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Assessing the prevalence of parasitic infections in diarrhoeic sheep: A study in the southern region of Rajasthan

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Abstract

The current study aimed to conduct comprehensive investigations into the clinico-pathology, and parasitological aspects of 64 sheep affected by diarrhoea in the southern region of Rajasthan. Among the 64 collected diarrheic faecal samples, 40 (62.5%) were found to be infected with parasitic infections. The study revealed varying prevalence rates among different parasitic infections, with the highest recorded for *Strongyle* spp. at 25%, followed by *Amphistome* spp. at 18.75%, *Trichuris* spp. at 7.8%, *Moniezia* spp. at 3.12%, *Coccidia* spp. at 1.56%, and mixed parasitic infections at 6.25%. Additionally, 24 samples (37%) tested negative for parasitic infections. These findings provide valuable insights into the parasitological landscape associated with diarrhoea in sheep within the specified region.

Keywords: Diarrhoea, parasitological, sheep and strongyle

Introduction

Sheep domestication, estimated to have occurred between 11,000 and 9,000 B.C. in Mesopotamia, marked a significant historical development. Their rapid integration into various world cultures underscores their immense value to early human settlements. Even today, sheep continue to play a crucial role in the livelihoods of rural, marginal, economically weaker, and landless farmers in remote areas where the benefits of scientific research are slow to reach. Despite the passage of time, the sheep husbandry system in India remains largely traditional. In this context, sheep grazing on pastures face susceptibility to various parasitic diseases, with gastrointestinal parasitism emerging as a major health constraint. The consequences of such parasitic infections range from reduced productivity to mortality. The alimentary tract, being comparatively more prone to spontaneous pathological conditions due to parasitic and bacterial infections, becomes a focal point of concern in the overall health of sheep and goats (Sharma, 1997) [4].

Gastrointestinal parasites, particularly helminth diseases encompassing trematodes, cestodes, and nematodes (Soulsby, 2012) [5], are known to afflict sheep. These parasites can compete with the host for food, reduce appetite, alter food passage through the digestive tract, or induce changes in the absorptive surface of the intestine. The southern region of Rajasthan faces a dearth of research on clinico-pathological and microbiological studies in diarrheal sheep.

Diarrhea, a common manifestation of gastrointestinal disorders, results from varied causes, including infectious and non-infectious factors. Such disorders lead to alterations in the normal histological structure of the gastrointestinal tract, resulting in decreased absorption and diarrheal symptoms. Understanding the Etiology and clinico-pathological aspects of diarrhea in sheep is crucial for effective prevention and control measures. This knowledge can pave the way for the introduction of appropriate preventive and therapeutic strategies to mitigate losses in sheep populations.

Materials and Methods

Faecal examination for parasitic eggs and oocysts

The faecal samples were collected from the sheep exhibiting diarrhoea. The faecal samples were examined for the presence of parasitic ova and coccidial oocysts.

For examination, floatation and sedimentation method using saturated magnesium sulphate was employed. To detect presence of coccidial infection, a small amount of mucosal scraping was taken on a glass slide and then diluted with saline. After covering the slide with a coverslip, microscopic examination was done for coccidial oocysts.

Results

Among 64 samples diarrhoeic faecal sample 40 (62.5%) were infected with parasitic infection, among the various parasitic infections highest prevalence was recorded for *Strongyle* spp. 16(25%) followed by *Amphistome* spp. 12(18.75%) *Trichuris* spp. 5(7.8%), *Moniezia* spp. 2(3.12%) *Coccidia* spp. 1(1.56%) Mixed parasitic infection 4(6.25%) and negative in 24(37%) samples.

Table 1: Various parasitic egg/ova recovered from diarrheic sheep

S. No.	Parasitic egg recovered in faecal sample	Number of positive sample (Percentage)
1.	<i>Strongyles</i> spp.	16 (25%)
2.	<i>Amphistome</i> spp.	12 (18.75%)
3.	<i>Trichuris</i> spp.	5 (7.8%)
4.	<i>Moniezia</i> spp.	2 (3.12%)
5.	<i>Coccidian</i> spp.	1 (1.56%)
6.	Mixed	4 (6.25%)
7.	Negative for parasite	24 (37%)

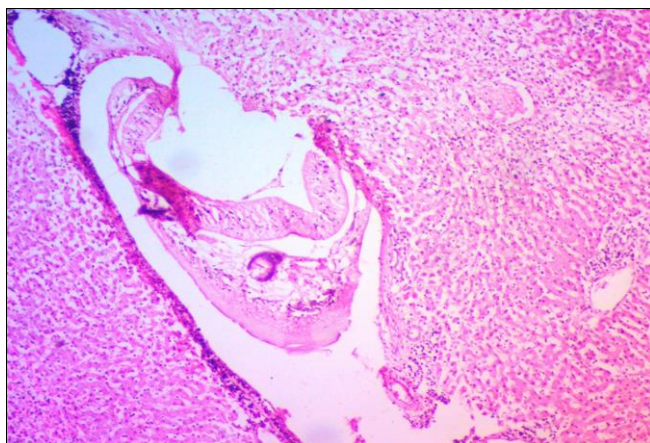


Fig 1: Microphotograph of liver showing chronic hepatitis, cross section of *Fasciola* in bile duct and around the duct severe fibrosis. H&E 100 x

