



PARATUBERCULOSIS IN A DOE - A CASE REPORT

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Johne's disease is chronic, infectious, granulomatous enteritis of ruminants caused by acid fast bacilli *Mycobacterium avium* subsp. *paratuberculosis*. Many species especially ruminants are susceptible to the infection. The principal route of infection is faeco-oral route and clinically the disease is manifested as progressive diarrhoea and emaciation. Infection usually occurs at an early age but months or years may elapse between infection and the production of overt clinical disease (Moser 1982). Acid fast organisms can be demonstrated in smears and sections of mucosa and sub mucosa using various staining techniques.

A 3 year old doe was presented to the Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Mannuthy for necropsy examination. The animal had a history of chronic diarrhoea, prostration and emaciation. The carcass was subjected to detailed necropsy. Samples of intestinal scrapping from ileo-caecal junction and representative tissue samples were collected for laboratory investigations. Sections were cut at 4 μ thickness and stained with routine Haematoxylin and Eosin stain (Bancroft and Cook, 1995), Ziehl- Neelsen's acid fast stain and Dahl's method (Luna 1968).

Gross examination of the carcass revealed emaciation, rough hair coat and pasting of faeces. This was in agreement with Morin (1982) who reported emaciation, severe weakness, prostration and soft pasty stool in affected animals. On postmortem examination, moderate depletion of fat with serous atrophy of abdominal fat could be noted. Catarrhal enteritis with uniform thickening of the intestine and mesenteric lymphadenitis could be

observed. The mesenteric lymph nodes were edematous and had a gritty texture. Morin (1982) also observed that the gross lesions of paratuberculosis were characterized by mesenteric lymphadenopathy with more or less extensive areas of caseous necrosis and calcification. Gross lesions in the intestinal tract were limited to a mild thickening and corrugation of the mucosa of the distal small intestine. Other internal organs were apparently normal. Acid fast staining of faecal smear revealed the presence of *Mycobacterium avium* subsp. *paratuberculosis* (Fig. 1).

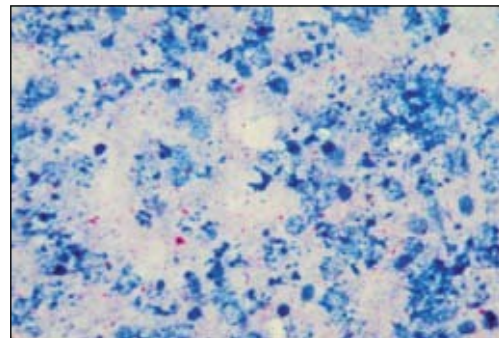


Fig. 1. . Acid fast bacilli in intestinal scrapings (Ziehl-Neelsen's acid fast 1000 X)

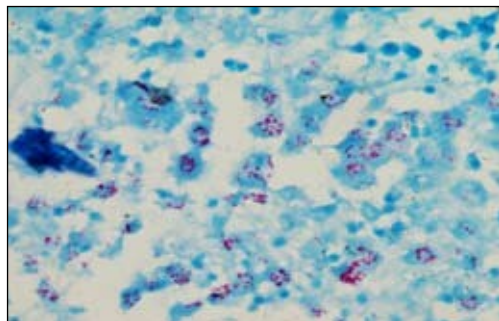


Fig.2. Mycobacterium - containing macrophages in lamina propria (Ziehl- Neelsen's acid fast 1000X)

Histopathological studies of tissues from infected animals can be considered as the gold standard method for the diagnosis of Johne's disease and should be used to confirm the disease instead of other methods (Hope *et al.*, 2000). On histopathology examination, fusion, atrophy & blunting of villi with infiltration of chronic inflammatory cells in lamina propria were observed (Fig. 2). Syncytia formation and lymphangectasis could also be noticed. This is in accordance with Hailat *et al.* (2010) who reported infiltration of the sub mucosa primarily with variable numbers of macrophages, lymphocytes and plasma cells along with granulomatous lymphangitis with or without dilated lacteals. The villi exhibited different changes including: villous distortion and thickening by inflammatory cell infiltrations, villous atrophy and fusion. According to McGavin and Zachary (2007) the lamina propria of the intestine was markedly expanded by granulomatous inflammatory cells, which compress the crypts and eventually result in their loss.

