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Popular Article

Coccidiosis in Rabbits

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Abstract

Rabbits are considered as an important and healthy source of animal protein all over the world. They are susceptible to important diseases that can reduce their productivity, causing severe economic losses. Coccidiosis is a ubiquitous protozoan infection of animals seriously impairing their growth and food utilization and also causes significant mortality in domestic rabbits which is caused by Eimeria species. The protozoa parasite that are microscopic, one-celled organisms and cause two forms of coccidiosis in rabbits which are intestinal and hepatic coccidiosis. Coccidiosis occurs in both clinical and subclinical form. Severity of the disease depends on the age of rabbit, amount of sporulated oocyst ingested by the susceptible host, immune status of an animal. The main predilection site for this organism is intestine and liver. Affected animals indicated the symptoms of diarrhea, reduced appetite, dehydration, and weight loss as well as liver and intestinal lesions. Diagnosis is based on the detection of the infective stages of the protozoon in feces or affected tissues. Prevention and control are achieved by adopting strict hygienic measures and using different anticoccidial drugs for treatment.

Introduction

Rabbits (Oryctolagus cuniculus) are regarded as a potential source of animal protein for human consumption. The meat of rabbits is recommended for human consumption more than other sources of proteins due to its high nutritious protein, calcium, phosphorus, and linoleic acid, with low fat and cholesterol contents. In addition to the commercial use of rabbits, they can be used for wool production and in medical research as laboratory animals, and they are raised as pets for hobby purposes. Rabbits are susceptible to dangerous viral, bacterial and parasitic diseases that drastically affect their production. Coccidiosis is a ubiquitous protozoan infection of animals seriously impairing their growth and food utilization, it causes significant mortality in domestic rabbit. It is caused by Eimeria species, protozoa parasites that are microscopic, one-celled organisms. There are two forms of rabbit coccidiosis – intestinal and hepatic.

Intestinal coccidiosis

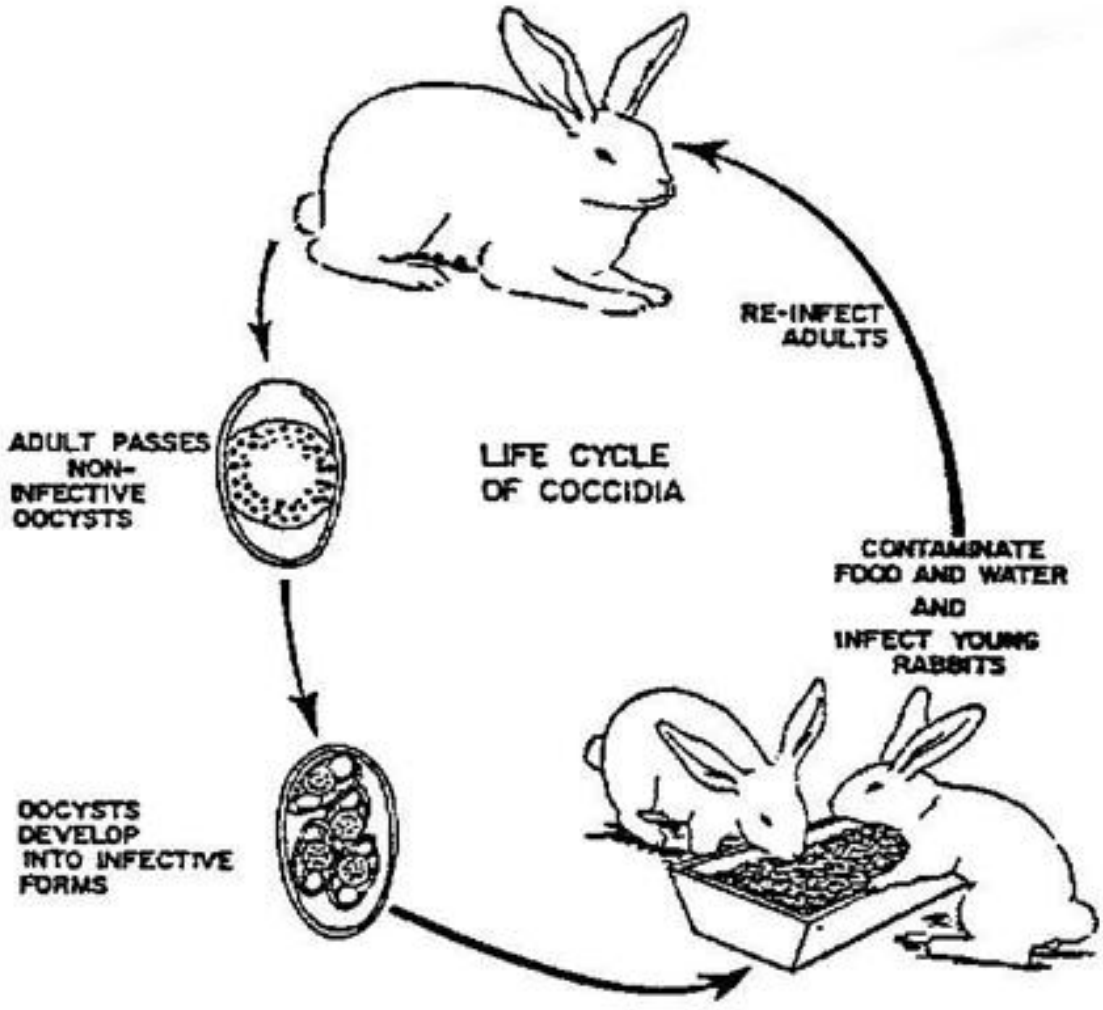
E. intestinalis and *E. flavescens* - more pathogenic; *E.magna*, *E. irresidua*, and *E. Piriformis* - moderate pathogenic; *E. perforans*, *E. neoleporis*, and *E. media* - least pathogenic