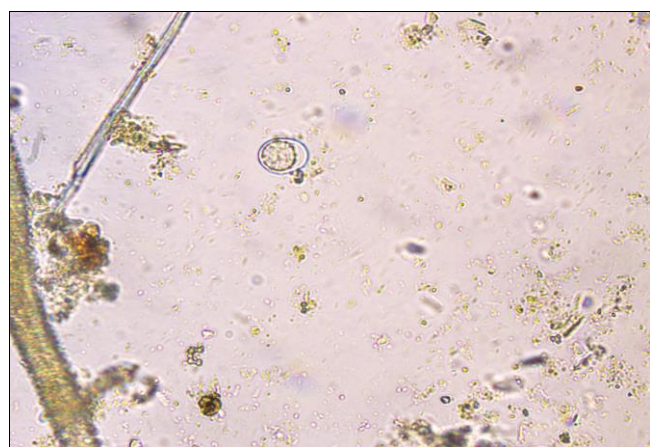


Fig 2: Microphotograph of fecal sample showing ova of *Coccidia*.- 100x

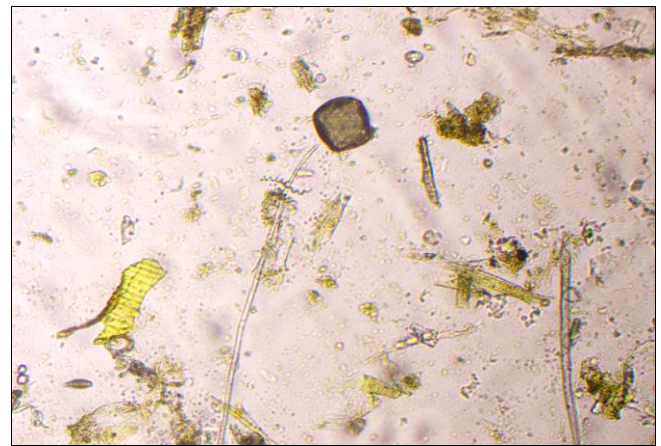


Fig 3: Microphotograph of fecal sample showing *Moniezia* ova.- 100x

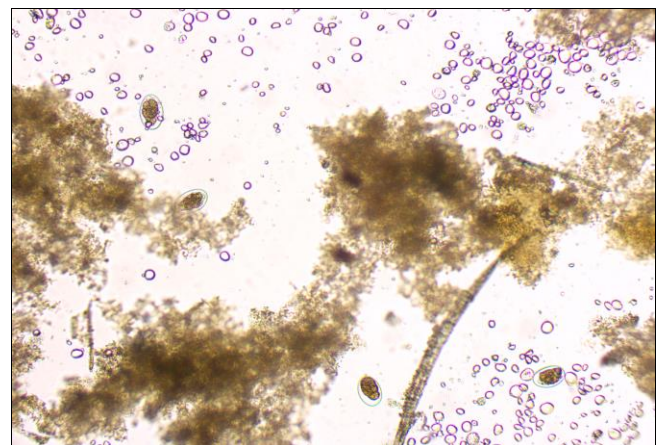


Fig 4: Microphotograph of fecal sample showing *Strongyle* ova. - 100x

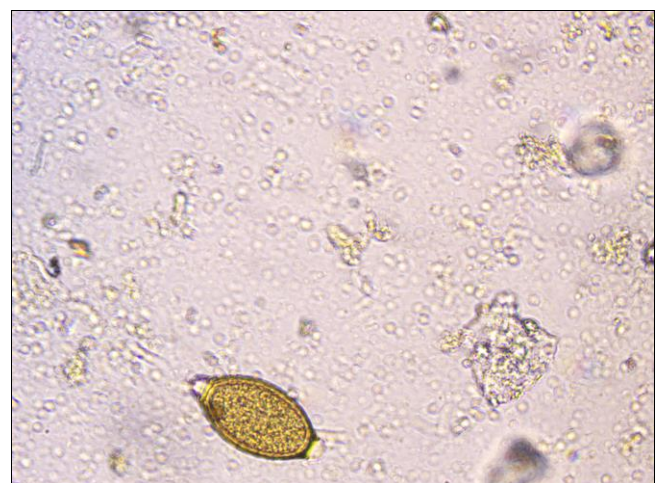


Fig 5: Microphotograph of fecal sample showing *Trichuris* ova. - 100x

Discussion

Parasitological findings revealed highest prevalence was of *Strongyle* spp. 16 (25%) followed by *Amphistome* spp. 12(18.75%) *Trichuris* spp. 5(7.8%), *Moniezia* spp. 2(3.12%) *Coccidia* spp. 1(1.56%) Mixed parasitic infection 4(6.25%) and negative in 24 (37%) samples. These findings were in general, agreement with those reported by Balachandran *et al.* (2010) [1], Bhat *et al.* (2012) [2], Moudgil *et al.* (2017) [3].

Conclusion

The objective of this study was to conduct a comprehensive investigation into the clinico-pathology and parasitology of 64 sheep affected by diarrhoea. A total of 64 samples were collected, with 42 samples obtained from live sheep exhibiting clinical signs of diarrhoea, and 22 samples acquired from deceased sheep carcasses with a history of diarrhoea.

Parasitological findings revealed the highest prevalence of *Strongyle* species (25%), followed by *Amphistome* species (18.75%), *Trichuris* species (7.8%), *Moniezia* species (3.12%), *Coccidia* species (1.56%), and mixed parasitic infections (6.25%). This study provides crucial insights into the parasitic landscape associated with diarrhoeal conditions in sheep, shedding light on the prevalence of different parasites in the examined population.

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