Acta Parasitologica Globalis 9 (1): 39-43 2018
ISSN 2079-2018

DOI: 10.5829/idosi.apg.2018.39.43

Prevalence of Major Gastrointestinal Parasites of Donkeys in Finfinne Donkey Sanctury Clinic, Finfinne, Ethiopia

Lemma Kebede Balcha

Lode Hetosa District Livestock and Fishery Resource Development Office, Arsi Zone, Huruta, Ethiopia

Abstract: This study was under taken in Finfinne Donkey Sanctuary Clinic from November, 2008 to April, 2009 to determine the prevalence of gastrointestinal (GI) parasites parasitizing donkey coming to Finfinne Donkey Sanctuary Clinic. Fecal examination was performed using qualitative techniques on 384 donkeys. Accordingly, 88.5% over all prevalence of GI parasites was for strongyles (40.9 %); *Gastrodiscus aegypticus* (0.5 %); *Oxyuris equi* (0.3 %); *Parascaris eqourum* (2.9 %); *Anoplocephala* (0.5 %) and mixed infection (46 %). This finding suggests the importance of GI parasitic problem in donkeys brought to this sanctuary clinic.

Key words: Donkeys · Finfinne · GI Parasites · Prevalence

INTRODUCTION

Ethiopia has the largest livestock inventories in Africa, including more than 30 million cattle, 30 million small ruminants, 1 million camels, 4.5 million equines and 4 million chickens [1]. It is also known that the country possesses about 5.02 million of donkeys 2.75 million horses and 0.63 million of mules. There is one equine for every four population [2].

Donkey is one of the most important domestic animals, contributing to a number of social and economical sectors [3, 4]. They are often described as the poor man's horse, a situation well reflected in the animal's energy agriculture of Ethiopia [5].

In remote rural areas of the country where modern transport is not available, the contribution of donkeys in facilitating marketing of agricultural products by reducing domestic transport burden of rural people, especially women, have created employment and income generating opportunities for many people [6].

The ancestor of donkey was wild asses from African and Asia. There were separated breeds such as Nubian (From North between the media Terrance and cost of Sahara desert) and Somalia from further coast to south of Red Sea [7]. Today, donkeys found widely distributed through the world. Spending hundreds of years being used by man but in spite of these, in the past little attempt have been made to study any aspect as poor population throughout the world and also often hardly able to offer medical care for the children let alone veterinary care for donkey [7].

Donkeys are often described as hardly and resistant animals that do suffer a number of health problems. The most important once are parasitic diseases, especially GI parasites, harness sore, sarcoides and infectious disease such as anthrax [5].

Gastrointestinal parasites are the most serious health problem of donkeys in Africa contributing to poor body conditions, reduced power output, poor reproductive performance and short life span. Large number of parasites has been reported by students of donkey sanctuary in African countries including Ethiopia Kenya, Zimbabwe, Burkina Faso and Morocco [8].

In Ethiopia, various studies have shown that donkeys commonly harbor GI parasites such as (large and small strongles, ascarids, pin worms, bots, stomach worms tape worms and liver flukes [9, 10]. Optimums utilization of equine was hindered by variety of disease among which parasitic disease are the major once , Among them helminthes of equines includes Nematodes , Trematods , and Cestodes of which the most common ones are large strongyles of genes strangles (Triodontophorus) the small strangles (Trichonemes, Cyathostomes), Ascarids (*P.equorum*), intestinal thread worms (Habronema spp), *Trichostonglus axei*, Tape worm (Anoplocephale spp) lung worm (*Dityocaulus arnfiedi*) and Trematode

Corresponding Author: Lemma Kebede, Lode Hetosa District Livestock and Fishery Resource Development Office, Arsi Zone, Huruta, Ethiopia. Tel: +251910772704.

(*G. aegyticus*) [11]. According to Graber [12] parasitic disease do have an economic impact on equines as they cause losses through lowered fertility reduced work capacity involvement culling and increased treatment cost. *Strongylus vulgrris* and *Stronglyles edentatus* are among the most common problem in Ethiopia and more rarely strongyles.

The disease process caused by the strongyles can be produced by migrating larvae and also adult worms. Larval of *S. vulgaris* are the most pathogenic causing arthritis, thrombosis and thickening of artery wall [13].

Though there have been reports on donkey helminthosis, limited works conducted on services condition of helminthes and effect of parasitism on body condition. The objectives of this study were to determine coprological prevalence of GI helminths of donkeys in Finfinne Donkey Sanctuary Clinic and to give some recommendations pertinent to the prevailing situation.

