



A Monthly e Magazine
ISSN:2583-2212
June 2024 Vol.4(6), 2215-2218

Popular Article

Balantidium coli in pig

Shreya Sinha**, Pushpa Tirkey*, Salyani Vishwara *and Supriya Kumari *

**Assistant Professor, Department of Veterinary Parasitology CoVs and AH, BAU, Kanke, Ranchi, Jharkhand, 834006 *Internee, Department of Veterinary Parasitology CoVs and AH, BAU, Kanke, Ranchi, Jharkhand, 834006

<https://doi.org/10.5281/zenodo.12216314>

Balantidium coli is a large ciliate protozoan that primarily infects pigs but can also affect humans and other animals. Here's a detailed look at *Balantidium coli* in pigs:

Characteristics:

Size and Structure: *Balantidium coli* is a large protozoan, typically measuring 50-200 μm in length and 40-70 μm in width. It has a characteristic ciliated surface and a large, bean-shaped macronucleus along with a smaller micronucleus.

Lifecycle: The lifecycle includes a trophozoite stage, where the organism is motile and feeding, and a cyst stage, which is non-motile and more resistant to environmental conditions. Infection is typically spread via the fecal-oral route.

Infection in Pigs:

Transmission: Pigs become infected by ingesting cysts from contaminated food, water, or environment. The cysts pass through the digestive system and excyst in the intestine, where trophozoites colonize and multiply.

Symptoms: In pigs, *Balantidium coli* infection is usually asymptomatic. However, in some cases, especially in young or immunocompromised pigs, it can cause balantidiosis, leading to diarrhoea, colitis, and possibly more severe gastrointestinal issues.

Zoonotic Potential:

Human Infection: Humans can become infected with *Balantidium coli*, primarily through contact with contaminated water or food. In humans, the infection can cause a range of gastrointestinal symptoms, from



mild diarrhoea to severe dysentery.

Precautionary Measures: People who work with pigs or in environments where pigs are present should practice good personal hygiene and sanitation to reduce the risk of infection.

Balantidium coli is an important pathogen to be aware of in pig farming due to its zoonotic potential and the impact it can have on both animal and human health.

Pathogenesis due to *Balantidium coli*: The pathogenesis of *Balantidium coli* involves several steps, starting with the ingestion of cysts and culminating in potential tissue damage and clinical symptoms. Here's an in-depth look at the pathogenesis process:

1. Entry and Excystation:

- **Ingestion:** Infection begins when a host ingests cysts of *Balantidium coli* from contaminated food, water, or through direct fecal-oral transmission.
- **Excystation:** Once the cysts reach the host's small intestine, the acidic environment and digestive enzymes trigger excystation, releasing the trophozoites.

2. Colonization and Multiplication:

- **Migration to the Large Intestine:** The trophozoites migrate to the large intestine, where they colonize and multiply.
- **Adhesion:** Trophozoites adhere to the mucosal lining of the large intestine using their cilia and other surface structures.

3. Invasion and Tissue Damage:

- **Mucosal Penetration:** Trophozoites can invade the mucosal lining of the intestine. They secrete proteolytic enzymes that help them penetrate the epithelial cells and degrade the host tissue.
- **Ulcer Formation:** The invasion leads to the formation of ulcers and lesions in the intestinal mucosa. These ulcers can cause significant inflammation and damage to the intestinal lining.
- **Secondary Infections:** The damaged mucosa becomes susceptible to secondary bacterial infections, which can exacerbate the symptoms and severity of the disease.

4. Clinical Manifestations:

Asymptomatic Carriage: In many cases, especially in pigs, *Balantidium coli* infection remains asymptomatic.

- **Acute Balantidiosis:** Symptomatic infections can present with diarrhoea, which may be watery or bloody, abdominal pain, nausea, and vomiting. In severe cases, the ulceration can lead to dysentery.
- **Chronic Balantidiosis:** Chronic infections can cause intermittent diarrhoea, weight loss, and general debilitation. The chronic inflammation can lead to complications such as perforation of the intestinal wall and peritonitis.

5. Cyst Formation and Transmission:

- **Encystation:** As the trophozoites multiply, some undergo encystation, forming cysts that are excreted in the feces.



