PATHOLOGICAL CHANGES DUE TO HELMINTH INFESTATION IN GOATS IN ANAND DISTRICT OF GUJARAT

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ABSTRACT

The present study describes the gross and histopathological lesion observed due to helminthic infestation by *Paramphistomum*, *Trichuris*, *Trichostrongylus* and *Moniezia* species in goats in Anand district of Gujarat. The gross lesions comprised mainly rumenitis with shortening of ruminal papillae, catarrhal enteritis with several mature and immature forms of the parasites found in rumen and intestine. Histopathological changes like shortening of rumen papillae, epithelial tissue hyperplasia, edema and fibroblastic proliferation in the sub-mucosa along with the infiltration of the inflammatory cells were observed due to *Paramphistomum* spp. The histopathological changes due to *Trichuris spp*. were petechial hemorrhages, necrosis at the tip of villi and proliferation of goblet cells along with the cellular infiltration predominantly lymphocytes, few eosinophils and occasionally macrophages. Also *Trichostrongylus* spp. and *Moniezia* spp. were associated with severe histopathological changes like thickening of intestinal wall, infiltration of eosinophils, chronic inflammatory cellular reactions with mucoid degeneration.

KEYWORDS : Histopathological changes, *Paramphistomum*, *Trichuris*, *Trichostrongylus*, *Moniezia,* cellular infiltration Goats.

INTRODUCTION

The economic importance of goat *(Capra hircus)* “poor man’s cow all over the world” is well documented (Maske and Phule, 2011) as is produces meat, milk, fiber, skin and manure. Gastrointestinal helminthiosis has been recognized as a major constrain to the livestock production throughout the globe through varying degree of gross and histological alterations in gastrointestinal tract. Helminths in general and gastrointestinal helminths in particular pose a serious problem to the caprines leading to high morbidity and lowered productivity (Perry and Randolph, 1999), mortality (Sykes,1994), and thus high economic losses (Iqbal *et al*. 1993) characterized by lower output of meat, milk, hides and skin thus affecting the income of small holder dairy farming communities. The present investigation was therefore, undertaken to examine the gross and histopathological changes of gastrointestinal tract caused by helminth infestation in naturally infected goats in Anand district of Gujarat.

MATERIALS AND METHODS

A total of 30 helminth infested, ruminal and intestinal samples were collected after a thorough gross examination of gastrointestinal system of goats at the time of necropsy at the Department of Veterinary Pathology of the College and from the meat shops of Anand city. The representative tissue pieces of intestine and rumen were preserved in 10 per cent neutral buffered formal saline solution. These were processed by standered paraffin embedding method. 5-6 micron thick Sections were cut with the help of microtome and stained with Ehrlich’s Haematoxylin and Eosine (H&E) method as described by Luna (1960). Typical lesions were photographed at different magnifications.

RESULT AND DISCUSSION

In the present study, the gross lesions in *Paramphistomum* spp., were localized loss of rumen papillae, oedematous inflammation with several immature *Paramphistomum* spp. attached to the rumen (Photo 1). The microscopic changes observed in rumen were shortening of ruminal papillae (Photo 2), epithelial tissue hyperplasia, oedema in the mucosa and fibroblastic proliferation in the sub-mucosa along with focal infiltration of macrophages and lymphocytes in the lamina propria. Cross or longitudinal sections of parasites were not observed possibly due to the section of tissues at improper angle. The finding of the present study is in agreement with those reported by Uddin *et al.* (2010).

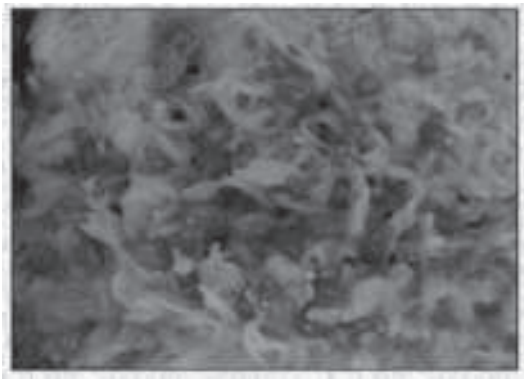

Photo 1

Photo 2

The gross lesion due to *Trichuris* spp. infections were characterized by catarrhal enteritis along with the penetrated parasites as well as petechial haemorrhages present on the mucosa of intestine (Photo 3). The microscopic changes in *Trichuris* spp. were characterized by petechial haemorrhages, necrosis at the tip of villi (Photo 4) and proliferation of goblet cells along with the cellular infiltration of mononuclear cells and occasionally by macrophages. The present study is in agreement with Mehta (2001) and Mohanta *et al.* (2007).

Photo 3

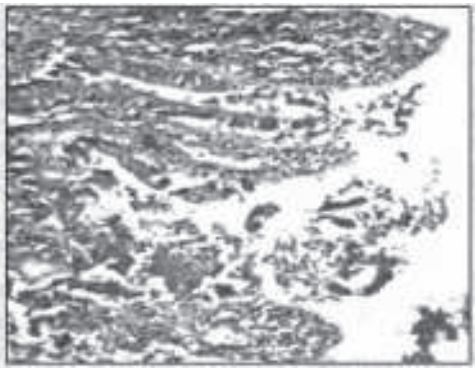

Photo 4

In the present study, *Trichostrongylus* spp. infected goat intestines showed gross lesion comprising of congestion, catarrhal enteritis and oedema. The microscopic changes were thickning of intestinal wall and oedematous folds, infiltration of eosinophils, moderate chronic inflammatory cellular reactions with mucoid degeneration (Photo 5 and 6). The findings are in agreement with Pienaar *et al*. (1990), Rahman and Collins (1991), Winter *et al.* (1997), and Mehta (2001).

The gross changes in *Moniezia* infestation were necrosis, petechial haemorrhages and inflammation in intestinal wall. Nodules were observed where the parasite invaded the intestine and the intestinal

Photo 5

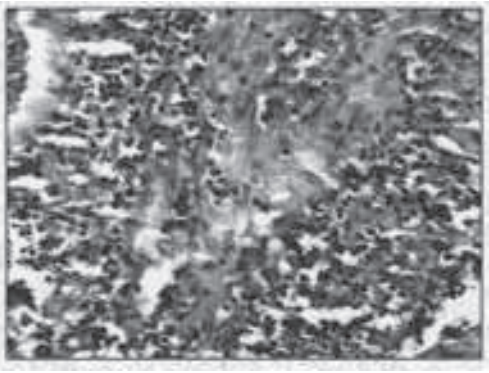

Photo 6

lumen was almost occluded with the large number of tapeworm. The histopathological changes observed were attachment of the parasites to the mucosal and sub-mucosal layer of intestines with damage to the intestinal tissue and destroying the intestinal villi (Photo 7).The observation of are agreement with the Mehta (2001) in goats and Moghaddar and Afrahi (2008) and Humbe *et al.* (2011) in sheep.

Photo 7

The present study shows that intestinal helminthes are associated with the production of variable degree of pathological lesions, which result in appreciable morbidity of the caprines and hence decreased productivity. In view of the findings of this study, it is recommended that besides routine faecal examination for gastrointestinal infestation in caprines, regular deworming should be done so as to get maximum production from this species.

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