ABSTRACT

The aim of the present study was to determine the occurrence of the infectious diseases of broiler birds by postmortem examination. For this purpose, 153 dead or sick birds from 55 farms were investigated and diseases were diagnosed on the basis of gross pathology at Muktagacha Veterinary hospital in Mymensingh district. Seven different diseases such as Enteritis, Mycoplasmosis, Omphalitis, Gumboro, Coccidiosis, Salmonellosis and Gumboro + Coccidiosis were identified and their prevalence were 29.41%,10.45%,8.50%,28.11%,5.23%,13.73%, 6.40% and 4.58% respectively. The post-mortem findings of the identified diseases are: Enteritis: pericarditis, dilation of the last part of the intestine, Salmonellosis focal area of necrosis and bronze color liver, Omphalitis: unabsorbed yolk sac, Gumboro: the petichae was found in the thigh and breast muscles, the bursa of fabricious was swollen and yellowish gelatinous membrane found , Mycoplasmosis: catarrhal exudate in nasal and Para nasal passage and congestion of the lungs. Gumboro and Coccidiosis are simultaneously occurred at the same time of outbreak of diseases. In severe cases the two caeca contain blood and yellow gelatinous membrane found into swollen bursa. About 7 numbers of broiler birds out of 153 birds were investigated in Gumboro and Coccidiosis mixed infection. The enteric bacterial diseases are most common in Muktagacha of Mymensingh districts. However, further more detailed studies are inevitable for confirmatory diagnosis.

CHAPTER I

INTRODUCTION

Poultry industries play an important role in poverty alleviation and economic development of Bangladesh. Poultry meat contributes approximately 37 of total animal protein supplied in the country (Rahaman *et al*., 1998). Livestock is one of the most important roles to promote human health and national economy; it has 195.28 million livestock of which about 17 cores poultry (DLS, 2003). Livestock is not only help to upgrade the financial condition to human nutrition. Normal requirement of animal protein for a man is about 62.5gm per day (Jabbar and Green, 1983).

Approximately 163.5 millions chickens are estimated to contribute partially for the alleviation of poverty and malnutrition of the people. At present situation commercial poultry eggs and meat are accomplishing the greater demand of animal protein as well as the human nutrition in the country .About 0.26 millions metric tons of meat and 5210 millions table eggs are produced per year (Rahman , 2003). A total of 5 millions people are working presently in this sector and an amount of Tk 22,000 millions has been invested in this sector (Rahman, 2003).

Scientific breeding, feeding management and disease control are the key points of success in poultry improvement programme One of the major constrains in the development of poultry industry in Bangladesh is the out breaks of disease which causes about 30 mortality of chickens in every year (Ali. 1994) .The most important broiler chick diseases are Enteritis, Mycoplasmosis, Coccidiosis, Gumboro, Salmonellosis, Necrotis enteritis etc. Most of these disease cripples the immune system of the affected birds that in turns result in vaccination failure and make them highly susceptible to other infectious diseases. Such poultry industry of this country will be logging behind unless the cases of such diseases mortality are known and requisite control measures of different fatal diseases are efficiently achieved.

Considering the above facts the present study was undertaken to study the diseases of broiler chicken in some broiler farms at **Muktagacha** in **Mymensingh** district with the following objectives:

I. To determine the prevalence of the infectious diseases of broiler at Upozilla in Mymensingh.
II. To study the gross pathological lesions of the identified diseases.
III. To compare the occurrence of the identified diseases.

CHAPTER II

REVIEW OF LITERATURE

2.1Occurence of infection diseases of poultry:

Anjum (1990) conducted an investigation on the diseases outbreak in 133 broiler and 93 layer flocks of various ages in farms around Faisalabad Pakistan in 1988. The commonest diseases were coli septicemia 8.9%, Salmenellosis 8.4%, Infectious Coryza 1.3% Fowl Cholera 0.9%, and Coccidiosis of 15%, Infectious bursal disease of 3.1%, Mycoplasmosis of 5.8%, avian leucosis 2.7% & avian pox of 2.2%.

Haider *et al.*, (2009) reported that clinical sings of infected chicks were depression, loss of appetite, huddled together, reduced feed and water intake, and reduced mean body weight, ruffled feathers, diarrhea, labored breathing and pest vent. The highest gross lesion was (84%) unabsorbed and coagulated yolk and the lesion was (32%) pericarditis and necrotic foci or nodules in heart.

Das *et al.*, (2005) observed the lesion of Newcastle disease are marked hemorrhage of the comb and head with cyanosis of the margin of the comb, necrosis in oral, pharyngeal and esophageal mucosa, pinpoint hemorrhage in the proventiculus, tracheal lining and large intestine.

