PREVALENCE OF ENDO PARASITES IN DOMESTIC ANIMALS IN THE VICINITY OF TANDOJAM

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ABSTRACT: *Endoparasites are one of the major problems which affect the productivity of buffalo, cow, goat and sheep. Losses caused by endoparasites invariably depend on the prevalence, nature and intensity of infection and the management practices. In the current study, we examined the prevalence of gastrointestinal and protozoan parasites, in order to determine the severity percentage in the vicinity of Tandojam. A total hundred twenty fecal and eighty blood samples were analyzed in the laboratory of Parasitology, Central Veterinary Diagnostic Laboratory (CVDL) Tandojam. The results indicates that seven different gastrointestinal parasites including Taenia, Haemonchus, Trichuris, Trichostrongylus, Liver fluke, Paramphisomum and Eimeria were recorded from fecal samples of four animals. Amongst all gastrointestinal parasites, Liver fluke found predominantly and appeared to be most prevalent problem in buffalo, Cow, Goat and Sheep. The intensity of Paramphisomum and Haemonchus appeared as least prevalent problems in buffalo and cow. Similarly, Taenia was also least prevalent problems in goat and sheep. Furthermore, amongst the blood protozoan, Anaplasma, Babesia, Thelleria and Trypanosma were found prevalent. However, Anaplasma appeared to be most common complaint in buffalo, followed by cow, goat and sheep. While Trypanosoma appeared to be least common problem in buffalo, cow, goat and sheep at the vicinity of Tandojam. The findings of present study suggested the baseline information for these most prevalent gastrointestinal and blood protozoan parasites. Based on these results, standard preventive management strategies can be formulated for these common occurring problems in the vicinity of Tandojam.*

KEY WORDS: Endo- parasites, Prevalence, Vicinity, protozoan parasites, Helminth parasites, Hypoproteinaemia, Mortality, Growth, Grazing, Pasture

INTRODUCTION

The animal origin foods are considered to be very important due to its high nutritive value for human consumption. To cater the need of vastly growing population of human also made it very crucial in these days [1]. Simultaneously, the parasitic infestations pose major global threat to animal population, which leads to serious economical and health problems [2]. The prevalence of endoparasite leads to retarded growth rate, lowered output and death of animal due to their undesirable effects on animals [3, 4].

The blood and gastrointestinal tract (GIT) of animals harbor number of endoparasites, which causes clinical and sub clinical parasitism. Amongst those, coccidia, Haemonchus, liver flukes, Paramphistomes, Trichuris, Taenia [5], Anaplasma, Babesia, Thelleria and Trypanosoma are of much importance especially in buffalo, cow, goat and sheep. These endoparasites adversely affect the health status of animals [6] and have been noted as a major constraint to productivity of animals on a clinical and subclinical level [7]. They influence on animals through hematological and biochemical disturbances [8, 9], anorexia, weight loss [10], hypoproteinaemia, loss of meat, impaired digestive efficiency, poor reproductive performance, emaciation [11]. They cause massive economic losses [12] amounting to Rs. 19.7 millions per year [13]. Other economic losses are involuntary culling, poor work performance, treatment costs, lowered milk production and mortality in heavily parasitized animals [14]. Thus, endoparasites are becomes one of the main hindrances in the development of livestock production and industry worldwide [15, 16, 17].

The prevalence of endoparasites is associated to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behavior of the host [18]. High prevalence of different helminth parasites was reported in cattle, Sheep and goat [19, 20].

In Pakistan including Tandojam, endoparasitism is no doubt, one of the major menaces for livestock to be a profitable industry [13, 9]. Poor awareness of livestock farmers and geoclimatic conditions contribute towards the conducive environment for the development and growth of endoparasites and it is significant to control internal parasites especially helminthes, flukes and blood protozoa with better management and precautionary measures.

Multiple approaches are in practice for an effectual control of endoparasites like periodical use of anthelmintics, vaccination program and improved management. However; increasing problems of development of resistance in parasites [21] against antiparasitic, chemical residual/toxicity problems [22] and antigen complexity of parasites have always led to the alternate proposals.

