



Occurrence of *Balantidium coli* in pig in Mymensingh, Bangladesh

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ABSTRACT

The study was conducted to survey the age, sex and month related occurrence of *Balantidium coli* infection (balantidiasis) in pig in Mymensingh district, Bangladesh. A total of 52 pigs were examined through Stoll's ova counting technique of which 34.62% pig were found infected with *B. coli*. Occurrence of *B. coli* was significantly higher in piglet (50.00%) than in adult (23.33%). During this study, slightly higher prevalence was observed in male than that of female pig. Higher prevalence of *B. coli* was observed in September month. Overall cysts per gram of faeces were 100-900 and the mean of cysts per gram of faeces was 133.0±5.2. The study suggests that the higher rate of occurrence of *B. coli* in pig is alarming for both pig and human health which deserve treatment and control of this zoonotic disease in the study area.

Key words: *Balantidium coli*, pig, Mymensingh, Bangladesh.

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INTRODUCTION

Pig production is an important part of the economy in many countries. Domestic and wild pigs (*Sus scrofa*) are susceptible to a wide range of infectious and parasitic diseases. Some of these diseases are specifically limited to pigs while some of the other diseases are shared with other species of wild life and domestic livestock. As the numbers and geographic distribution of wild and domestic swine continue to increase, it is certain that the number of contacts between these swine and domestic livestock will also increase, as well the probability of human exposure to the parasites of swine directly or indirectly.

Balantidium coli, is a common disease of ruminants (cattle, buffaloes, sheep and goats), pig, monkey, chimpanzee, orangutan, guinea pig and man (Samad, 1996). Pigs, in which species the infection is often asymptomatic, are considered to be the most important animal reservoir for human infection (Solaymani-Mohammadi et al., 2004). In fact, although human balantidiasis is considered to

be uncommon, its incidence is higher in communities that live in close association with pigs.

Balantidiosis, the disease caused by *B. coli* infection, has been reported in developing countries such as Brazil, Venezuela, the Philippines, Papua New Guinea, and Iran, and in central Asia and certain Pacific Islands (Solaymani-Mohammadi et al., 2004). The geoclimatic condition of Bangladesh is favourable for the development and survival of various parasites including *B. coli* (Datta et al., 2004). Several reports on the epidemiological surveys of protozoan parasites in animals and humans are available in Bangladesh and abroad but only a few reports of balantidiasis in man have been published. In India Kaur et al. (2002) reported 2.4% prevalence of *B. coli* in children. In many developed countries, the data on the prevalence of *B. coli* were published in an efficient manner as an aid to combat balantidiasis more efficiently. Therefore, a detailed study of the disease pattern is necessary. The aim of the present study is to

evaluate the infection rate of *B. coli* in different areas of Mymensingh district of Bangladesh in relation to age, sex and months of the year.

MATERIALS AND METHODS

Sample collection

Fecal samples of pig were collected from different areas of Mymensingh (Sadar, Muktagachha). Morphological examination was done in the Department of Parasitology, Bangladesh Agricultural University, Mymensingh. Faecal samples from 52 pigs were collected randomly irrespective of age, sex, health, and months of the year from the study areas.

Faecal samples were collected by inserting a moistened finger into the rectum and gently massaging with a rotary motion until the external sphincter relaxes. Fresh faecal samples were collected from the ground immediately after voiding where possible. The samples were then preserved in 10% formalin. The samples were labeled properly with all relevant information and brought to the laboratory for examination as early as possible.

Examination of fecal samples

The fecal samples were proceed and examined by Stoll's Ova counting technique for counting the number of cysts or trophozoites per gram of fecal samples following their characteristic morphological features as described by Soulsby (1982).

Statistical analysis

Statistical analyses were performed with Statistical Package for Social Sciences (SPSS) programme by using F test. Odds ratio were calculated according to the formula given by Schlesselman (1982).

