Liver Fluke: Elisa Diagnosis in Goats in Pakistan

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Abstract

Fascioliasis is an economically important parasitic disease of small ruminants mainly caused by a trematode of the genus Fasciola. The most important species responsible for fascioliasis are Fasciola hepatica and Fasciola gigantica. The study was conducted for detection of fascioliasis in small ruminants through ELISA in Multan. A total of 100 samples were collected randomly for examination of GIT parasites especially for prevalence of fascioliasis. The animals under study were selected randomly without any discrimination of sex and age. During coprological examination of goats of district Multan, the total number of positive cases for Fasciola hepatica was 33/100 (33%) by sedimentation technique(s) and 19/100 (19%) by direct examination of the slides while 25/100 (25%) through floatation method were diagnosed respectively. The ELISA was performed on serum samples along with Copro-ELISA on the naturally infested animals. The ELISA gave promising results. It is recommended that there should be a routine procedure for the detection/diagnosis of fascioliasis in goats through ELISA for good sustainable production practices in free range(s).

INTRODUCTION

Small ruminants including goats play a vital role in the micro-economy and socio-economic uplift of the farmers including females too. Small ruminants including goats are always at threat of various viral, bacterial, fungal and parasitic problems [1]. They are fast grower and good producers of their young kids [2]. Pakistan is very rich in goat population which is ever increasing from 49.14 million in 2004 to 53.8 in 2008 and 68.4 in 2014-2015 [3]. Such rocket trends have not been seen in any of the available reports. About 100 goats of Beetal and Nachi breeds endemic at Multan were randomly selected without any sex and age. The animals were subjected to routine fecal parasitological examination along with Sero-ELISA and Copro-ELISA. For fecal parasitological examination 10 gm fecal material was collected aseptically in sterilized containers and brought to Chemotherpay and Epidemiology Laboratory, Department of Pathobiology, Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan. The Fasciola hepatica is endemic in the study area [6]. The parasite is escalated through a snail which facilitates its transmission to the healthy goat host. This alone parasite can kill a lot of goats including kids without any information or notice or showing any signs. This per acute out breaks are common in goat population. To avoid such unpredictable losses a routine parasitological examination is imperative for the timely control of devastating parasite. The country like Pakistan cannot afford such losses where the innocent farmers may lose the head of goat which is only source of milk and money. To escape from such unpredictable losses a timely monitoring and examination is necessary through proper parasitological survey/examination. This paper has been designed to show the real issue to be presented properly for the strengthening production and sustainable production measures for goats at national level.

MATERIALS AND METHODS

About 100 goats of Beetal and Nachi breeds endemic at Multan were randomly selected without any sex and age. The animals were subjected to routine fecal parasitological examination along with Sero-ELISA and Copro-ELISA. For fecal parasitological examination 10 gm fecal material was collected aseptically in sterilized containers and brought to Chemotherpay and Epidemiology Laboratory, Department of Pathobiology, Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan. The Fasciola hepatica is endemic in the study area [6]. The parasite is escalated through a snail which facilitates its transmission to the healthy goat host. This alone parasite can kill a lot of goats including kids without any information or notice or showing any signs. This per acute out breaks are common in goat population. To avoid such unpredictable losses a routine parasitological examination is imperative for the timely control of devastating parasite. The country like Pakistan cannot afford such losses where the innocent farmers may lose the head of goat which is only source of milk and money. To escape from such unpredictable losses a timely monitoring and examination is necessary through proper parasitological survey/examination. This paper has been designed to show the real issue to be presented properly for the strengthening production and sustainable production measures for goats at national level.

of Veterinary Sciences, Bahauddin Zakariya University, Multan, Pakistan. The fecal sample was investigated for examination of GIT parasites especially for prevalence of fascioliasis or eggs [7]. Three coprological methods were employed for the quick exploration of GIT worms including liver flukes eggs or as a whole worm. Three parasitological techniques were employed including Sedimentation technique, direct slide examination and floatation method(s) for the coproexamination of Fasciola eggs or worm as a whole or part. The Sero-ELISA was performed on serum collected from naturally infested positive goats while Copro-ELISA was performed on fecal sample of naturally infested positive goats. The results obtained were analyzed statistically through percentage method and probability analysis.

RESULTS

The animals under study were selected randomly without any discrimination of sex and age. During coprological parasitological examination of goats of district Multan, the total number of positive cases for Fasciola hepatica was 33/100 (33%) by sedimentation technique(s) and 19/100 (19%) by direct examination of the slides while 25/100 (25%) through floatation method were diagnosed respectively (Table 1 and Figure 1).

For Sero-ELISA test and Copro-ELISA test kits were purchased from BIO-X diagnostics, Belgium. The procedures were adopted strictly according to manufacturer’s advice. The comparison of gold standard fecal parasitological tests between ELISA was made and it revealed that Sero-ELISA showed promising results in relation to circulating antibodies in serum while Copro-ELISA proved it’s committed due to actual presence of Antigen fragments in the fecal material. The Fasciola hepatica and Fasciola gigantica play a major role in liver failure in ruminants and find a suitable vector, a snail for the dissemination of vector-borne disease [8]. It could be fatal to human subjects too if accidently consumed metacercarie or snail or infected liver. The unhygienic practices could lead to positive infection in humans but in goats the marshy area containing shrubs and plantation is suitable environment for the infection to be established in healthy animals. Fascioliasis could prove fatal to whole of flock of goat if untreated or undiagnosed so there should be a routine procedure for the detection/diagnosis of fascioliasis in goats for good sustainable production practices in free range(s). To avoid such unpredictable losses a timely monitoring and examination is necessary through proper parasitological survey/examination and copro-examination through sedimentation is of no question. The most of the population rearing small ruminants including goat(s) are poor or unprivileged but now due to its high growth and future trends [9].

DISCUSSION

There were 100 goats of Beetal and Nachi breeds endemic in southern Punjab, Pakistan. The goats were selected randomly without any sex or age. Goats were screened for GIT parasites. The routine copro-examination techniques exhibited that sedimentation techniques proved outstanding showing 33% positive cases and the followed by Floatation method and direct examination as 25% and 19% respectively. The comparison of gold standard fecal parasitological tests between ELISA was made and it revealed that Sero-ELISA showed promising results in relation to circulating antibodies in serum while Copro-ELISA proved it’s committed due to actual presence of Antigen fragments in the fecal material. The Fasciola hepatica and Fasciola gigantica play a major role in liver failure in ruminants and find a suitable vector, a snail for the dissemination of vector-borne disease [8]. It could be fatal to human subjects too if accidently consumed metacercarie or snail or infected liver. The unhygienic practices could lead to positive infection in humans but in goats the marshy area containing shrubs and plantation is suitable environment for the infection to be established in healthy animals. Fascioliasis could prove fatal to whole of flock of goat if untreated or undiagnosed so there should be a routine procedure for the detection/diagnosis of fascioliasis in goats for good sustainable production practices in free range(s). To avoid such unpredictable losses a timely monitoring and examination is necessary through proper parasitological survey/examination and copro-examination through sedimentation is of no question. The most of the population rearing small ruminants including goat(s) are poor or unprivileged but now due to its high growth has attracted a number of business men for goat farming. To save your profit from loss it is necessary to adopt a regime for better and timely curbing of worms including trematodes like fascioliasis. The timely elimination of Fasciola from herd may guarantee the strengthening of small ruminants including goats and by proper adaptation of treatment/prophylactic measure by latest diagnostic facilities [9].

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REFERENCES