Keeping in view these considerations the present study on "Prevalence of Endo parasites in domesticated animals in the vicinity of Tandojam" was investigated in Buffalo, Cow, sheep and Goat so that better preventive and curative measures can be taken in future.

MATERIALS AND METHODS

Geographical location of study

The present study was conducted to assess the Prevalence of Endo parasites in domesticated animals, including Buffalo, Cow, sheep and Goat in the vicinity of Tandojam. Tandojam is located at 25°25'60N 68°31'60E and lies about 20 km away from Hyderabad city of Pakistan, along Hyderabad and Mirpurkhas Dual carriageway. Sindh Agriculture University is also situated in this city at 18 km from Hyderabad, on Hyderabad-Mirpurkhas highway and is about 200 km from Karachi airport linked with super highway to Hyderabad.

Sample collection

A total hundred twenty (n=120) fecal samples comprised of 30 sample for each animal (buffalo, cow, goat and sheep), respectively, were randomly collected from the surroundings of Tandojam and brought under laboratory for analysis. The samples were analysed in Parasitology Section of Central Veterinary Diagnostic Laboratory (CVDL), Tandojam during. Furthermore, a total of eighty blood samples (n= 80), 20 for each animal (buffalo, cow, goat and sheep), respectively, were also analyzed. During collection and transportation of samples, possibly all the hygienic measures were undertaken/adapted.

Analysis of Endo parasites

Fecal samples were analyzed through McMaster, Sedimentation and Floatation techniques for the GIT endoparasites diagnosis especially of cestodes, nematodes, Liver flukes and Emeria.

The blood samples were analyzed through thin blood smear technique for the identification of blood protozoans like Anaplasma, Babesia, Thelleria and Trypanosoma. The detail of each technique is summarized here:

1. McMaster technique

To determine the presence of parasitic eggs, (3g feces of cow and buffalo, while 2g of sheep and goat was weighed separately into a plastic beaker. Then 60ml of saturated solution of NaCl was added in each sample. The contents were thoroughly mixed with a stirring device. After that, fecal suspension was filtered through a strainer into another clean beaker. The filtrate was shacked thoroughly and then a sub-sample was taken with Pasteur pipette and transferred into three chambers of McMaster slide one by one. The counting chamber was allowed to stand for 5 minutes and then was examined under a microscope at 10 x magnification. Presence of parasitic eggs was assumed as positive samples.

2. Sedimentation technique

A total of 5g fecal sample was weighed in a plastic dish for each sampled animal. About 5 ml of distilled water was added in the dish and sample was mixed well. Samples were transferred into a Capling jar and completely filled with distilled water. By shaking the jar, sample was mixed and poured into a 250ml measuring cylinder, and then emptied into a 50ml graduated test tube. The filled tubes were left for 20 min and after that 46 ml of suprnatantt solution was discarded. By using Pasture pipette, 1ml of solution was picked from the remaining 4ml of sediment and transferred into another test tube to which 1ml of floatation fluid was added. Sediment and floatation fluid was mixed thoroughly and then with the help of Pasture pipette all 4 chambers of Universal slide were filled. Thereafter, slides were examined under Microscope. Presence of parasitic eggs was assumed as positive samples.

3. Floatation technique

Fecal samples of 2g for cow and buffalo, 1g for sheep and goat were weighed separately in a tea strainer placed in a plastic dish. One tea spoon of saturated sugar solution was poured on the fecal sample. The sugar solution and fecal sample were mixed well with the help of spoon. The sample solution was strained from tea strainer by applying small pressure and remaining debris was discarded. After that, strained solution was transferred into a test tube upto top and after 1 min, debris from the top of the test tube was removed. Thereafter 2 drops of sugar solution were added and covered with a cover slip. Test tube was left undisturbed for 30 min and then cover slip was picked and placed on a microscopic slide, examined under microscope. Presence of parasitic eggs was assumed as positive samples.

