

OUTBREAKS OF COCCIDIOSIS IN RABBITS IN HARYANA

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ABSTRACT

Coccidiosis was recorded in 11 rabbit units in different areas of Haryana from July, 2010 to June, 2012. Hepatic, intestinal and both hepatic and intestinal forms of coccidiosis were detected in seven, two and two units, respectively. Clinically, the affected rabbits were dull and depressed and had decreased feed intake. Lesions in hepatic coccidiosis comprised of nodules (~5mm diameter) filled with pale yellow pus having a large number of oocysts of *Eimeria* spp. In intestinal form, large numbers of oocysts were observed in intestinal scrapings. Histopathological examination of liver tissues from rabbits affected with hepatic form of the disease revealed cholangiohepatitis, hyperplasia of bile duct epithelium and presence of gametes and oocysts of *Eimeria* spp. The morbidity due to the disease ranged from 1% to 62% (overall 23.3%), while the case fatality rate ranged from 0.66 to 1.00. A combination of amprolium and sulfaquinoxaline was administered orally for 5-7 days in infected rabbits for the treatment of both forms of the disease.

Key words: Coccidiosis, hepatic form, intestinal form, *Eimeria* spp., rabbit

Though, rabbits are raised primarily for their use as laboratory animals, they are also being reared for commercial purposes including wool, meat and fur. Rabbit production has become one of the important animal resources in different countries including India (Bhat *et al.*, 1996). In Haryana, rabbit farming has come up very fast in recent years and farmers are opting for it to supplement their income. However, there are a number of infectious and non-infectious diseases that hamper the maximization of production potential. In addition, these diseases are responsible for increased morbidity and mortality, decreased production of wool or meat and low economic returns.

Coccidiosis is one of the main parasitological infections in rabbitry (Licois and Marlier, 2008) and eleven species of *Eimeria* have been reported to affect rabbits (Kvicerova *et al.*, 2008; Pakandl, 2009). The disease in rabbits primarily occurs in two forms viz. hepatic and intestinal and has been reported from different parts of India (Sanyal and Srivastva, 1986; Krishna and Vaid, 1987; Jithendran and Bhat, 1996; Lakshmanan *et al.*, 2011). However, the information of its occurrence from Haryana is lacking and this communication reports about the outbreaks of rabbit

coccidiosis from different parts of Haryana.

MATERIALS AND METHODS

Rabbits (dead or alive) brought from different parts of Haryana by the farmers from July 2010 to June 2012 were examined. In addition to clinical manifestations and post-mortem examinations; detailed information about place of occurrence of disease, total population, number of animals affected and died, time of occurrence of the disease etc. was collected. Gross pathological changes were recorded in different visceral organs on necropsy. The liver tissue from animals at necropsy was collected in 10% formalin for histopathological examination using routine Haematoxylin and Eosin staining method (Luna, 1968). The disease was confirmed by microscopic demonstration of the coccidial oocysts in different affected organs.

RESULTS AND DISCUSSION

Eleven outbreaks of the disease were recorded in rabbit units in different parts of the state during two years period. Of these, seven units had hepatic form, two units had intestinal form and the remaining two units had both intestinal and hepatic forms of the disease. The affected rabbits in almost all units were

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Fig 1. Liver showing lesions as pale white abscesses in hepatic coccidiosis.

dull and depressed, while in four units, decreased feed intake was also recorded. In severely affected animals, particularly in units with intestinal form of disease, the mucous membranes were pale. In two units, affected animals also had distended abdomen and passing mucous along with feces. Bhat *et al.* (1996) also reported similar clinical findings in coccidiosis-affected rabbits.