MATERIALS AND METHODS

Study Area: The study was conducted in Finfinne at Merkato donkey sanctuary clinic. Geographically Addis Ababa is located at 9° 2'N 38° 42'E With an elevation of about 2400 m.a.s.l. Addis Ababa city possesses a complex mix of high land climates zones with temperature differences of up to 10°C depending of elevation and prevailing wind patterns. This elevation moderate temperature year round and the city's position near the equator mean that temperatures are every constant from month to mouth. Addis Ababa receives mean annual rainfall of 1, 800 mm in bimodal pattern. The long rainy season extended from June to September followed by dry season from October to February and the short rainy season from March to May [14].

Study Animals: The study was conducted on a total of 384 donkeys breed brought to Merkato donkey sanctuary Clinic. Including all age groups and male donkey because in Finfinne donkeys are used to peaking purpose only the population to donkey is highest relative to mule and horse. All the animals were clinically examined and their age was determined. Equines less than two years of age were considered as young, while those more than two years old as adult as methodology used by Yoseph *et al*. [10].

Study Design: The study conducted was cross-sectional using simple random sampling technique. The sample size was determined based on excepted prevalence rate of 50% (As there is no previously reported prevalence on this disease in the specific study area) and absolute desired precision of 5% at confidence level of 95 % [15].

Direct Fecal Collection: The fecal samples were collected from study donkeys at Finfinne Donkey Clinic throughout the study period. The specimens were collected directly from the rectum of donkey. The sample was collected in universal bottle that contain preservative (Potassium dichromate). Each sample was labeled with the animal number, Age, body conditions, sex, date of collection of sample and place of collection. The collected faecal samples daily collected and then subjected to qualitative (Floatation) technique and also quantitative examination was made using McMaster egg counting technique as described by Urquhart *et al.* [11] and Hendrix [16].

Sedimentation and Floatation Technique: Approximately 3 gm of faces was taken and mixed with 42 ml of water. The mixture was poured through a wire mesh screen. Then the strained fluid was allowed to stand to 15-30 minutes. The supernatant was decanted off and the sediment was poured in to test tube. The test tube was filled with saturated salt solution and inverted 5 or 6 times with thumb over the open side. A few drops of saturated salt solution was added until a convex meniscus stand above the tope of the test tube and allowed to stand for 15-30 minutes. Then cover slide was put over the top of the test tube so that is in contact with liquid. Finally, the cover glass was placed on slide and examined under low power microscope according to Hendrix [16].

Data Analysis: The data was obtained were analyzed using SPSS version 15 for windows prevalence (%) was obtained by dividing the number of animals harboring a given helminths to total animal examined, chi-square (x^2) test was used to associate different i.e. in prevalence of the different GI helminthes in donkey in Age categories and body condition of donkeys in all the case 95% confidence intervals and $P< 0.05$ was set for significance.

RESULTS

A total of 384 donkeys were examined for helminthes parasites; the overall prevalence of GI helminthes were found to be 88.5% among the major parasites found in donkeys in the study area were polyparasitism (46%), *Strongyle* spp (40.9%), *Parascaris* spp (2.9%), *Gastrodiscus* spp (0.5), *Anoplocephala* spp (0.5) and Oxyuris equi (0.3%) (Fig. 1).

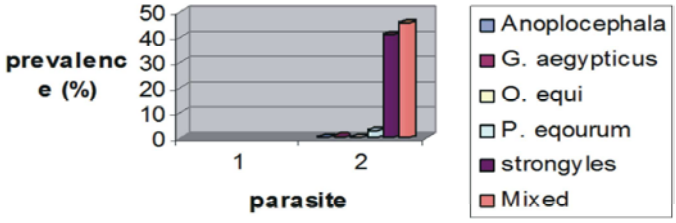

Fig. 1: Coproscopic prevalence of GI helminths in examined donkeys

Table 1: Prevalence of helminthes by giving services group

Service category	Number animal examined	Number the (%)
Less services (1)	29	27(93.1)
More services (2)	355	313 (88.2)
Total	384	340(88.5)

χ^2= 0.643 P=0.442

Table 2: Prevalence by body score condition

Body condition	Number animal examined	Number (%)
Good ideal	147	133 (90.5)
Moderate	237	207 (87.3)
Total	384	340 (88.5)

χ^2= 0.899 P= 0.911

Prevalence of Helminthes by Services: Significance difference was not observed in the prevalence GI helminthes between those gives less services and animals gives more services (p<0.411)

Effected of Body Score Condition: There was no significant differences observed in the prevalence of GI helminthes between good (Ideal) and poor (Moderate) body score condition (Tab 2).

