PREVALENCE, CHEMOTHERAPY AND HAEMATOLOGY OF STRONGYLOSIS IN HORSES OF DISTRICT LAYYAH

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ABSTRACT

The present study had been planned to estimate the infection rate of strongylosis, comparative efficacy of four anti-parasitic drugs; Closantel (Endoectiven), Mebendazole (Vermox), Neem (*Azadirachta indica A . Juss*) dried leaves and Oxfendazole (Systamex) and effect of strongyloids on different blood parameters in horses of district Layyah. Horses' faecal samples were processed coprollogically for strongyloids infection with the prevalence of 57.47%. The horses positive for the infestation were randomly divided into six groups A, B, C, D, E and F each comprising of 10 animals. Group A was treated with Closantel (Endoectiven), group B with Mebendazole (Vermox), group C with Neem (*Azadirachta indica A. Juss*) dried leaves, group D with Oxfendazole (Systamex), group E was kept as positive control (infected untreated) and group F was kept as negative control (uninfected untreated). The percentage efficacy of different treatments was 0 and 0%, 91.93 and 95.16%, 6.89 and 8.62%, 96.82 and 98.14% after days 7 and 14 post medication, in groups A, B, C and D respectively. Horses affected with strongylosis showed greater reduction in haematological parameter. On day zero total erythrocyte count values were 4.50, 4.09, 4.90, 3.85, 3.87 and 8.00×10^6 /µl in group A, B, C, D, E and F, respectively while on day 7 (post treatment) the values were 4.35, 7.47, 5.02, 6.20, 3.78 and 8.00×10^6 /µl in group A, B, C, D, E and F respectively. The values on day 14 (post treatment) were 4.25, 9.10, 5.10, 6.80, 3.69 and 8.00×10^6/µl in group A, B, C, D, E and F respectively. Packed cell volume (PCV) values were 32.50, 31.29, 31.02, 32.80, 32.60 and 37.00% in group A, B, C, D, E and F, respectively on day zero (pre treatment), while the values on day 7 were 31.70, 34.35, 32.10, 36.40, 31.95 and 37.00% in group A, B, C, D, E and F respectively. The values on day 14 (post treatment) in group A, B, C, D, E and F were 31.15, 40.10, 32.12, 39.95, 31.05 and 37.00%, respectively. Haemoglobin estimated values on day zero (pre treatment) in group A, B, C, D, E and F were 8.85, 9.28, 9.35, 9.64, 9.70 and 12.00 g/dl, respectively, while theses values in group A, B, C, D, E and F on day 7 (post treatment) were 8.65, 10.35, 9.45, 11.20, 9.18 and 12.00 g/dl respectively. Similarly the values on day 14 (post treatment) were 8.10, 11.05, 9.49, 12.40, 8.72 and 12.00 g/dl in group A, B, C, D, E and F, respectively.

Key Words: Strongylosis, Strongyloids, Haematology.

INTRODUCTION

The horses, due to their memorial role in Islamic history, are considered as a symbol of superiority among the horse breeders in Pakistan. The population of horses in Pakistan is 0.3 million. (Anonymous, 2008). Equines are mainly infected by members of the family Strongylidae, Ascaridae, Oxyuridae (Bayer, 1977). Adult horses do not show marked clinical signs as well as they may act as a source of infection for the young equine. The general performance of horses infected with strongylosis is impaired (Radostits *el al*., 2000).

Keeping in view the importance of equines in our society the present project was designed to study the infection rate of strongylosis in local horses of district Layyah; to estimate the efficacy of closantel (Endoectiven; Iven labs. Spain), Mebendazole (Vermox tabs; Johnson Pharma Karachi), Neem (*Azadirachta indica A . Juss*) dried leaves and Oxfendazole (Systamex; ICI Pakistan) and to study the effect of strongylosis on haematological values viz Total erythrocyte count (TEC), Packed cell volume (PCV) and Haemoglobin (Hb).

MATERIALS AND METHODS

Faecal samples from 87 horses belonging to all age and sex groups from district Layyah were collected directly from the rectum of animals in different polythene bags. The samples were processed the same day in Livestock Diagnostic Laboratory district Layyah. Each sample was examined by Direct Smear Method (Urquhart *et al.* 1996) for the presence of ova. The positive samples were subjected to McMaster Egg Counting Technique (Urquhart *et al.* 1996) for calculating the numbers of eggs per grm of faeces. From the study population a total of 60 horses were selected (50 infected, 10 healthy).They were divided into six groups A, B, C, D, E and F. The animals of group F were free from strongyloids (negative control).

Group A was treated with Closantel intramuscularly at a dose rate of 8mg/kg body weight as a

single dose. Group B was treated with Mebendazole orally at a dose rate of 10mg/kg body weight, Group C was treated with Neem (dry leaves) orally at a dose rate of 375mg/kg body weight as a single dose. Group D was treated with Oxfendazole orally at a dose rate of 10mg/kg body weight. The animals of group E were kept as positive control (Infected untreated) while the animals of group F were kept as negative control (Uninfected untreated).