4. Thin Blood Smear technique

A small drop of blood sample was placed on a pre-cleaned, labeled slide, near its frosted end. Another slide was brought at the 45° angle up to the drop. The drop was allowed to spread along the contact line of the two slides. The upper (spreader) slide was quickly pushed toward the unfrosted end of the lower slide. It was made sure that the smear has a good feathered edge. This was achieved by using the correct amount of blood and spreading technique. Smear was allowed to dry for 5 minutes and then fixed by dipping in the absolute methanol. After fixation, slide was labeled and then stained with 10% Geimsa Stain. After 3 min, slide was washed with tap water. In last slides were left to be dried off and microscopic examination was performed for blood parasites.

Data analysis

The prevalence percentage of all endoparasites was calculated by using the formula: Prevalence Percentage = Number of Positive sample/Total Number of Samples*100. The data was analysed using MS Excel of Microsoft Office version 2013.

RESULTS

Prevalence of gastrointestinal parasites

The prevalence of gastrointestinal parasites in different domesticated animals (buffalo, cow, goat and sheep) varies from one another. The fecal samples of buffalo for gastrointestinal parasites are presented in (Figure 1) showing great variability among seven different gastrointestinal parasites. The result indicates that the highest prevalence percentage was observed for Liver fluke (40%) followed by Emeria (30%) and Haemonchus (26.67%) from buffalo fecal samples. The prevalence percentage of Paramphistomum (10.00%) was lowest amongst all other gastrointestinal parasites followed by Taenia (13.33%) and Trichostrongylus (20.00%). Whereas, the Trichuris showed the moderate prevalence percentage (23.33%) compared to all other gastrointestinal parasites from buffalo fecal samples (Figure 1).

The fecal samples of cow for gastrointestinal parasites showed bit variation in comparison to buffalo. However, among seven different gastrointestinal parasites, the prevalence percentage greatly varies (Figure 2). The result indicates the highest prevalence percentage for Liver fluke (33.33%) followed by Trichuris (30.00%). It was moderately observed for both Emeria (27.67%) and Trichostrongylus (27.67%). Whereas, the lowest prevalence percentage was recorded for Haemonchus (13.33%) followed by Paramphistomum (16.67%) and Taenia (20.00%) from cow fecal samples (Figure 2).

The results regarding the prevalence of gastrointestinal parasites in goat fecal sample was quietly different from buffalo and cow for all seven gastrointestinal parasites. The highest positive sample percentage was observed for Liver fluke (46.67%) followed by Emeria (43.33%) and Haemonchus (40.00%). While the lowest prevalence of gastrointestinal parasites was examined for Trichuris (13.33%) followed by Paramphistomum (20.00%) and Trichostrongylus (23.33%). However, none of sample was found to be positive for Taenia as shown in (Figure 3).

The fecal samples of sheep for gastrointestinal parasites also showed variation in comparison to buffalo and cow. However, among seven different gastrointestinal parasites, the prevalence percentage greatly varies (Figure 4). The maximum positive sample percentage was recorded for Liver fluke (43.33%) followed by Emeria (40.00%), Trichuris (33.33%), and Haemonchus (30.00%). Whereas, the minimum prevalence of gastrointestinal parasites was examined for both Paramphistomum (16.67%) and Trichostrongylus (16.67%) from sheep fecal samples. However, similar to goat none of sample was found to be positive for Taenia as shown in Figure 3.

Prevalence of blood protozoan parasites

The prevalence of blood protozoan parasites in different domesticate animals like as buffalo, cow, goat and sheep showed variability for four different protozoan parasites. It is obvious from the results presented in Figure 5 that prevalence of Anamplasma was found most severe in all four observed animals. However, it was higher in buffalo (53.33%) followed by cow (43.33%), goat (30.00%) and sheep (23.33%). Similarly, the severity of Thelleria was also observed higher in all four animals. However, buffalo and cow was severely affected (40.00% and 36.67%), respectively, compared to goat (26.67%) and sheep (20.00%). In case of Babesia infection, higher percentage was recorded for buffalo (26.7%) followed by cow (23.33%), goat (20.00%) and sheep (16.67%). The occurrence of Trypansoma was found lower in buffalo (23.33%) followed by cow (20.00%), goat (13.33%) and sheep (13.33%) compared to other protozoan parasites (Figure 5).

