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Toxocara vitulorum in calves: A case report

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Abstract

The most important gastrointestinal helminthic infection in cattle and buffalo calves is Toxocariasis caused by *Toxocara vitulorum*. The present case describes the clinical presentation, diagnosis and therapeutic management of *T. vitulorum* infection in a 20 day old female cattle calves presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Theni with a history of anorexia and diarrhea. Clinical examination revealed a sunken eye. Faecal examination was performed by sedimentation technique. Microscopic examination of the faecal sediment revealed numerous characteristic *T. vitulorum* eggs. The affected calves were treated with Piperazine suspension at 100-200 mg/kg body weight followed by liquid paraffin. On follow up examination 20 days after treatment, the calves were negative for *T. vitulorum* eggs. The present case emphasizes the importance of early diagnosis, appropriate anthelmintic therapy and hygienic management in controlling *T. vitulorum* infection in young calves.

Keywords: Anorexia, diarrhea, faecal examination, piperazine, *Toxocara vitulorum*

1. Introduction

Helminthiasis in calves are one of the major constraint to the farmers, causing huge economic losses through decreased growth rate, decreased productivity, weight loss, treatment losses and mortality. In India the annual economic losses due to parasitic diseases in livestock has been estimated at approximately ₹7, 000–8, 000 crore with gastrointestinal helminthiasis accounting for major share of the economic losses (Prakash *et al.*, 2024) ^[1].

Toxocara vitulorum is the largest ascarid parasite affecting the small intestine of cattle and water buffaloes especially neonatal calves. Even though the parasite occurs worldwide, its economic importance is more in tropical and subtropical regions. The calves with weakened immunity or poor nutritional condition are most susceptible to ascarid infection often resulting in fatal outcomes (Das and Phukan, 2018) ^[2]. The calves becomes infected when it ingests the egg contaminated from the environment. The unembryonated eggs are usually passed out from the faces of the infected animal. The unembryonated egg undergoes embryonation in the environment in about 10- 15days. The egg containing larva (egg with L2) are ingested by the healthy animal. Immediately after ingested b the animal L2 hatch in the duodenum and migrate to different tissues where they remain dormant. At around 8 month of pregnancy the dormant larvae gets activated under the influence of prolactin if the animal happens to be female. The activated larva also enters via the placenta and amniotic fluid and reaches the intestine. The larvae will attain maturity once after the birth of the calves. This is known as prenatal / transplacental transmission. The activated larva also migrate to the mammary gland and the calves becomes infected when it ingests the colostrum containing larva. This is known as Transcolostral/Transmammary transmission. The adult male and mature female undergoes copulation and produce eggs, which are excreted in the faeces. An adult female *Toxocara vitulorum* can produce about 1, 000 eggs per day, with egg production reaching up to 8, 000 eggs per day or as high as 100, 000 eggs per gram of feces per day (Roberts, 1989) ^[3]. The respiratory organ can be affected by the migration of L3, potentially leading to pneumonia. Other symptoms that may occur include difficulty passing stool, fluid loss, reduction in body mass, and swelling beneath the jaw (Davila *et al.*, 2010) ^[4]. Visceral larvae migrans in adult cattle induced by *T. vitulorum* are often asymptomatic (Davila *et al.*, 2010) ^[4]. *Toxocara*

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vitulorum larval migration in calves can induce liver and lung damage. This Toxocariosis may cause Stearrhoea (poor digestion and absorption of the faeces), mud coloured evil smelling faeces, butyric acid odour from the mouth, diarrhoea. In heavy infestation it may cause intestinal obstruction and death. Studies report up to 50% mortality in buffalo calves due to *T. vitulorum* infection (Srivastava & Sharma, 1981) [6], with calves aged between 1 and 3 months being most vulnerable (Wickramasinghe *et al.*, 2009) [7]. Several factors, including geography, season, age, gender, bodily condition, faecal consistency, nutritional status, husbandry techniques, etc., might impact the prevalence of toxocariasis. Numerous factors have been recognized as potential contributors to *T. vitulorum* infection across diverse geographical regions worldwide, including age, gender, body condition, season, and fecal consistency (Woodbury *et al.*, 2012; Biswas *et al.*, 2021) [8]. Several drugs, including Piperazine, Pyrantel, Febantel, and Oxfendazole, are effective against *T. vitulorum* in its adult stage (Ziegler and Macpherson, 2019) [9]. Pyrantel and Levamisole are both efficacious anthelmintic agents for eliminating *T. vitulorum* third-stage intestinal larvae (Ziegler and Macpherson, 2019; Afshar *et al.*, 2023) [9, 10]. This case study highlights the clinical presentation, diagnostic findings, therapeutic management of *T. vitulorum* in cattle calves.