Hepatic coccidiosis

E. steidae is one of the most pathogenic coccidian protozoans in domestic rabbits causing severe disease manifestations and increased mortality. Coccidiosis is mainly seen in intensively managed animals, especially young rabbits, although it can occur in small rabbitries and pet rabbits.

Life Cycle

Intestinal coccidiosis:



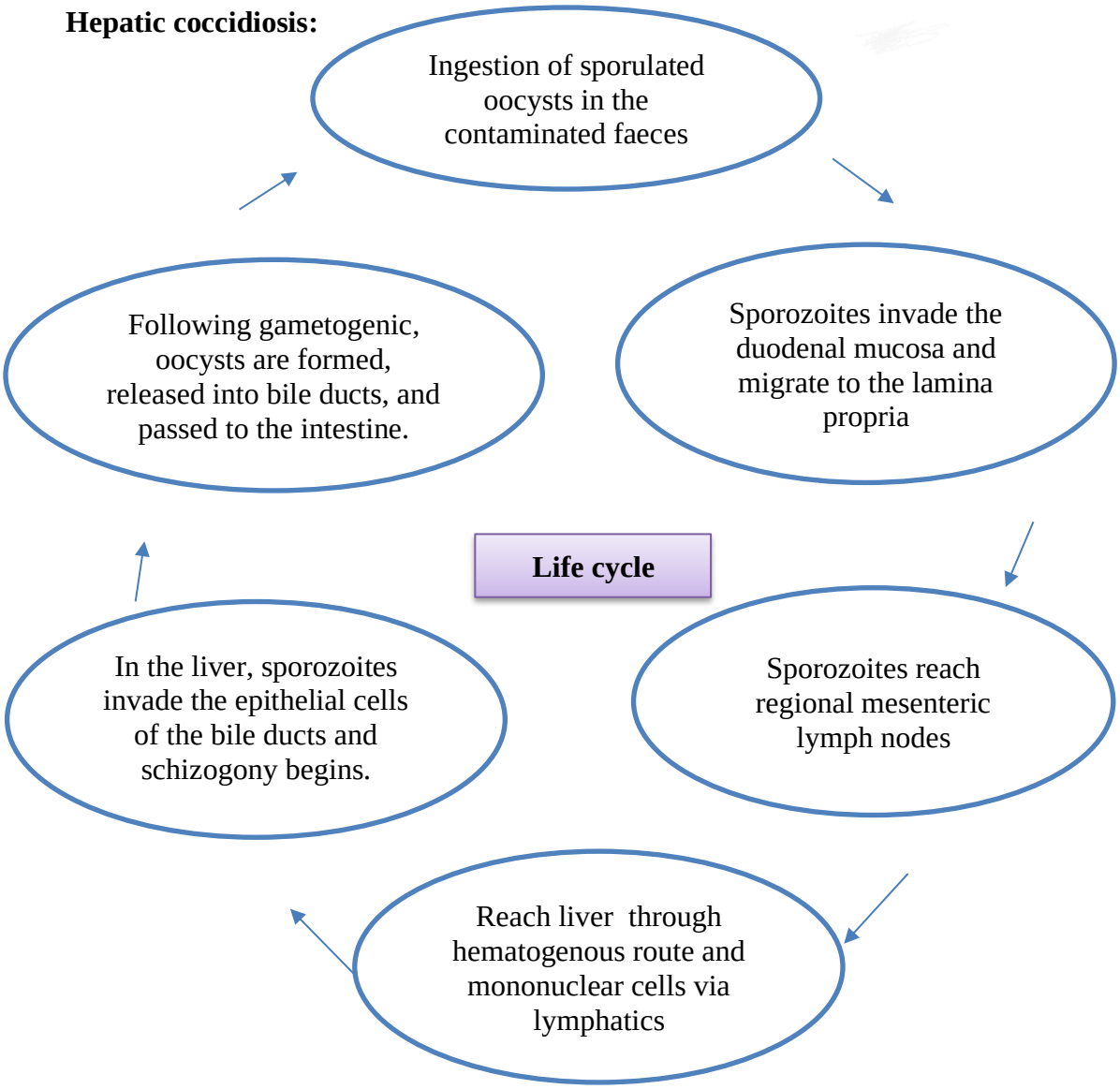


Fig 1. Life cycle of Eimeria species.

Clinical Signs

Reduced appetite, depression, abdominal pain, diarrhoea, retarded growth, pale mucous membranes, blood or mucous mixed feces. Intussusceptions may be associated with chronic infections. Subclinical coccidiosis results in reduced feed conversion.

Gross Lesions

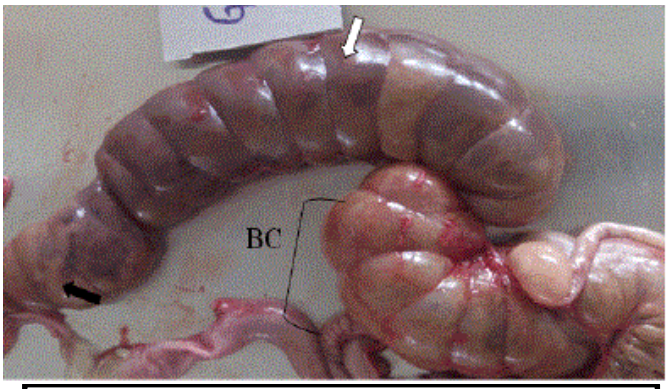


Fig 1. Intestine showing marked congestion (white arrow), necrotic area (black arrow) and ballooned section of the caecum (BC)

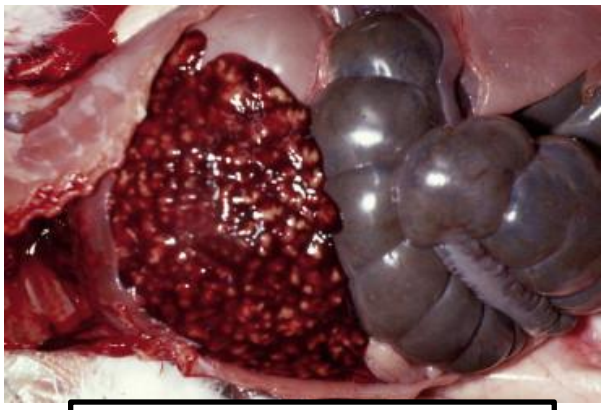