DISCUSSION

Endoparasites are one of the major problems which affect the productivity of buffalo, cow, goat and sheep. Losses caused by endoparasites invariably depend on the prevalence, nature and intensity of infection and the management practices. In the current study, we examined the prevalence of gastrointestinal parasites from fecal samples and protozoan parasites from blood sample of four domesticated animals including buffalo, cow, goat and sheep, in order to determine the severity percentage in the vicinity of Tandojam. Although, various species of endoparasites recovered in the present study has also been reported earlier not only in Pakistan but throughout the world [23, 18, 24, 25, 26,] However, these workers have also recorded the occurrence of other endoparasites and this regional variation may be attributed to different geographical distributions, host factors, climatic conditions, host age, sex and breeding status, grazing habits, the standard of management and use of anthelmintic [27, 28, 29, 30, 31]. In the current study, when fecal samples of four animals have been observed, seven different gastrointestinal parasites including Taenia, Haemonchus, Trichuris, Trichostrongylus, Liver fluke, Paramphisomum and Eimeria were recorded. Amongst all gastrointestinal parasites, Liver fluke found predominantly and appeared to be most prevalent problem in buffalo, Cow, Goat and Sheep in the vicinity

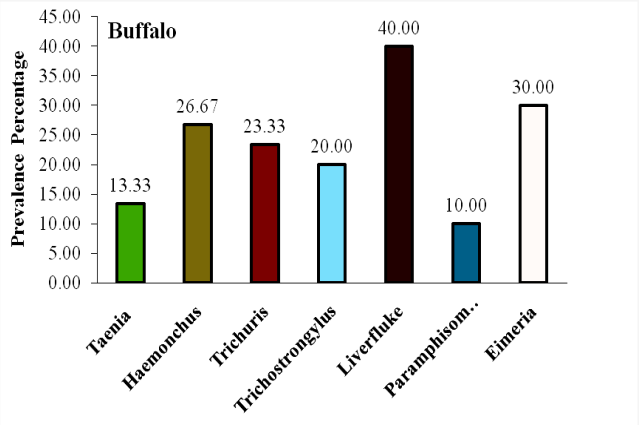

Figure 1. Prevalance percentage of gastrointestinal parasites in buffalo in the vicinity of Tandojam.

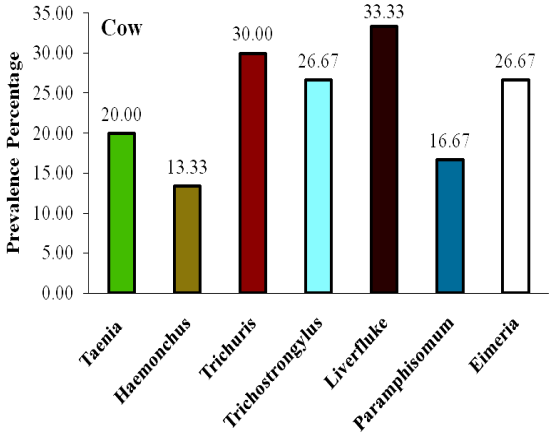

Figure 2. Prevalance percentage of gastrointestinal parasites in cow in the vicinity of Tandojam.

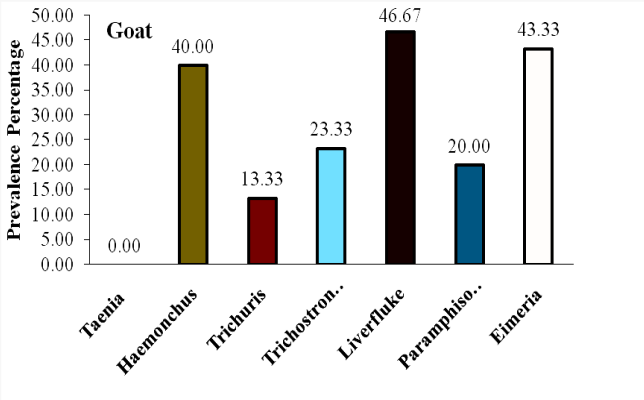

Figure 3. Prevalance percentage of gastrointestinal parasites in gaot in the vicinity of Tandojam.

