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HISTOPATHOLOGIC FINDINGS IN LARGE INTESTINE OF GOAT (*CAPRA HIRCUS*) INFECTED WITH *TRICHURIS* SP. IN KARACHI, PAKISTAN

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Abstract

Morphological changes were observed in the goats intestine infected with *Trichuris* sp. showed heavy infiltration of lymphocytes. Odema, necrosis, hemorrhages were frequently observed. Mucous glands showed eosinophilic infiltrations whereas villi seem to be disconnected from the attachment and had became wide. Moreover the structure of large intestine was completely deteriorated.

Keywords: *Trichuris* sp., Histopathology, Large intestine, Goat, Pakistan.

INTRODUCTION

The livestock sector helps Pakistan in strengthening its economy as it produces food, brings on assets along with employment. The production and yield of livestock gets constraint due to the outbreaks of helminths disease in sheep and goats (Khan *et al*., 1989). The decrease of product capacity of domestic animals depend upon the intensity of parasites their burden and intensity of damage (Van Houtert and Sykes, 1996). People use to keep goats because they immediately adapt themselves to the surrounding environment and provide us with valuable items. According to FAO (1998) two percent of the total world's milk is produced by the goats. The helminths causes several diseases to the goats and sheeps that leads to low wool and meat quality and quantity and a decline in reproductivity of young one's causing profitable loss to the economy (Sutterland and Scott, 2010). *Trichuris* (Roderer, 1761) known as whip-worm belonging to the family Trichuridae which cause Trichuriasis which has a variety of host accountable for an important disease prevailing throughout the world mostly found in caecum and rectum portions of large intestine. Their larvae burrow in the intestinal wall and encapsulated causing ulcerative necrotic pathches appear along with severe hemorrhages in mucosa. Animals experience bloody colitis and diphtheritic caecitis (Taylor *et al*., 2007). The present study was conducted to observe the changes in host's tissue infected with *Trichuris* sp. in goats of Karachi.

MATERIALS AND METHODS

The gastrointestinal tracts of goat was collected from the area of Gulshan-e-Iqbal, Karachi and was cut longitudinally into different parts for histopathologic study. The affected tissue from large intestine embedded with parasites were taken out and washed thoroughly with saline to remove the attached debris. The tissues were fixed in 10% formalin for 24 hours, it was cleaned and dehydrated through alcoholic grading series and then cleared by xylene and fixed in paraffin wax. When the blocks containing wax gets stabled, it was trimmed to adjust in the microtome machine to obtain thin sections for further study. These sections were dewaxed by using xylene and was hydrated through decending series of grading. Sections 6-8 microns were cut with rotary microtome (Waheed *et al*., 2016). Permanently mounted tissue sections were observed and microphotographs taken using photomicroscope, Nikon (Opiphot-2).

OBSERVATIONS

The goat like other herbivorus ruminants have a digestive system comprising of the mouth, oesophagus, four stomach components, small intestine, large intestine and glands similar to that of sheep, deer, bison, giraffes and elk (Shapiro, 2001). The large intestine showed heavy cellular infiltration of gastric glands showing necrosis, odema, hypertrophy and hemorrhage (Fig. 1). The gastric gland seemed abnormal with odema and heavy necrotic (Fig. 2). Broadening of villi with detachments were prominent (Fig. 3). Moreover, mononuclear infiltration of cells (monocytes, lymphocytes and plasma cells) were obvious while the mucous gland had eosinophilic infiltration. In Fig. 4 haemorrhage at a number of place and infiltration was observed which was due to complete destruction of large intestine structure.