The faecal samples from each group were examined on day 7 and 14 (post treatment) while the data thus obtained was subjected to statistical analysis using one way analysis of variance (Daniel, 2005).

The blood samples were also collected while collecting faecal samples on day zero, 7 and 14 from all the horses of group A, B, C, D, E and F. Blood was drawn into Thoma diluting pipette upto the 0.5 mark. Hyme, s solution was sucked into the same tube upto the 101 mark. The pipette was gently shaken. Cover slip was placed on the counting chamber. A drop of content was then touched to the space between counting chamber and cover slip. The counting chamber was then examined under the high power microscope (Benjamin, 1985).

The Packed cell volume was determined by loading the sample of whole blood in a capillary tube. The capillary tube was centrifuged at 15,000 rpm for five minutes. Then packed cell volume was recorded (Benjamin, 1985). Sahli,s graduated tube was filled with N/10 HCL upto the mark on %age scale of tube and, blood was added in to the tube. The Haemoglobin was estimated by adding distilled water (drop wise), stirring and comparing with the color scale of sahli,s haemometer (Benjamin,1985).

RESULTS AND DISCUSSION

The faecal samples of horses were processed coprologically for the presence of strongyloids. Prevalence of strongs in the horses was 57.47%. The results of the present study are in conformation with the results of Santos *et al.* (1992) who reported that prevalence of strongylosis in horses was ranging from 32 to 67%. However, results of the present study are not in agreement with the results of Hutchinson and Mfitililldoze (1989) who reported higher incidence of nematodes (81%) in horse, while 89% were infected with strongyles.

The reduction in ova on day7 and 14 (post treatment) was noted to be 0% and 0% respectively in horses of Group A. The dose rate of Closantel used in present study was in accordance with Guerrero *et al.* (1985) who used similar dose rate. However, the results of the present study were not in agreement with them as there was a 86% reduction in eggcount.

The reduction in ova on day7 and 14 was noted to be 91.93% and 95.16% respectively in horses of group B, which were similar to the results of Seibert *et al.* (1986) who reported that Mebendazole had an anthelmintic efficacy as 97.7% to 100% against adult *Strongylus vulgaris, S. edentatus, Parascaris equorum* and small strongyles.

The horses in group C showed a reduction in ova on day 7 and 14 (post reatment) as 6.89% and 8.62%, respectively. The dose rate of Neem used in the present study was in accordance with Ali (2005) who used similar dose rate of 375mg/kg body weight and reported that Neem is effective as 53.6% against Gastrodiscus in horses. The horses in group D showed a reduction in ova on day 7 and 14 (post treatment) as 96.82 and 98.41% respectively. Findings of present study are in accordance with the result of Maqbool (1993) who reported the efficacy of Oxfendazole 97.3% against strongylosis in horses.

The mean values of different blood parameters are presented in Table 4. A marked decrease in haemoglobin was observed in infected animals and the value of haemoglobin was in normal range in uninfected untreated horses on day zero (normal haemoglobin value is 10.5 to 15.5g/dl) Haemoglobin value was near to normal range in horses of group B, C and D on day 7 post treatment while decrease in Hb value was noted in group A due to increase in eggs per gram (EPG) of faeces. There was also a decrease in haemoglobin value in group E which was untreated and in uninfected untreated horses remained unchanged.

Table: 1. Mean values of different blood parameters in group A, B, C, D, E and F on day zero (pre-treatment) and on day 7 and 14 (post treatment)

Blood Parameters	Groups	Day zero	Day 7	Day 14
TEC ($n\times10^6$/µl	A	4.50	4.35	4.25
	B	4.09	7.47	9.10
	C	4.90	5.02	5.10
	D	3.85	6.20	6.80
	E	3.87	3.78	3.69
	F	8.00	8.00	8.00
Hb (g/dl)	A	8.85	8.60	8.10
	B	9.28	10.35	11.05
	C	9.35	9.45	9.49
	D	9.64	11.20	12.40
	E	9.70	9.18	8.72
	F	12.00	12.00	12.00
PCV (%)	A	32.50	31.70	31.15
	B	31.29	34.35	40.10
	C	31.02	32.10	32.12
	D	32.80	36.40	39.95
	E	32.60	31.95	31.05
	F	37.00	37.00	37.00

The total erythrocyte count and packed cell volume were reduced on day zero in all infected groups,

but was normal in the group of healthy horses. After the treatment these values increased towards normal in group B, C and D while decrease in group A of the infected horses and remained unchanged in healthy horses.

The haematological findings of the present study are in agreement with the results of Peal *et al*. (1989) and Sohail (1989) who reported that there is decrease in haemoglobin level, total erythrocyte count and packed cell volume as compared to healthy animals. It is tempting to speculate that the decrease in haematological values may be due to the blood sucking nature of the parasite.

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