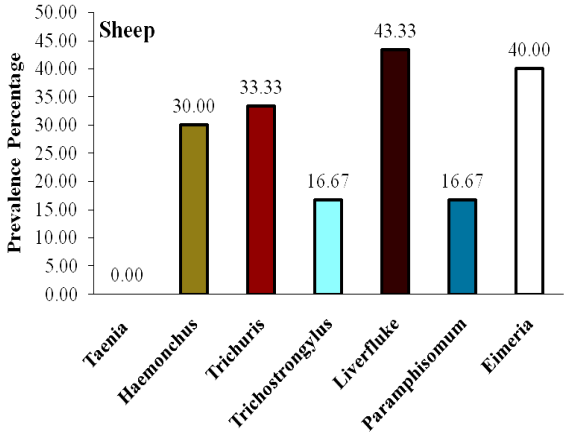

Figure 4. Prevalance percentage of gastrointestinal parasites in sheep in the vicinity of Tandojam.

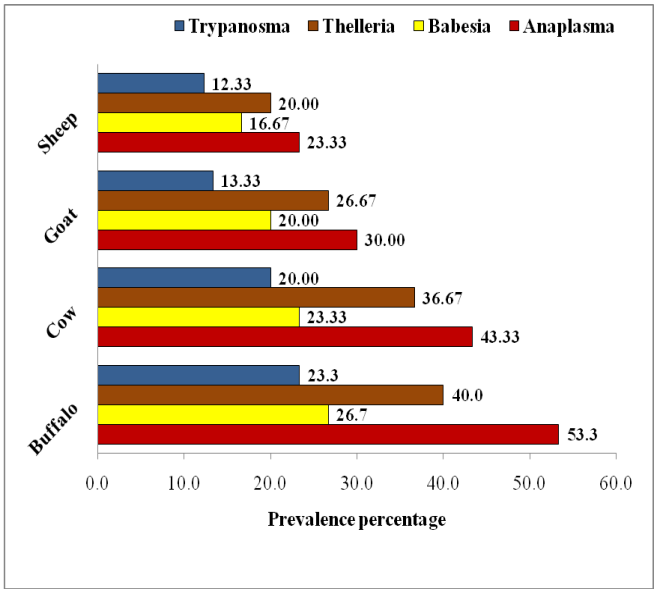

Figure 5. Prevalance percentage of blood protozoan parasites in four observed domesticated animals in the vicinity of Tandojam

of Tandojam. While, the intensity of Paramphisomum in buffalo, Haemonchus in cow, Taenia in goat and sheep appeared as least prevalent problems. Furthermore, amongst the blood protozoan, Anaplasma, Babesia, Thelleria and Trypanosma were found prevalent in the vicinity of Tandojam in four observed domesticated animals. However, Anaplasma appeared to be most common complaint in buffalo, followed by cow, goat and sheep. While Trypanosoma appeared to be least common problem in buffalo, cow, goat and sheep at the vicinity of Tandojam.

It is obvious that present study suggested the baseline information for these most prevalent gastrointestinal and blood protozoan parasites. Based on the present study, now it is possible to formulate the standard preventive management strategies for these common occurring problems in the vicinity of Tandojam.

CONCLUSION

From current study it is concluded that endoparasites appears as an emerging threat to the population of domesticated animals and their production in the vicinity of Tandojam. Amongst all, Liver fluke and Anplasma found to be most frequent complain. Furthermore; on the basis of current findings it is suggested to aware livestock farmer regarding all preventive measures. So that live stock enterprize can be uplifted.

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AUTHOR'S CONTRIBUTION

Asad Ali Khaskheli: Carried out research project and draft the manuscript.
M. Ibrahim Khaskheli: Helped in paper Write up.
Allahjurio Khaskheli: Contributed in analysis of data.
Gul Bahar Khaskheli: Contributed in citation of paper.
Rani Abro: Contributed in setting the paper according to format of Journal.
Abdul Samad Magsi: Contributed in reviewing of paper
Ghulam Murtaza Lochi: Contributed in setting the references of paper according to Journal format.

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