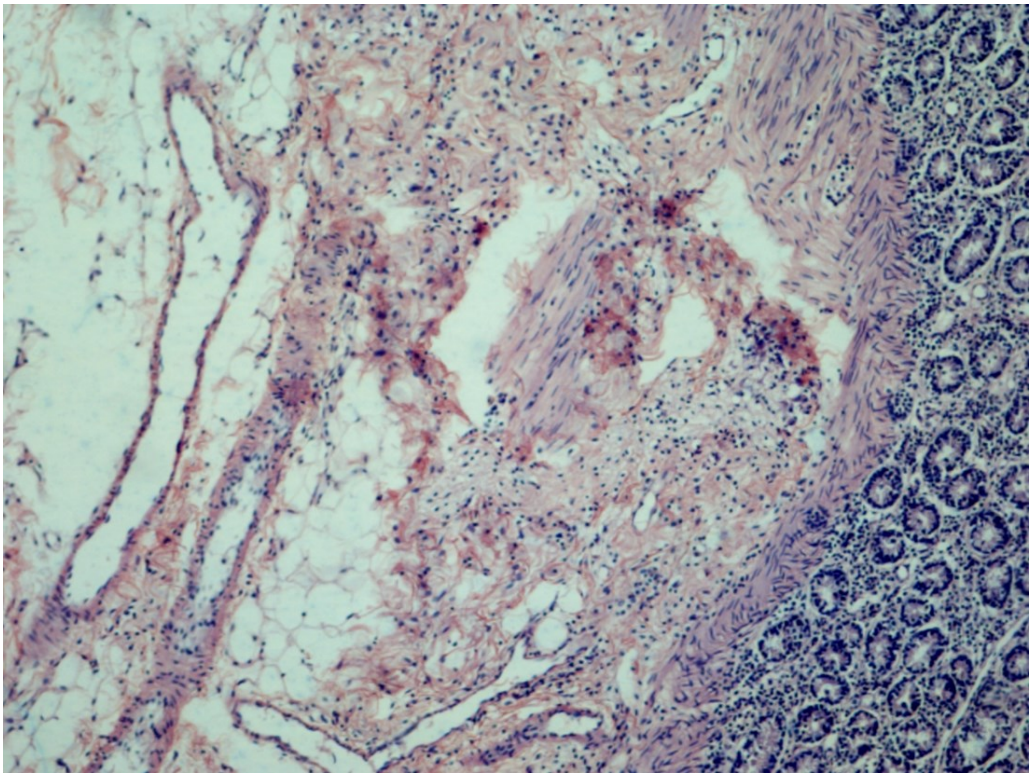

Fig. 1: Photomicrograph of large intestine showed heavy cellular infiltration of gastric glands showing necrosis, odema, hypertrophy and hemorrhage (10X).

