INCIDENCE OF JOHNE'S DISEASE AND HAEMONCHOSIS IN A SHEEP

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ABSTRACT

An adult female Mecheri in an organized sheep farm exhibiting the signs suggestive of Johne's disease was positive for the bacilli, *Mycobacterium avium* sub species paratuberculosis by Zeihl - Neelson technique and the haematological and serum biochemical parameters of the positive case were analyzed. The case on necropsy was confirmed for Johne's disease by it's characteristic gross lesions and histopathological findings. Faecal examination and necropsy revealed the concurrent infestation by the stomach worm, Haemonchus spp.

KEY WORDS: Johne's disease, Mecheri sheep, Z-N technique, Hypoproteinemia and Haemonchosis.

INTRODUCTION

Johne's disease caused by Mycobacterium avium sub species paratuberculosis is a chronic, progressive and contagious disease of bovines, now being common in sheep and goats in India. However, the information on the occurrence of Johne's disease in sheep in India is limited as the prevalence of the disease in sheep reported by other workers was 2.0-14.1% and the poor reporting is mainly due to lack of diagnostic kits (Singh et al. , 2007). The disease by virtue of its insidious nature, causes recurrent and considerable economic losses thus posing a hidden threat to the sheep and goat farmers and hence periodical screening of the animals alone could help identify this subclinical disease and eradicate the infection from the farm. This paper presents the detection of Johne's disease in an adult Mecheri sheep predisposing severe stomach worm infection, necropsy lesions and the change in the haematological and biochemical parameters of the diseased animal.

CASE HISTORY AND OBSERVATIONS

An organized sheep farm with 120 sheep was maintained under semi-intensive system of management with periodical screening for gastro intestinal parasitism and Johne's disease. An adult, female Mecheri sheep of five years old manifested intermittent pasty diarrhoea, gradual loss of body weight, poor quality wool, hidebound skin, severe anaemia, intermandibular edema and normal appetite. The animal during its diarrhoeic phase was treated symptomatically with suitable antibiotics, vitamin supplements accompanying intra venous fluid therapy but the animal did not respond to the treatments and went to recumbency.

MATERIALS AND METHODS

Faecal smears were collected from the sheep suspected of Johnes disease and screened by Zeihl - Neelson (Z-N) technique. Intra dermal skin test using Johnin purified protein derivative supplied by Indian Veterinary Research Institute, Izatnagar was performed at the caudal fold of the animal as per the recommended procedure. Faecal examination was carried out to rule out helminthic infection. Whole blood and serum samples were collected to analyze the hematological and biochemical values, respectively. The sheep was subjected to necropsy to confirm Johne's disease by the pathognomonic lesions and histo pathological examination.

RESULTS AND DISCUSSION

The age of the animal and the chronic weight loss were suggestive of the chronic disease, paratuberculosis which was also reported by Moser (1982) and the clinical manifestations were also supportive to this tentative diagnosis (Scott, 2005). Pink coloured acid fast bacilli in clumps were demonstrated in the stained faecal smears of the suspected animal using the ZN method as direct microscopy has been reported to provide most sensitive diagnosis for paratuberculosis (Condron et al., 1995). The faecal smear positive sheep was

negative to the Johnin intradermal skin test and no reaction at the site of injection was observed after 72 hours of the test. The faecal examination revealed the eggs of the abomasal worm, *Haemonchus spp* as parasitic infection is common in sheep infected with Johne's disease (Scott, 2005).

The serum biochemical analysis revealed a significant reduction in glucose (53 mg %), total protein (5.25g%), albumin (1.5 g%), calcium (4.0 mg%) and phosphorus (4.5 mg%); and a slightly higher level of globulin (3.75 g%). The hypoalbuminemia and hypocalcaemia were attributed to the reduced absorption of the nutrients due to granulomatous enteritis (Radostits et al., 2000). The analysis also revealed an increase in the level of enzyme, AST (150 IU/l) which might be due to the chronic wasting of muscles, and an elevated ALT (190IU/l). Haematological analysis revealed a significant reduction in total erythrocyte count ($3.3x10^6$/cmm), haemoglobin (7g%), and packed cell volume (20.0%) indicating severe anemia which might be attributed to the infestation by blood sucking abomasal nematode following the occurrence of Johne's disease (Kadam et al.,2007) and a slight reduction in the total leukocyte count ($7.7x10^3$ / cmm).

Necropsy revealed thickened and corrugated mucosa in the jejunum and ileum, enlarged and oedematous mesenteric lymph nodes, dilatation of lymphatics and gelatinisation of mesenteric fat and these were similar to the findings of Upendra Man Singh (2005). Sections from the ileo-caecal valve and lymph node revealed the presence of typical pink clumps of the acid fast bacilli *Mycobacterium avium* sub species paratuberculosis (Pradeep Kumar et al., 2007). Heavy infestation with *Haemonchus spp.* worms was detected in the forestomach, as this parasite is the most common and blood sucking nematode in this location.

Since the clinical form of Johne's disease could be detected in the adult sheep which was being a clinical shedder, young animals in the flock may have picked up the infection early in their life and this could pose a threat to the economy of the entire herd. Hence, periodical screening of the flock and adoption of extensive system of management would help in the identification and eradication of this emerging chronic disease.

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