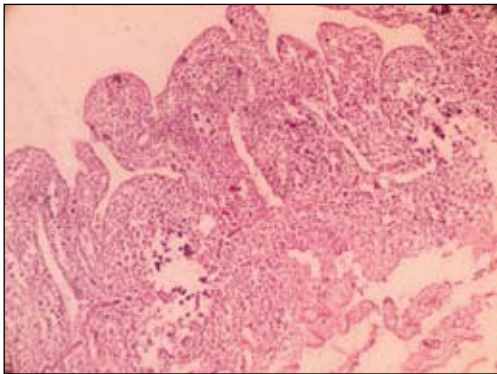


Fig.3. Fusion, atrophy & blunting of villi with infiltration of chronic inflammatory cells (H&E 100X)

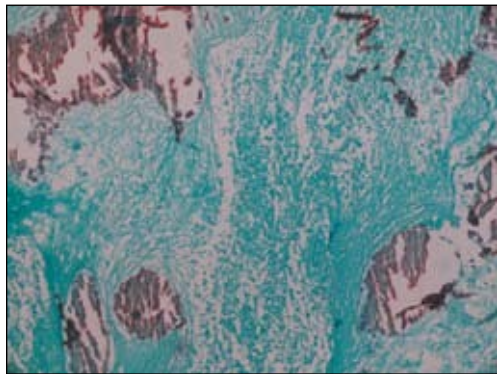


Fig. 4. Mesenteric lymph node (H&E, 40X)- Ectopic calcification

The *Mycobacterium* in the macrophages of distended lamina propria could be demonstrated by Ziehl-Neelsen's acid fast staining (Fig 3). Ectopic calcification and granuloma was noted in mesenteric lymph nodes (Fig 4). Calcification could be demonstrated using Dahl's method (fig 5). Hailat *et al.* (2010) also reported that the most severely affected lymph nodes were characterized by granuloma formation with mineralization.

Confirmation of diagnosis of paratuberculosis depends on demonstration of epithelioid cells containing acid fast bacilli. Organisms can be demonstrated in smears and sections of mucosa and sub mucosa using various staining techniques. Conversion of an inapparent carrier to a clinically affected animal often occurs subsequently to stress such as parturition, poor nutrition or intercurrent diseases. Screening of herd is most important in such cases because currently available vaccines do not prevent disease or bacterial shedding. Diagnosis and culling of infected animals remains the most effective disease control measure because of its economic importance.

Summary

Paratuberculosis is chronic infectious granulomatous enteritis of ruminants. This paper describes the occurrence and pathomorphological alterations in a goat with paratuberculosis. A 3 year old doe was presented to the Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Mannuthy for necropsy examination with the history of chronic diarrhoea and

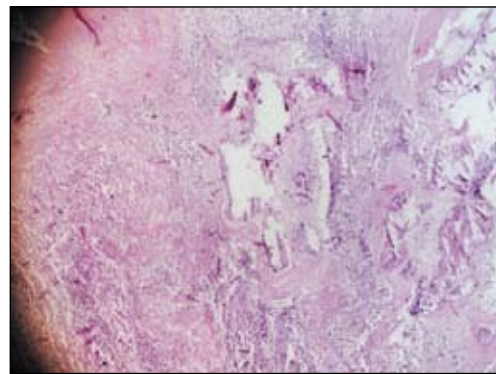


Fig.5. Mesenteric LN (Dahl's method 100X)- Ectopic calcification

emaciation. Detailed microbiological and histopathological examination revealed the presence of *Mycobacterium avium* subsp. paratuberculosis. The demonstration of acid fast bacilli in the histopathological sections of intestine confirmed the Johne's disease.

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