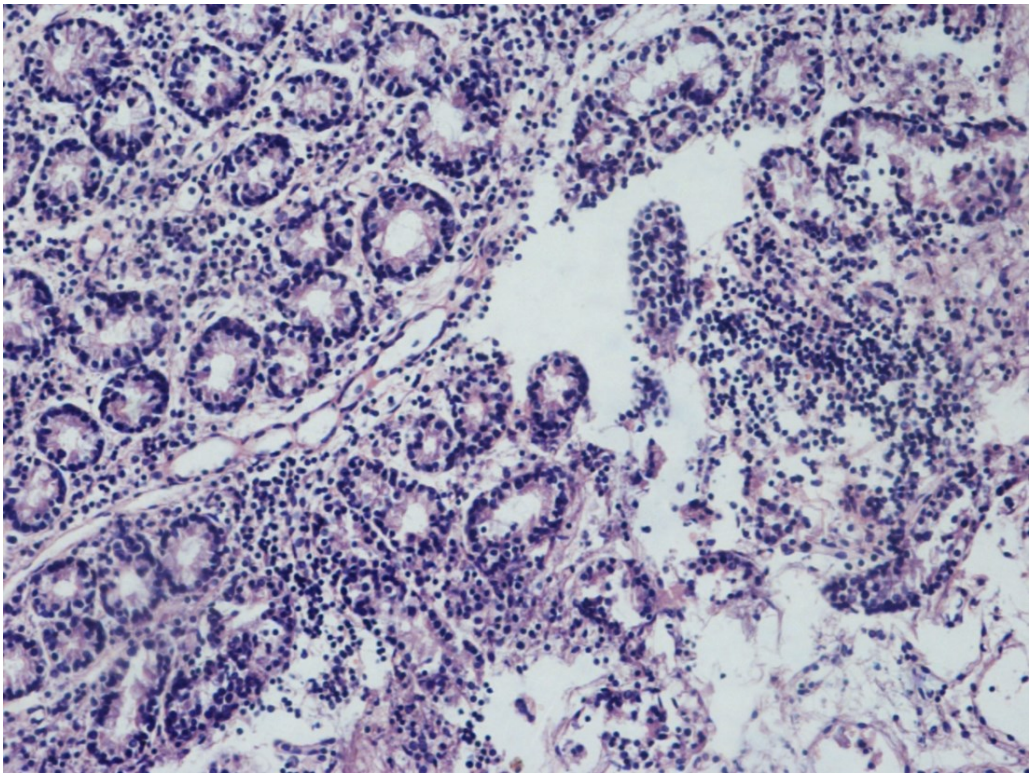

Fig. 2: Section of large intestine showing the abnormal gastric gland with odema and necrosis (20X).

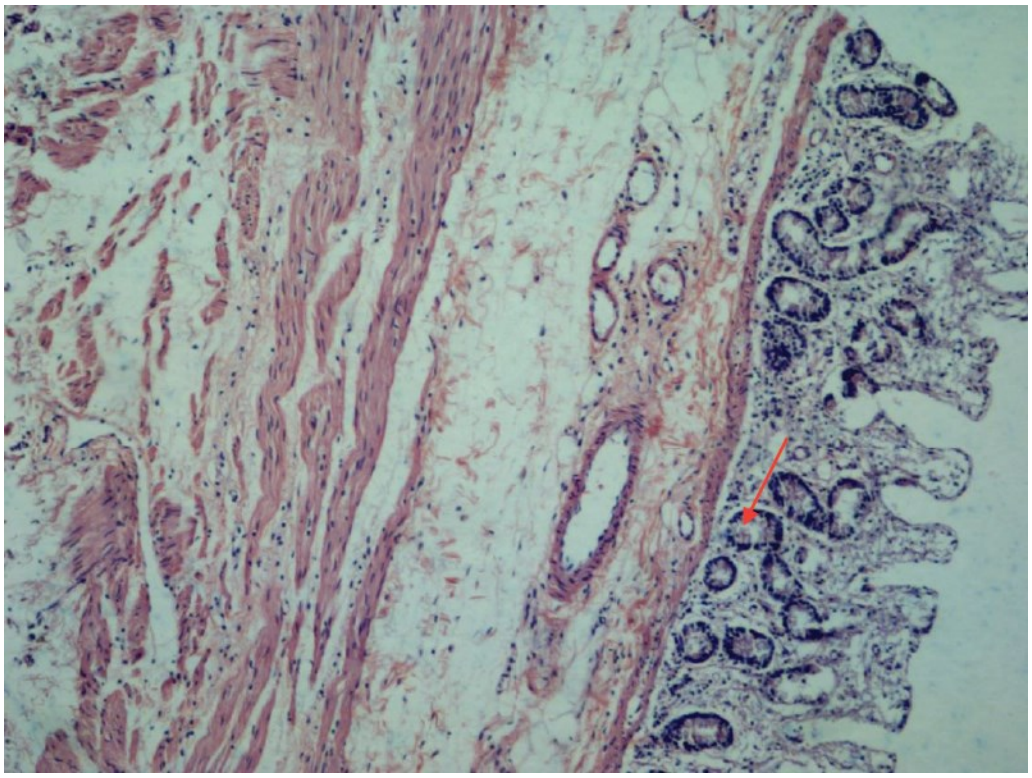

Fig. 3: Section of large intestine showing broadening of villi with detachments were prominent(←) (10X).