In hepatic coccidiosis, lesions seen in the liver (Fig. 1) comprised of nodules (~5mm diameter) filled with pale yellow cheesy pus having varying degree of spread in the liver parenchyma. The livers were enlarged and gall bladder distended. Similar lesions of hepatic coccidiosis in rabbits had been recorded by Lakshmanan *et al.* (2011). Examination of pus as wet mount under low power microscope revealed a large

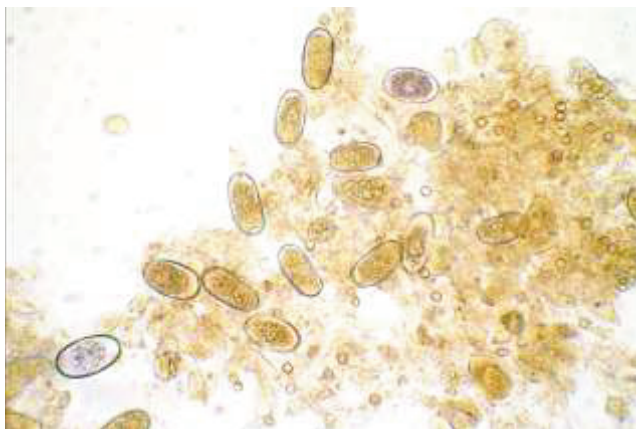


Fig 2. Oocysts of *Eimeria* spp. in smears from nodules in liver x 40

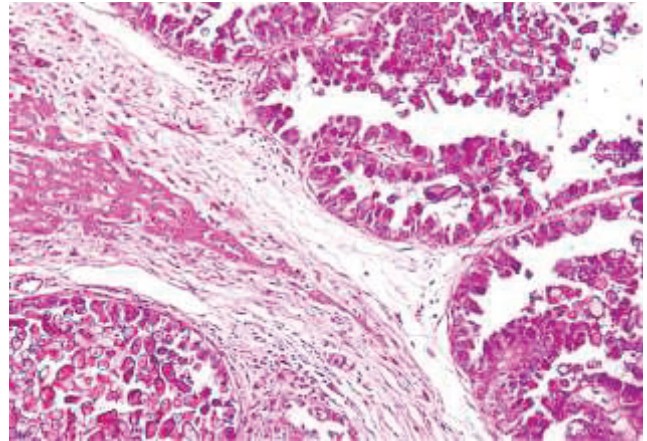


Fig 3. Inflammatory cells and fibrous tissue in wall of bile duct, hyperplasia of bile duct epithelium alongwith gametes and oocysts of *Eimeria* spp in liver H & E X

number of oocysts which confirmed the hepatic form of the disease (Fig. 2). Similarly, presence of large numbers of oocysts in intestinal scrapings and contents confirmed the intestinal form of the disease.

Histopathological examination of liver specimens from rabbits affected with hepatic form of the disease revealed cholangiohepatitis characterized by thickening of wall of bile ducts due to inflammatory cells and fibrous tissue proliferation, hyperplasia of bile duct epithelium and presence of gametes and oocysts of *Eimeria* spp. (Fig. 3). Bile duct epithelium showed papillary projection in the lumen due to hyperplasia. Besides, there was dilatation of sinusoids, haemorrhages and inflammatory cells in hepatic parenchyma. In one case, liver also exhibited cirrhosis characterized by connective tissue proliferation in between hepatic parenchyma. Similar changes were reported in liver of rabbits suffering from hepatic form of coccidiosis by Al-Mathal (2008).

Of the total population of 2703 animals in these eleven rabbit units, there was morbidity and mortality of 630 and 452 animals, respectively. A great variation in morbidity (1% to 62%, overall 23.3%), mortality (4% to 50%, overall 16.7%) and case fatality rate (CFR, 0.66 - 1.00) was observed. Since the rabbits were reared under conventional system of rearing, the role of environmental stress and poor management in precipitating the high morbidity and mortality cannot

be ruled out. Varied prevalence rates of coccidiosis has been reported from other states of India (Sanyal and Srivastva, 1986; Meiti et al., 1988; Jithendran and Bhat, 1996; Shameem and Devada, 2005), Taiwan (Li *et al.*, 2010) and China (Jing *et al.*, 2012). Further, farmers appeared not to be fully aware of the management practices and problems associated with poor management; as rabbit farming is relatively a new venture in Haryana.

For treatment, a combination of amprolium and sulfaquinoxaline was advised in recommended doses for 5-7 days. It took about 10-15 days for recovery. The treatment is usually not very successful after the appearance of clinical signs of coccidiosis regardless of the drug used (Pakandl, 2009). As a preventive measure, the farmers were advised to maintain good hygienic conditions in the rabbitry and use of anticoccidials.

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