2. History and clinical examination

A 20 day old female cattle calves were brought to the Veterinary Clinical Complex, Veterinary College and Research Institute, Theni with the history of anorexia, diarrhoea, physical examination revealed sunken eye ball. The physiological parameters were normal.

3. Materials and Methods

Faecal samples were collected from the of female cattle calves. The faecal samples were processed and centrifuged at 2000 rpm for 2 mins. After centrifugation, the supernatant was discarded and sediment was examined under microscope.

4. Results and Treatment

Upon faecal examination, numerous eggs were found. Eggs were brown in colour, unsegmented yolk material and pitted surface which confirms that the egg is *Toxocara vitulorum* (Fig 1and 2). In this case the calves and dam was treated with Suspension Piperazine at the dose rate of 100-200 mg/kg b.wt followed by liquid paraffin. The owner was also advised for the hygienic maintenance of the animal house. The animal was screened after 20 days for the presence of eggs or worms. After 20 days both the dam and the calves were tested negative

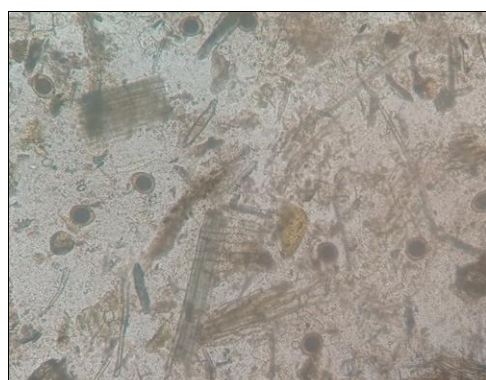


Fig 1: *Toxocara vitulorum* eggs found in faeces during Coprological examination (10x)

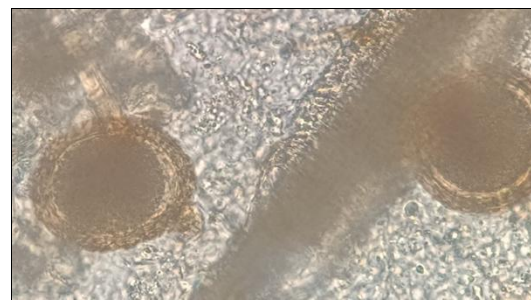


Fig 2: *Toxocara vitulorum* eggs (40x)

5. Discussion

This case highlights the impact of *Toxocara vitulorum* infection on neonate infection cattle calves which emphasized correct diagnosis and treatment. The diagnosis of *T. vitulorum* infection in the present study was confirmed by coprological examination, which revealed numerous brown, thick shelled eggs with unsegmented yolk material. These morphological features were in accordance to the morphological characters given by Soulsby, 1982) [11]. In this case, treatment with Piperazine suspension followed by liquid paraffin resulted in complete recovery. Piperazine acts by causing neuromuscular paralysis of ascarid worms, allowing their expulsion through normal intestinal peristalsis, while liquid paraffin facilitates the removal of paralyzed worms and minimizes the risk of intestinal obstruction (Kachara *et al.*, 2025) [12]. The successful therapeutic response observed in the present case is in agreement with the findings of (Kachara *et al.*, 2025) [12], who reported complete clinical recovery and elimination of *T. vitulorum* infection in a buffalo calf following anthelmintic treatment. Similarly, Kim *et al.* 2025 [13] has documented the successful diagnosis and treatment of *T. vitulorum*.

6. Conclusion

This case report demonstrates the successful management of toxocariasis in 20 day old female calves through prompt diagnosis, treatment and prevention. This case highlights the importance of ascarid infection. Targeted selective treatment and good maintenance of the animal house can reduce the economic losses associated with parasitic infection.

Conflict of Interest

Not available

Financial Support

Not available

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