

Prevalence of Mycoplasmosis of Chickens at Kotwali Thana in Chittagong, Bangladesh

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Abstract

A study of prevalence of mycoplasmosis of chicken at kotwali thana in Chittagong was conducted from 23rd November, 2010 to 22nd March, 2011. A total of 455 either dead or sick birds were examined during the period. Diagnosis was based on history, clinical signs, serum plate agglutination (SPA) test and postmortem lesions. The overall prevalence of mycoplasmosis was 15.38%. The prevalence was 73% in broiler and 27% in layer. The result further revealed that highest number of cases were recorded in the age group of 8-21 days (49%) followed by 22-35 days age group (21%), 0-7 days age group (21%), 36-60 days age group (6%) and over 60 days age group (3%). It was also demonstrated that during the study period the highest prevalence of mycoplasmosis was recorded in January (33%) followed by February (30%), March (23%), and December (13%) and lowest in November (1%).

Keywords: Mycoplasmosis; Prevalence; Clinical sign; Serum plate agglutination; Postmortem lesion

Introduction

Poultry industry is one of the rapidly developing areas in the livestock sector of Bangladesh. This industry is playing an important role in the economy of Bangladesh. At present, one of the most important sources of protein in Bangladesh is poultry meat and eggs. Over the years commercial poultry farming has been developed introduce some high yielding strains of chicken are reared in intensive system. The total number of domestic chicken in Bangladesh is about 195 million [1]. Moreover poultry sub-sector has provided job opportunity to the unemployed young people. But at present this profitable sub-sector is seriously interrupted by a number of infectious and contagious diseases such as Newcastle disease, Infectious bursal disease, mycoplasmosis, Salmonellosis, Fowl cholera, Avian leucosis complex, Marek's disease, Infectious laryngotracheitis, Infectious coryza, Aspergillosis, Coccidiosis, Necrotic enteritis and mycotoxicosis. Among these infectious diseases, mycoplasmosis is of great importance. In Bangladesh, the sero-prevalence of *Mycoplasma gallisepticum* was reported in exotic hybrid chickens by Amin [2]. Mycoplasmosis is a chronic and slow spreading contagious disease in birds characterized by obstinate hacking cough, sneezing and tracheal rales [3]. The economic loss often incurred results from poor feed conversion ratio of broiler, declining of egg production in layer, reduction of hatchability in breeder flock, down-grading of broiler meat and condemnations of carcasses. The disease can be transmitted both horizontally and vertically and remain in the flock constantly as subclinical form [4]. The present study was undertaken to determine the prevalence of mycoplasmosis in chickens at Kotwali Thana in Chittagong.

Materials and Methods

A pathological investigation on the prevalence of mycoplasmosis was conducted at the Thana Livestock Hospital at Kotwali in Chittagong region from 23rd November, 2010 to 22nd March, 2011. Serological test was conducted in the laboratory of Thana Livestock Office at Kotwali in Chittagong. A total of 455 dead or sick birds of different poultry farms of Kotwali Thana at Chittagong region, were used for this study. These birds were brought to the Thana Livestock Office at Kotwali in Chittagong. Diagnosis of disease was made on the basis of history, clinical signs, serological test and postmortem lesions.

Diagnosis of mycoplasmosis

Diagnosis of mycoplasmosis was made on the basis of clinical signs

of infected chickens and postmortem changes in dead chickens. The birds were examined systematically and the postmortem changes were recorded during necropsy.

Clinical signs

The disease was diagnosed based on clinical signs including nasal discharge, coughing, and rales. Depression, conjunctivitis, swollen eye, eyelid edema and other more general signs were included such as in appetite, depression, weight loss and a drop in egg production. The highest morbidity and mortality occurred in the presence of concurrent infections and environmental stress.

Serological analysis

In live birds, blood samples (2 mL) were collected from wing vein by using fresh disposable plastic syringe (5 mL) and collected blood was kept at room temperature for about 1 to 2 hours.

A clean straw color serum was seen around the clotted clump and after centrifugation (252 g for 10 minutes) the serum was stored at -20°C until used.

Serum plate agglutination (SPA) test

The SPA test was conducted with crystal violet stained *M. gallisepticum* commercial antigen (Nobilis MG) obtained from Intervet Company Ltd. (The Netherlands). Following the manufacturer's instruction, antigen (0.03 mL) and crude or diluted serum (0.03 mL) was placed side by side with pipette in a glass plate and mixed well by stirring with glass rod, followed by rocking. Results were read within 2 minutes [5,6]. In positive cases granules were formed slowly which could be seen during rocking. In the negative case, no such granules were formed. All SPA results were recorded.

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Postmortem changes

Diagnosis was confirmed by post-mortem examination of dead chickens. Lesions comprising catarrhal exudates in the nasal passages, infraorbital sinuses, trachea, and bronchi, Caseous exudates in the air sacs, fibrinous or fibrinopurulent pericarditis, perihepatitis and congestion in lungs were observed.

