HISTOPATHOLOGY

Introduction:

Goats and sheep are the major domestic animal species in India. Much of the economy of the country has been depend upon the domestication of these animals. Especially economy of the poor people is depend on this domestication practices. It is realized that the sum total of ravages occasioned by various parasitic infections in both goat and sheep farms. Among these coccidiosis is believed to be a commonest depreciator or even a potential killer of the goats and sheep. Although very few workers have discussed on invasive powers of the sporozoites of coccidia in goat and sheep. The little information is available about coccidiosis in goat a lot has been written about coccidiosis in sheep. But many authors presume that the same species of coccidia may affect sheep as well as goat and producing similar pathological lesions, only few cross transmission experiments have been tried.

Levine (1961) has described the life cycle of ten Eimerian species, out of that E. arloingi and E. ninakohlyakimovae in sheep intestine. Marotel (1905), Martin (1909) are also described the intestinal infection of these species. Naunihal singh and B. P. pande (1967) are described the histopathological lesions due to natural infection of E. arloingi and E. ninakohlyakimovae in sheep. Krilov M.V. (1961) attempted the transmission in between goat and sheep. The severe diffuse sub acute enteritis is found in the jejunum and ileum of goat which results in severe proliferation of glandular epithelium, as a result cytoplasm containing macro and micro gametocytes Mugera G.M. (1968). Azizollah khodakaram Taftiand and Maryam Mansourian (2008) described pathologic lesions of naturally occurring coccidiosis in sheep and goats, the coccidiosis is especially occurs in kids and lambs which causes depression, loss of appetite, yellow to dark watery diarrhea, progressive dehydration and emaciation were referred to
diagnosis of disease. At necropsy, gross lesions where seem mostly in the Jejunum. There are no differences between sheep and goat cases with regards clinical signs, and gross histopathological lesions. Cocciodiosis to be quite common in kids of Kenya goats. The lesions on the intestinal mucosa were similar in all the cases seen. There was no evidence of oedema, haemorrhages, ulceration or of any acute inflammation in the intestinal tract of any of the animals studied. No lesions were noted in the caecum and colon of the goats examined. These observations are in contrast to the lesions of cocciodiosis in sheep due to *E. arloingi* infection, Lotze J.C. (1952) i.e. petechiae in the small intestine, extensive haemorrhages in the posterior part of the small intestine and thickening and oedema and haemorrhages in the upper large intestine. Serious damage is found because of *E. arloingi* is possible when infection is heavy Lotze J.C. (1952) Lotze consider that the asexual stages were the most damaging in his findings. Small intestine was thickened and whitish patches were seen. There is edema on wall of the intestine. The intestinal contents may be blood tinged.

This observation indicates that the coccidia species affecting goats may be biological races producing different pathological lesions in goats from those seen in sheep.
MATERIAL AND METHODS

Intestine of sheep and goats were dissected to observe the rate of infection and for the further histological study. Some sheep and goats were found to be infected and some were non–infected. To study the histopathological changes in both the infected and non–infected intestine of the hosts were fixed in Bouins fluid. This fixative prevents the tissue from post mortem changes. These tissues then washed and dehydrated through alcoholic grades, cleared in xylene and kept embedded in paraffin wax (58 - 62°C). The wax is cooled and blocks were made by cutting the extra paraffin wax. Then the sections of tissue were made by using microtome. These sections were about 5 – 6µ in thickness. The sections were taken on glass slides and stained in Eosin haematoxylin double staining method. Best sections or slides were selected and observed under the microscope for histopathological study.

Present author has studied histopathology only for two Eimeria species i. e. E. arloingi in goat and E. ninakohlyakimovae in sheep. As these two species are more pathogenic.
T.S. OF NORMAL INTESTINE OF GOAT AND SHEEP

The transverse section of normal intestine shows that it is composed of serosa, muscular coat, sub-mucosa, muscularis mucosa and mucosa. Serosa forms outer thin layer covering. Muscular coat consists of outer longitudinal and inner circular fibers. Between longitudinal and circular muscles lies a network of lymphatic vessels and closed ganglionated plexus of amyelinated nerve fibers called as plexus myentericus. Sub-mucosa is well developed and is composed of loose connective tissue. Muscularis mucosa is very much reduced and consisting of thin outer longitudinal and inner circular layers. Mucosa is thrown in to villi or folds composed of single layered epithelial cells from the base of villi up to surface layer there are several tubular simple or branched glands as crypts of lieberkuhn. These glands are lined by epithelial cells containing goblet cells.
HISTOLOGY OF INFECTED SMALL INTESTINE OF GOAT

Present author found white lesions with cystic areas in the various parts of the small intestine of the goats. (Ileum, Jejunum, Duodenum). There is hypertrophy of villi and epithelial cells in the glands of lieberkuhn and other cells. In transverse section different developmental stages of coccidia including gametocytes and oocysts are seen. In the developmental stages of schizonts group of nuclei are seen in circle, while in others fully developed merozoites are seen like petals of a flower. In lamina propria and sub-mucosa small developing schizonts are seen, in glandular epithelium of crypts of lieberkuhn and in the cells of villi fully developed schizonts, male and female gametocytes and immature and mature oocysts are seen. All the stages are intracellular so cells are hypertrophied. At some places there is destruction of epithelial cells due to parasites. No hemorrhage found, only clump of mucus is seen in the small intestine.