- **Environmental Survival:** The cysts are hardy and can survive in the environment for long periods, facilitating transmission to new hosts.

Immune Response:

- **Host Immune Reaction:** The host's immune response to the infection includes the recruitment of inflammatory cells to the site of infection, which can limit the spread of the trophozoites but also contribute to tissue damage and clinical symptoms.

Pathogenic Factors:

- **Virulence Factors:** The pathogenicity of *Balantidium coli* is associated with its ability to produce enzymes like hyaluronidase and cysteine proteases, which aid in tissue invasion and damage.

Summary:

The pathogenesis of *Balantidium coli* involves a complex interaction between the parasite and the host's intestinal environment. The process includes ingestion, excystation, colonization, tissue invasion, and the resulting clinical symptoms. Understanding this process is crucial for diagnosing and managing balantidiasis in both animal and human hosts.

Diagnosis: Diagnosis is typically made by microscopic examination of fecal samples for the presence of trophozoites or cysts.

Treatment and Control: Infected pigs can be treated with antibiotics such as tetracycline or metronidazole. Good hygiene practices, proper sanitation, and management of pig living conditions are important for preventing the spread of the infection.

Treatment of *Balantidium coli* in pig

The treatment of *Balantidium coli* infection in pigs primarily involves the use of specific antibiotics and maintaining good husbandry practices to prevent the spread of the infection. Here's a detailed overview of the treatment strategies:

1. Antibiotic Therapy

Several antibiotics have been found effective against *Balantidium coli*

- **Tetracycline:** This is commonly used for treating *Balantidium coli* infections in pigs. The typical dosage is around 10-20 mg/kg of body weight, administered orally, twice daily for 5-7 days (Sengar & Singh, 2006 and Bauri et al, 2012)
- **Metronidazole:** Another effective antibiotic, metronidazole is often administered at a dosage of 20-30 mg/kg of body weight, orally, once daily for 5-7 days.
- **Diiodohydroxyquin (Iodoquinol):** Although less commonly used in veterinary medicine, it can be effective and is usually given at a dosage of 30 mg/kg of body weight, orally, three times daily for 20 days.

2. Supportive Care

In addition to antibiotic therapy, supportive care is important for managing symptoms and ensuring



recovery:

- **Fluid Therapy:** Ensure the pig has access to plenty of clean, fresh water to prevent dehydration, especially if diarrhoea is severe.
- **Nutritional Support:** Provide a balanced diet to support the pig's immune system and overall health during recovery.

3. Preventive Measures

Preventing the spread of *Balantidium coli* within pig populations involves good husbandry and hygiene practices:

- **Sanitation:** Regular cleaning and disinfection of pig pens, feeding equipment, and water troughs to reduce environmental contamination with *Balantidium coli* cysts.
- **Quarantine:** Isolate infected pigs to prevent the spread of the infection to healthy animals.
- **Water Quality:** Ensure that pigs have access to clean, uncontaminated water sources to minimize the risk of infection.
- **Fecal Management:** Proper disposal of pig feces to reduce environmental contamination and potential transmission of cysts.

4. Monitoring and Follow-Up

Regular monitoring of pigs for signs of infection and follow-up fecal examinations can help ensure that the infection has been effectively treated and to prevent recurrence:

- **Fecal Examinations:** Conduct periodic fecal tests to check for the presence of *Balantidium coli* cysts or trophozoites, particularly after treatment.
- **Health Checks:** Monitor pigs for clinical signs of illness, such as diarrhea or weight loss, and provide prompt veterinary care if symptoms reappear.

Veterinary Consultation

Always consult a veterinarian for accurate diagnosis and appropriate treatment recommendations tailored to the specific needs of the pig population and the severity of the infection.

References

- Sangar Y.S and Singh , V. (2006). comparative therapeutic efficacy of Tetracycline HCl and Metronidazole plus Furazolidine against *B.coli* infection in buffalo calves *J-vet Parasitol* 20(1) : 89-91
- Bauri,R.K. Ranjan, Rajeev.,Deb , A.R and Ranjan, R. , (2012), Prevalence and Sustainable Control of *Balantidium coli* infection in pig of Ranchi , Jharkhand , India, *vet world* vol 5(2):94-99