DISCUSSION

Strongyles are generally recognized as the most harmful of the internal parasites of the horse. The finding of the present study indicated that helminth parasites are the major health problems of donkeys in Finfinne. The microscopic faecal examination (simple floatation) showed that GI helminthiasis was among important health constraints to equine population in the study area. All examined donkeys were positive for GI parasites with close similarity in the type and burden of parasites observed. An over all prevalence of GI parasites was (88.5%). Donkeys were found to be infected with a number of parasitic species such as *Strongyle* spp, *Ascarides*, *Oxyuris* spp, *Gastrodiscus* spp and *Anoplocephala* spp.

This study showed that polyparasitism was common in all examined donkeys. The donkeys were 40.9% positive for *strongyles*, 2.9% for *Ascaris*, 0.3% for *Anaplocephala*; 0.3% for *Oxyuris* spp; 0.5% for Gastrodiscus spp. Mixed infection with rate was found to be 46%. This is in agreement with Yoseph *et al*. [10] whose work has revealed high rate of mixed infection (46%), with low rate infection with *Anoplocephala* (0.3%), *0xyuris* spp (0.3%); Yacob [17] which is 42.57% and lower than reports by Belay *et al.*[18] is in and around Kombolcha, Fikru *et al.* [19] in Western Highland of Oromiya.

Strongyles are among the most frequently encountered and highly pathogenic helminthes of equidae causing death in infected animals when control measures are neglected. However, the greatest losses are probably failure of young equine to grow properly and less efficient performance of horses that are even moderately parasitized. When the 251 total positive faecal samples were assessed for intensity of infection on the basis of severity index defined by Soulsby [13] 31.87% were found to be severely infected, 38.65% heavily infected, 20.72% moderately infected and 8.76% mildly infected. Relatively harmonious results were reported by Fekadu [20] who have reported 59.04% with severely infected and 24.94 %, 19.04 % and 16.62 % with heavily, moderately and mildly infected respectively, Yacob [17] reported 13.06 % and 37.87% were massive and highly infested. Although the donkey had relative higher mean EPG there was no statistically significant difference (P>0.05) among examined donkeys in our study species for the level of strongylosis.

In this study the prevalence rate of GI nematodes was relatively lower since the study was conducted only on adult donkeys. This is in agreement with the results of Feseha [5] which indicated that *Parascaris equorum* have is more frequently in young donkeys as compared to adults which are the reason of poor body condition and stunted growth.

There were no significant differences (P>0.05) in different service groups for GI helmenthosis between donkeys with less serves (93.1%) and more services (88.2%). Mean while, in animals in poor body condition, high level of GI helminthosis (90.5%) was registered compared with animals with good body condition (87.3%).

The relatively higher prevalence of Helminths parasites in donkeys than horses may be due to the livestock management practice where different animal species and age groups are kept for free grazing. This phenomenon is expected to increase the chance of exposure to Helminth parasites. There was also a relatively higher Helminths parasites infection in equines kept under free grazing system compared to stall feeding. This could be explained due to contamination of pasture with larvae of different parasites there by increasing the chances of exposure to parasitic infection for free grazing category. These findings were agreement with the previous reports by Fekadu [20].

The maintenance of high infection rate of strongylosis in the study area might be associated with lack of any parasitic helminth intervention program and the management system in the area where in country like Ethiopia equines were allowed to graze together on small plot of land through out the year which facilitates contamination between animals.

CONCLUSION AND RECOMMENDATIONS

In country like Ethiopia, there is less developed modern transpiration, equines are the most utilized means of transport ting form and industrial products both in vast rural territory an urban despite its likely economic importance, Helminthiasis is a given a low priority because of its sub clinical nature. Detailed study should be conducted on economic importance of helminthes parasites especially stonglyes and other GI helminthes of equine based on their contribution to reduced performance and mortality. Poor veterinary services, lack of due attention for equine health care and lack of any parasitic helminthes intervention program and management system in the country where many equines, except cart horses which indoor feeding, were allowed to graze together on small plot of land throughout the year may facilitated contamination of GI helminthiasis between animals. Based on above conclusive remarks the following recommendations are for worded: Strategic treatment with broad spectrum anithelmintic of grazing equine mainly greater than two months of age should be conducted every 4-6 weeks, worm control should be accompanied with different approach such as treatment of dam interval worming, seasonal treatment and monitoring of anathematic control program, since cattle could be a source of infection with some GI helminthes for equines, equine should not be allowed to graze on pasture for cattle and comprehensive study on epidemiology of equine parasites in different season in different agro-ecological sites should be performed.

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