Data analysis

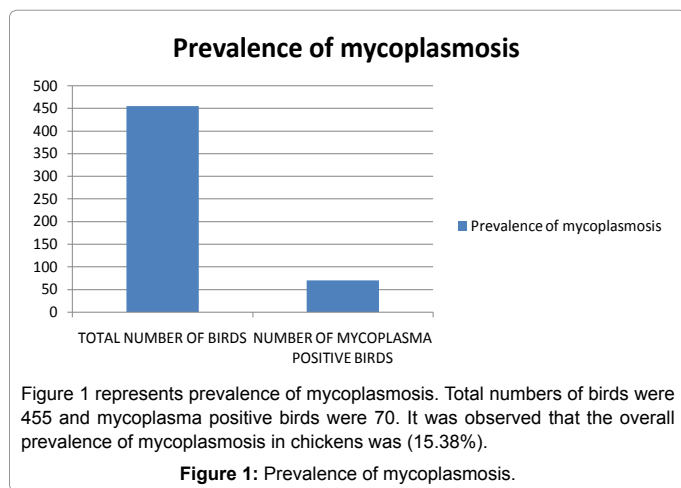
Clinical and postmortem data were categorized according to age, month of study period and types of chicken (layer and broiler). Data were analyzed by normal tabular method with Microsoft office excel 2007.

Results

A total number of 455 chickens were examined and mycoplasmosis was diagnosed in 70 chickens. Among them 51 broiler birds (73%) followed by 19 layer birds (27%) were positive to mycoplasma. The overall prevalence of mycoplasma was 15.38% (Figure 1).

The result revealed that highest number of cases were recorded in the age group (Table 1) of 8-21 days 34 (49%) followed by 22-35 days age group 15 (21%), 0-7 days age group 15 (21%), 36-60 days age group 4 (6%) and over 60 days age group 2 (3%) of chicken.

The prevalence of mycoplasmosis on different months (Table 2) of study period during which prevalence was recorded highest in January 23 (33%) followed by February 21 (30%), March 16 (23%) and December 9 (13%) and lowest in November 1 (1%).



Age of birds	0-7 Days	8-21 Days	22-35 Days	35-60 Days	Over 60 days
Positive case	15	34	15	4	2
Percentage	21%	49%	21%	6%	3%

Table 1: Prevalence of mycoplasmosis on different age groups.

Different month of the study period	Number of positive case	Percentage
November	1	1%
December	9	13%
January	23	33%
February	21	30%
March	16	23%

Table 2: Prevalence of mycoplasmosis on different month of the study period.

Discussion

Prevalence of mycoplasmosis was estimated on the Thana Livestock Office at Kotwali in Chittagong. The present study revealed 15.38% of mycoplasmosis in Chittagong region which did not vary significantly with earlier investigations. 11.55% of cases of mycoplasmosis at Chittagong and Mymensingh region, but prevalence of the present study is higher than previous study, reported 5.32% on Sylhet. This variation may be due to cold environmental condition.

The overall prevalence of mycoplasmosis was lower than that of earlier report of 55.83% [7], 52% [8] and 13-22% [2]. The present findings were also differed with the previous results reported by Kelly et al. [9] in Zimbabwe, Chrysostome et al. [10] in Benin, Shah-Majid [11] in Malaysia, Pandey and Hasegawa [12] in Zambia. Bencina et al. [13] and Godoy et al. [14] reported 56.54, 57.15 and 59.10% seroprevalence of MG infection in chickens, respectively. This might be due increase awareness about vaccination against mycoplasma among the farmers around the Thana Livestock Office at Kotwali in Chittagong. Only postmortem and serological based diagnosis of mycoplasmosis was might be another reason.

In the present study, seasonal variation in MG seroprevalence was observed. Variation of prevalence of mycoplasmosis on different month of the study period was observed at the present study. The prevalence was higher 33% in January followed by 30% in February, 23% in March 13% in December and 1% in November which was in agreement with the result of Pradhan et al. [15]. The prevalence was highest in winter and lowest in summer which was in agreement with the results. It was probable that the cold weather depress the natural resistance of birds, leading to an increased susceptibility to infections.

In the present investigation the prevalence was also found to have decreased with the increase of age. Similar report was demonstrated highest MG infection (71.42%) at 18 weeks of age and lowest (55.17%) at 63 weeks of age. This finding also supports the report of Sarkar et al. [16] who recorded 73.80% MG infection at 20 weeks of age in comparison to 45.16% at 55 weeks of age. Similar report was demonstrated the prevalence of MG infection significantly decreased with the increase of age. It might be due to the seasonal influence as during the winter birds were younger than in summer season [17]. Highest infection in the young chickens is probably due to the vertical transmission of this organism.

Conclusion

In this Study, it was well mentioning that the prevalence of MG was higher in broiler then layer birds. Age and seasonal variation plays an important role in occurrence of this disease. So more attention should be given at the age and season as mycoplasmosis is the most economically significant disease in poultry industry of Bangladesh which causes serious economic losses in poultry farm, reduce feed efficiency, decrease growth and reduce egg production. The present study is a preliminary work on the mycoplasmosis which was identified only on the basis of history, clinical signs, Serum plate agglutination (SPA) test and postmortem lesions. However, the result of this study will certainly help the future researchers to provide guidance in carrying out further detail study on mycoplasmosis of poultry in Bangladesh.

Conflict of Interest

The authors have no conflicts of interest to declare.

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