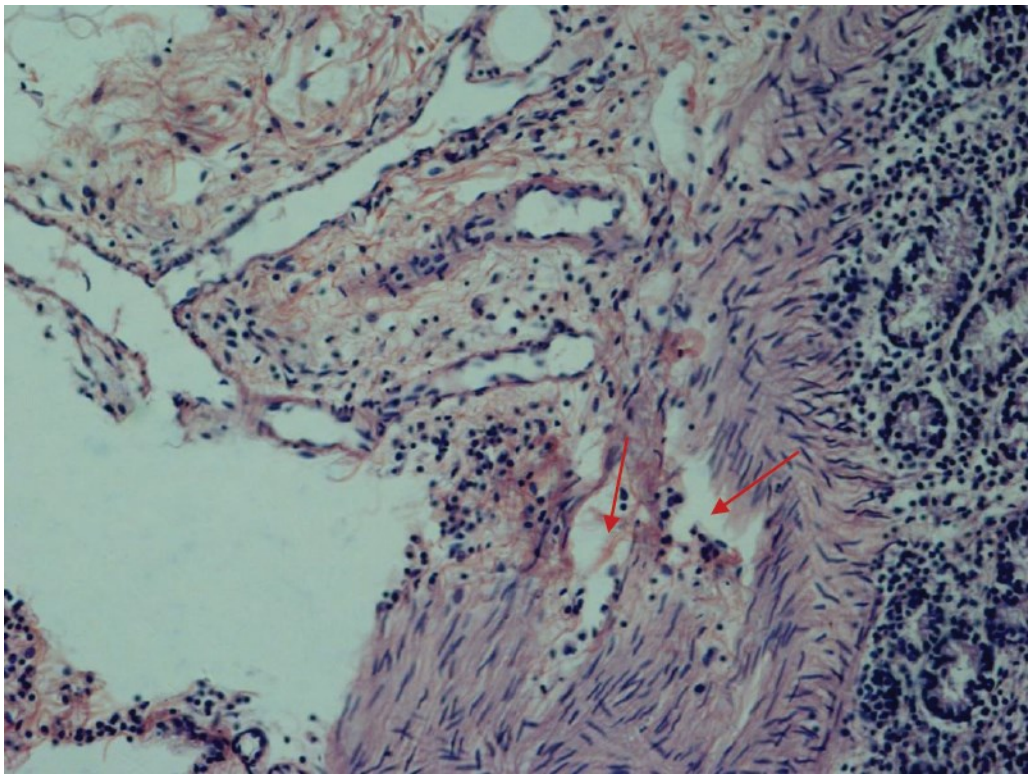

Fig. 4: Photomicrograph showing haemorrhage(←) at a number of places and infiltration was observed which was due to complete destruction of large intestine structure (20X).

DISCUSSION

Trichuriasis is an important disease frequently found in domesticated animals and have a profound effect on the biology of animal. Clinical and sub-clinical diseases of *Trichuris* include congestion, edema of the intestinal mucosa accompanied by necrotic patches on the mucosa and sub-mucosa, the animal may also experience severe diarrhoea. The tissue gets damaged due to the parasites embedded in it directly or it may release some toxins that affects the hosts tissue (Abner *et al*., 2002). The severity of infection is due to helminths depends upon the host-parasite relationship.

In the present study, histological sections showed the crypts of Leiberkuhn, submucosa, gastric glands were clearly differentiated. Thickening of mucosa was observed as earlier reported by Mohanta *et al*. (2007). Acute inflammation in caecum was due to *Trichuris vulpis* observed in dogs by Bowman (2002).

The current study showed no sign of encapsulation of parasite in the tissue. The penetration causes damages to the intestinal wall which leads to haemorrhages ultimately an increase in goblet cell takes place (Zainab and Khan, 2016). Most of the infection caused by *Trichuris* spp. remains mild in intensity as reported in an earlier study but infection gets severe when number of worms increased (Soulsby, 1965). During the study, tissue sample showed haemorrhages, lymphotic infiltrations and odema which is also reported in dogs infected with *T. vulpis* (Kirkova and Dinev, 2005).

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