RESULTS AND DISCUSSION

Overall occurrence of *B. coli* in pig

The occurrence of *B. coli* was 34.62% in pig. The cyst per gram of faeces was 100-800 with mean of

cyst per gram of faeces 133.0±5.2. The present finding is relatively lower than the earlier findings of Mercy, et al. (1989) who reported higher prevalence of *B. coli* infection (42.00%). The current report is relatively higher than that of Solaymani-Mohammadi et al. (2004) and Permin et al (1999) who recorded 25% and 19% prevalence of *B. coli* in pig, respectively. The variations between the present and previous findings might be due to difference in the sample size, selection of samples, technique of sample examination, geographical locations, period of study, climatic condition of the research area, managemental factors of pig.

Age and sex related occurrence of *B. coli* in pig

The age specific prevalence of *B. coli* infection in pig was presented in the Table 1. Prevalence of *B. coli* in pig was higher in piglet aged <6 months (50.00%) than in adult aged > 6 months (23.33%). The calculated odds ratio reveals that piglet were 3.28 times more likely to be infected by *B. coli* than that of adult pig (Table 1).

From this study, it was recorded that the prevalence of *B. coli* was significantly ($p<0.01$) higher in male (37.50%) than female (30.00%) pig. Male pigs were 1.4 times more vulnerable to balantidiasis than female (Table 1).

It was observed that the age of the pig had significant effect ($p<0.01$) on the prevalence of *B. coli* infection. Higher prevalence of balantidiasis was observed in pig aged < 6 months (50.00%) than pig aged >6 months (23.33%). This finding supported by Frederick et al. (2008) who reported higher prevalence of balantidiasis (57.00%) in piglet than adult (55.1%). But this report is in contrast to the previous findings of Hayriye et al. (2009) who reported that higher prevalence was found in piglet (1.4%) than adult (1.5%) and predicted that piglet is more likely to develop balantidiasis than adult. Since both adult and piglet stay together in a flock piglet can get infection easily. Moreover, less developed immune system of piglet may enhance the higher prevalence of balantidiasis in piglet than adult. The prevalence of balantidiasis is more in boar (37.50 %) than sow (30.30%). This report is supported by Polinas et al. (2006) who reported that prevalence of *B. coli* in

boar (12.00%) and in sow (11.17%) in intensive farming. The present finding is differed from that of the earlier finding of Polinas et al. (2000) who reported higher prevalence in sow (36.6%) than boar (13.3%) in extensive farming.

Month related occurrence of *B. coli* infection

From this study, it was observed that the occurrence of *B. coli* infection in pig was

significantly ($p < 0.01$) higher in September (40.00%) than other months of the year. The present finding is supported by Permin et al. (1999) who reported that the higher prevalence of balantidiasis is found in rainy season (43.34%). However, the highest prevalence in September month may be due the high humidity and heavy rain fall that may increase the chance of contamination of food and water sources by fecal materials containing *B. coli* cyst.

Table 1
Age related occurrence of *B. coli* in pig

Parameters	No. of positive cases		Cyst per gm for stool		Odds ratio
	No.	Prevalence (%)	Range	Mean±SD	
Age	<6 month (n=22)	11	50.00	100-600	<6 month Vs >6 month = 3.28
	>6 month (n=30)	7	23.33	100-100	
Sex	Female (n=20)	6	30.00	100-500	Male Vs female = 1.4
	Male (n=32)	12	37.50	100-800	
Months	July (n=20)	7	36.84	100-400	
	August (n=15)	5	33.33	100-100	
	September (n=10)	4	40.00	100-200	
	October (n=4)	1	25.00	100-500	
	November (n=3)	1	33.33	100-600	

n= Total number of samples examined.

** Indicates significant ($p < 0.01$)

B. coil is a zoonotic protozoa. The occurrence of *B. coli* in relation to sex, age of pig at different months of a year could impose a consideration attention of this disease in the study area. Further extensive work in this regard should be needed to assess the zoonotic significance of the disease and to find out a proper control strategies against it in Bangladesh.

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