Fig 2. Multifocal irregular yellowish nodules in the liver

Fig 3. Intestinal scrappings revealed unsporulated oocyst

Diagnosis

Laboratory diagnosis of hepatic and intestinal coccidiosis depends on the analysis of feces of suspected rabbits. Microscopic identification of *Eimeria spp*. oocysts through the fecal analysis of suspected animals is very important. Developmental stages of *E. stiedae* have been detected in stained impression smears from the liver. Histopathological examination of the liver tissues, bile duct, or intestine is also used for the detection of different developmental stages of the parasite. Serological diagnosis of E. stiedae using ELISA has also been reported. Identification of *Eimeria spp*. using molecular assays such as multiplex PCR assay was also been reported.

Histopathology

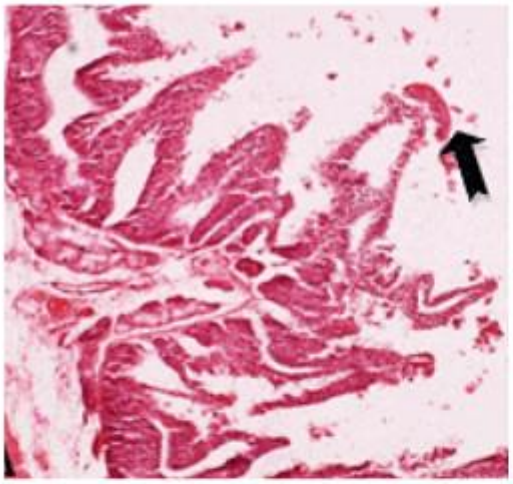


Fig 4. Intestine showing destruction of enterocyte and desquamated epithelium (arrow). H&Ex100.

