SHORT COMMUNICATION

Prevalence of *Toxocara vitulorum* in Buffalo Calves in and around Mhow (Indore), Madhya Pradesh state of India

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Abstract

This study was performed from October 2019 to March 2020 to determine the distribution of *Toxocara vitulorum* in buffalo calves irrespective of age and sex in and around Mhow, District Indore, Madhya Pradesh. For this purpose, 200 fecal samples were collected from the rectum or freshly passed stool and were subjected to further parasitological investigation by flotation technique and Egg per gram (EPG) by McMaster technique. Out of 200 samples, 45 samples were positive for the *T. vitulorum* infection, having an overall 22.5% prevalence. Age-wise, 78% prevalence was observed in 0-6 months of age followed by 22% in 6-12 months age group, sex-wise prevalence in female calves was higher (27%) than male calves (18%) whereas month-wise highest prevalence 25.7% was observed in the month of November followed by 23.3% in the month of February, 22.8% each in October and January, and 20% each in December and March respectively.

Keywords: EPG, Calves, Prevalence, Sex, *Toxocara Vitulorum.*

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Introduction

Parasitic diseases of dairy animals are a universal problem and are considered one of the major obstacles in animal's health and production performance. Retarded growth, poor production of milk, meat, poor quality of skin, and hides are known harmful effects of parasitic infections in bovines (Sharma *et al.,* 1984). There is a vast economic impact of *Toxocara vitulorum* as it mostly affects buffalo calves. *Toxocara vitulorum* critically affects buffalo calves of <3 months of age and this infection is generally recognized as an important limiting factor in calf rearing because of high morbidity, loss in production, and disturbance in the breeding program. If it is not controlled in the field, the prevalence can go even up to 100%, and the mortality rate can be as high as 80%. Prevalence in most of the countries was between 5-50% (Juyal, 2009). Pathogenicity caused by *T. vitulorum* infection in young calves is mainly seen in diarrhoea and steatorrhoea.

T. vitulorum infection can be diagnosed based on clinical signs, necropsy findings, fecal examination for eggs, and serological tests. Coprological examination techniques fail to detect infections in adults and during the prepatent stage and mild infections in young calves. Hence, keeping the above facts in mind, an experiment was conducted to determine the distribution of *Toxocara vitulorum* in buffalo calves in and around Mhow, District Indore, Madhya Pradesh .

Materials and Methods

The Prevalence study was carried out on the buffalo calves randomly selected from the areas in and around Mhow, District, Indore (M.P.), and college dairy farm for 6 months from October 2019 to March 2020. For the study of age-wise prevalence, buffalo calves up to 6 months and 6-12 months of age were selected. The samples were processed in the Department of Veterinary Medicine, Veterinary Clinical complex (VCC), and college dairy farm at Veterinary College, Mhow, District Indore, Madhya Pradesh. A total of 200 fecal samples were collected either directly from the rectum or freshly passed stool from individual animals, and each

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sample was kept in a separate sterile plastic container and labeled properly. The fecal samples collected from individual calves were examined for the presence of *T. vitulorum* ova by flotation Technique as per the standard procedure. The ova of *T. vitulorum* were identified on the basis of morphological details. The fecal egg count was estimated as Egg per Gram of feces (EPG) by using the McMaster technique (Soulsby, 1982).

Results and Discussion

Prevalence Study

In the present study, 200 fecal samples of buffalo calves were examined for 6 months (October 2019 to March 2020). Out of which 45 samples were found positive for *T. vitulorum* infection giving an overall 22.5% prevalence. Considerably higher prevalence of *T. vitulorum* infection, ranging between 20.58 and 78.57%, has been reported in buffalo calves from certain areas in Jammu (Yadav *et al*. 2004), Himachal Pradesh (Agnihotri and Katoch, 2003), Bihar (Kumari *et al*. 2004) and Punjab (Kaur and Kaur 2008). However, Muraleedharan *et al.* (2005) from Karnataka (1.28%) and Samanta and Santra (2009) from West Bengal (6.01%) reported a comparatively lower prevalence. The variation in the prevalence of *T. vitulorum* might be associated with poor hygienic conditions of the shed, environmental conditions, poor health management, etc.

Age-wise Prevalence

Prevalence of *T. vitulorum* was highest (78%, 35/45) between 0-6 months, followed by 22% in 6-12 months of age group (Table 1). The cause of higher prevalence of *T. vitulorum* infection in the younger age group might be due to transplacental transmission at the later stage of pregnancy and transfer of larva in colostrums and milk or poor managemental condition during post-natal stage. These findings were also supported by Kebede *et al.* (2018). High prevalence in the younger age group was also reported by Rao *et al*. (2000) and Das and Phukan (2018). It was reported that the lower rate of prevalence in 6-12 months might be due to the elimination of worm burden or immunity gained by the calves from repeated infection of infective larvae through colostrum or milk.

Table 1: Sex and Age-wise prevalence of *T. vitulorum* in buffalo calves (n = 200)

	Buffalo calves		
Sex	*Screened*	*Positive*	*% Prevalence*
Male	100	18	18
Female	100	27	27
Total	200	45	22.5%
Age wise	0-6 Months	35/45	78%
	6-12 Months	10/45	22%

Sex wise Prevalence

Out of the 100 samples tested for male and female each, 18 (18%) and 27 (27%) samples respectively were found positive for *T. vitulorum* infection, indicating a higher infection rate in females than males (Table 1). Similarly, a higher prevalence in female calves than male calves was reported by Raza *et al.* (2010). But Rao *et al*. (2000) stated that the sex of the calves had no significant influence on the prevalence, while Akhtar *et al.* (2000) and Islam *et al.* (2005) reported a higher prevalence in male calves than female calves. Though scientists have not explained the absolute reason for more prevalence in female calves but according to Das and Phukan (2018), the higher prevalence in female calves could be due to female calves that are allowed to suckle more milk than male calves, hence increasing the chances of infection more through transmammary route in female calves.

Month Wise Prevalence

In the present study, fecal samples per month were examined from October 2019 to March 2020. The month-wise prevalence was 22.8, 25.7, 20, 22.8, 23.3, and 20% from October 2019 to March 2020, respectively. Similar findings were also reported by Devi *et al*. (2000), Sahoo *et al*. (2003), and Bhattacharya and Ahmed (2005) in their study of *T. vitulorum* infection in cattle. They reported that the higher prevalence rate was attributed to the increased relative humidity that favors the embryonation and the development and dissemination of the parasite.

Conclusion

It is concluded that the overall prevalence of *T. vitulorum* infection irrespective of sex and age was 22.5 %. The prevalence was higher in females (27%) than males (18%). The infection was more prevalent in < 6-month-old calves (78%) than that in the age group of 6-12 months (22%).

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