nematodes (31.6%, 27.8–35.4), liver flukes (30.9%, 21.5–37.5), cestodes (8.4%, 7.1–9.7), and *D. viviparus* (5.4%, 3.4–7.5). Co-infections by all possible combinations of the three most predominant groups occurred in 11 to 15% of the animals. There were significant differences in infection rates between age groups, with higher risk of liver fluke infection in animals older than 1 year of age (odds ratio (OR) = 3.2), but lower presence for coccidia and strongyles (OR = 0.19 and 0.51, respectively). For *Fasciola hepatica*, within-herd prevalences of >25% in 16 farms and 94 of 281 (33.5%) animals with >5 eggs per gram (epg) indicate that significant production losses are likely occurring. The variation in the prevalence of gastrointestinal parasites and liver flukes, together with the level of infection among age groups, could be used in integrated management programs to establish selective anthelmintic treatments and select for heritable traits of host resistance. These results serve as a baseline for future studies to determine the success of control measures and should increase awareness that subclinical parasitism is widespread in the livestock sector.
© 2016 The Authors. Published by Elsevier Ltd on behalf of World Federation of Parasitologists.
This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Epidemiological studies are necessary to determine the potential impact of parasitic infections in particular areas. Antioquia contains 11.7% of Colombia's cattle, or about 2.6 million individuals (Nacional and Agropecuario, 2016). The high plains of Northern Antioquia contain the largest population of dairy cattle in Colombia with about 310,000 milking cows. The area has a suitable

* Corresponding author.
E-mail address: jenny.chaparro@udea.edu.co (J.J. Chaparro).

http://dx.doi.org/10.1016/j.parepi.2016.05.001
2405-6731/© 2016 The Authors. Published by Elsevier Ltd on behalf of World Federation of Parasitologists. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

climate for the development of most species of helminth parasites due to abundant grass pasture throughout the year, no dry season, and moderate temperatures. A recent study that monitored the annual weather patterns showed that 24-h temperatures fluctuated between 5 and 20 °C, there were no freezing events, and relative humidity ranged between 50 and 90% (Echeverri et al., 2015). With the above conditions, parasites are likely influencing the productive performance of the herds depending on the intensity of infection and factors like age and nutritional status of the animals.

An anecdotal report from a large dairy farm in the high tropics of Antioquia aimed to determine the frequency of paramphistomids in snails and cattle showed a prevalence for *Fasciola hepatica* of 80% (51/71 cows) and that two species of snails, *Lymnaea truncatula* and *L. columella*, were infected with intra-mollusk stages of the trematodes (Lopez et al., 2008). A more recent study that randomly selected 180 culled bovines sent to a local slaughter in the same area revealed the presence of adult forms of *F. hepatica* in 41 livers (Correa et al., 2016). According to recent studies in European countries, fasciolosis is undoubtly a major production disease which for the last decade has either increased, or remains high, in spite of control efforts (Charlier et al., 2014). With regard to bovine gastrointestinal nematodes, the epidemiological situation in the country is also largely unknown. A study conducted in 36 farms of Cundinamarca determined the anthelmintic resistance by doing fecal egg count reduction tests (FECRT) and also identified the different types of nematodes (Marquez et al., 2008). In order of decreasing prevalence the following parasites were identified: *Cooperia* spp. (67%), *Haemonchus* spp. (13%), *Ostertagia* spp. (11%), *Trichostrongyles* spp. (8%). In addition, resistance to albendazol and ivermectin was detected in 17% and 8% of the farms, respectively. Limited and past investigations on *Dictiocaulus viviparus* in three dairy farms in the high tropics of Antioquia showed a prevalence of 38.6% (49/127) in animals of less than 1 year old (Lopera, 1991). Interestingly, a clear tendency to lower prevalence with increasing age of the calves was also observed. Recent field investigations in mortality cases of 6–8 month calves have shown *D. viviparus* to be the culprit (personal observations).

In view of the lack of epidemiological information on the prevalence of parasitic infections in Colombia, a cross-sectional coprological study was designed to provide an overview of the situation in the largest dairy area of Antioquia (Fig. 1).

2. Materials and methods

2.1. Study area and animals

The study was performed at 29 dairy farms between May and July 2014. The farms were located in the municipality of San Pedro de los Milagros, which has a total population of 65,000 cattle. The farms were located in the high tropics of Antioquia at an altitude of 2500 m above sea level, latitude of 6°27′34″N, and longitude of 75°33′28″W (Fig. 2).

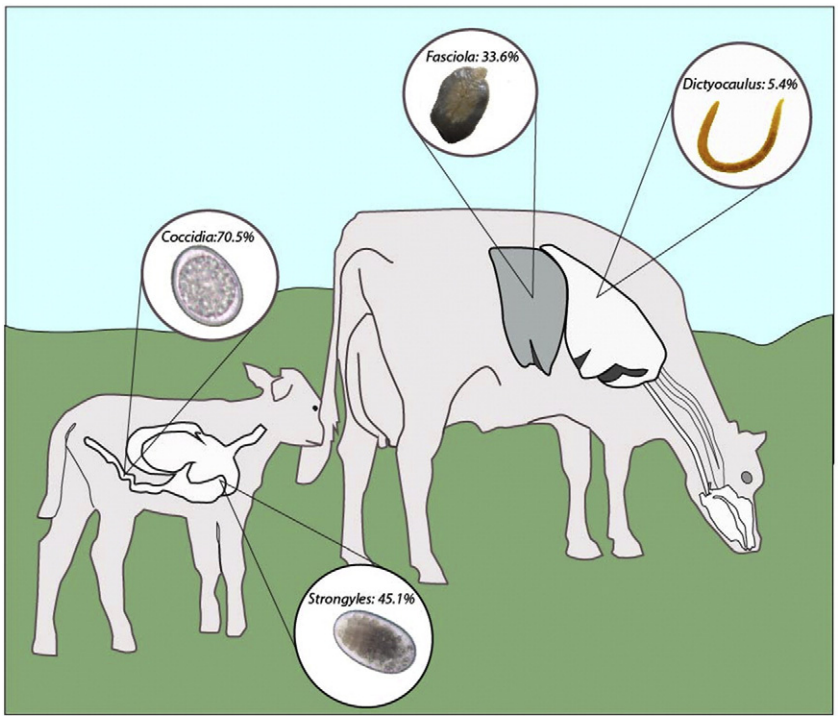

Fig. 1. Prevalence of main internal parasites in young (<1 year) and adult (>1 year) dairy cows in the high tropics of Antioquia, Colombia.

Download English Version:

https://daneshyari.com/en/article/2473677

Download Persian Version:

https://daneshyari.com/article/2473677

Daneshyari.com