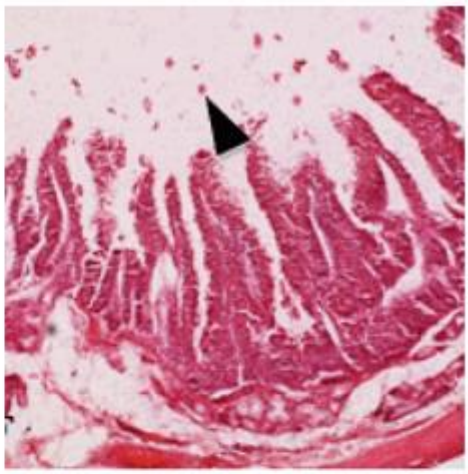


Fig 5. Intestine showing several oocysts within the lumen (arrow head). H&Ex100.

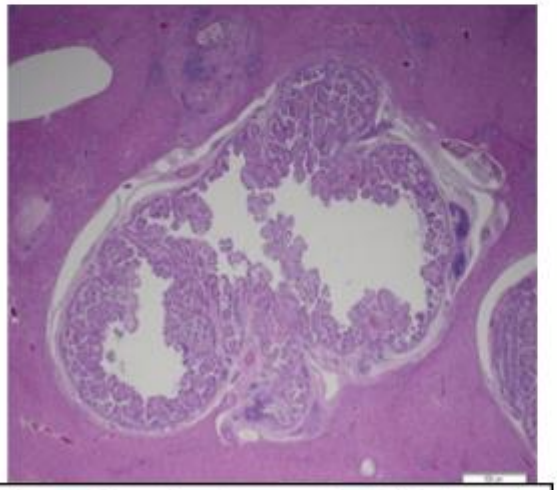


Fig 6. Liver showing marked dilation of bile ducts & hyperplasia of biliary duct epithelium. H&E x100.

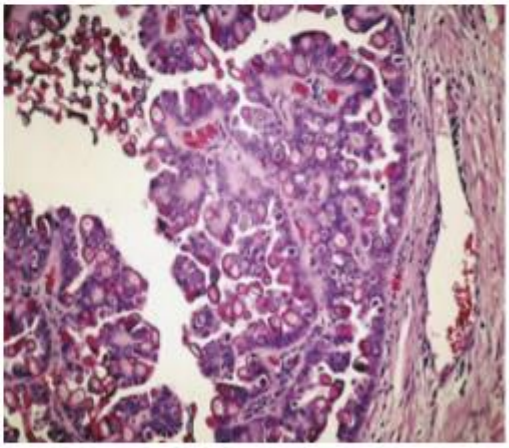


Fig 7. Hyperplasia of intestinal epithelium, with papillary projections with different stages of oocysts. H& E x400.

Treatment

Anti-coccidial drugs should be used for successful treatment of coccidiosis in rabbits which should be broad-spectrum, highly effective with a good therapeutic index, and easily administered for short time. Drugs includes sulphadimidine, amprolium, furazolidone, monensin etc can be used. nticoccidial drugs and are relatively inexpensive and showed successful results. However, increase in consumer demand for the production of organic products, the potential development of resistant strains of parasites toward drugs and the presence of antibiotic residues in meat created a potential need for searching for natural and safe alternatives to anticoccidial chemicals. Hence, several studies investigated the effects of natural alternatives such as sulfur and sulfates, tannic acid, bismuth compounds, thymol, camphor, alum, volatile oils, and garlic on rabbit coccidiosis.

Prevention

Coccidiosis in rabbits is aggravated by poor hygienic conditions and high stocking densities that encourage the spread of protozoa. Rabbits raised in groups are more affected than those kept alone. Accordingly, the first steps for preventing the occurrence and spread of coccidiosis in a rabbitry are proper hygiene and husbandry practices as well as strict biosecurity measures. Control of coccidial infection using common disinfectants is difficult as oocysts have a remarkable ability to survive under exogenous environmental conditions.

Conclusion

Strict hygienic measures and effective treatment plays a major role in control of coccidiosis. As coccidiosis is considered a very important parasitic disease in rabbits, future studies should focus on finding novel approaches for the prevention and control of such a significant threat. Economic value of rabbits can be improved by preventing coccidiosis following good sanitary measures.

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