Kamal and Hossain, (1992) conducted necropsy examination on chicken of BAU poultry farm and revealed that the highest prevalence of Ranikhet disease (18.65%) followed by Coccidiosis (17.36%), Aspergillosis (10.61%), Ascaridiasis (6.75%), Fowl cholera (6.43%), Lymphoid leucosis (1.93%).

Islam *et al.*, (1998) recorded 139 outbreaks of disease in 69 small or medium scales commercial poultry farms at Mymensingh and neighboring districts. The diseases included Mycoplasmosis, Colibacillosis complex with a relative occurrence of 20.9%. Primary *E. coli* and Salmonella infection of chickens 11.0%.

2.2.Isolation and Identification of the diseases by pathological changes:

2.2.1. colibacillosis

Ewers *et al.*, (2003) conducted and experiment on pathogenic ***E. coli*** in German. They stated that infections with pathogenic ***E. coli*** (APEC) cause Colibacillosis, an acute and mostly systemic disease

resulting in significant economic losses in poultry industry world wide. Avian Colibacillosis is a complex syndrome characterized by multiple organ lesions with air sacculitis and associated pericarditis, perihepatitis and peritonitis being most typical.

Mukhopadhyay *et al.*, (1999) reported congested ovary and oviduct and the distended oviduct contained fibrinous exudative mass. In few cases nonfunctional ovaries and ovaries with misshapen follicles were observed. The lumen of the oviduct was occluded with inspirated exudates and the ova.

Gross (1988) reported the pathology of Colibacillosis as thickened air sac and of the containing caseous exudates on the respiratory surface. In more acute case of Colibacillsis, severe septicemia is noted.

2.2.2. Salmonellosis:

Chishti *et al.*, (1985) reported that post-mortem lesions of pullorun infection which included bronze discoloration of liver 75%, mottling 25%, haemorrhagic 60% & necrotic foci 11% .In infection due to*Salmonella gallinarum* the liver showed bronze discoloration 60%,motting haemorrhage 45% cases & necrotic foci 10% .

Wigley *et al*,. (2002) reported that a number of inbred lines of chickens had been shown the systemic & Salmonellosis caused by *Salmonella enterica* serovar *Salmonella gallinarum* in adult birds or by *Salmonella enterica* serovar *enteritidis* and *Salmonella enterica* serover *typhimurium* in young chicken.They reavealed that genetic resistance to Salmonellosis is dominant and not linked to sex **.**

Boden (1999) described that 50 members of the Salmonellae group had been isolated from poultry in the **UK,** and several had caused out breaks of disease in broiler plants.

2.2.3. Gumboro Disease:

Saif ., *et al*., (2001) said that gross lesions could seen for the most part on the bursa of Fabrisus.The bursa might be swollen or showed signs of haemorrhage.In some cases, however, no lesions were observed and the bursa shrinked in size.

sssuch as petechial haemorrhage on the thigh, breast & between gizzard & proventriculus were seen .In addition varying degrees of bursal lesions and haemorrhages in caecal tonsil were observed .The bursa become yellowish in colour slimy to gelatinous material was noticed the bursa. Minute streaks of petechial haemorrhage were also noticed on the inner surface of bursa of fabricious.

2.2.4. Omphalitis:

Kamal (1989) described the necropsy lesions of Omphalitis as curled and considerably thicken unabsorbed yolk in all chicks. The covering of yolk appeared to be highly inflamed, thickened and edematous. The blood vessels around yolk were highly congested and hemorrhages were also evident in these areas. The livers in few chicks were markedly pale.

Gross (1964) reported a diseases of chickens characterized by reduced weight gain and retained caseous yolk sacs. The disease was reproduced by dipping incubating eggs in a suspension of 013 serotype ***E. coli*** from a field flock affected with a similar condition.

2.2.5. Coccidiosis:

Samad (1988) reported that mortality for in young birds due to coccidiosis varies from 25%-905 which is the predominant factor of economic loss.

Rahman (1992) reported that *Eimeria neceatrix* affects the upper two thirds of the small intestine .The affected chicken are depressed, listless and show rapid loss of weight and diarrhea. On autopsy intestine is much enlarge and ballooned associated with complete loss of tone. The surface show numerous white and red foci present within the intestinal wall. *E.acervulina* usually found in the anterior part of intestine. In serve infection the signs in chicken are loss of weight and white diarrhea. *E .maxima* produce thickening of the mucosa.*E .brunetti* cause presence of petechae catarrhal enteritis, blood and coagulative necrosis of the lower digestive tract of ten described is not sufficient for diagnosis.

2.2.6. Mycoplasmosis:

Bradburry (2001) Gross lesions of respiratory tract may be almost rarely visible or consist of excess mucous and catarrhal exudates in nasal and Para nasal passages trachea bronchi and air sacs.

Ley and Yoder (1997) Fibrinous or fibrinopurulent perihepatitis and pericarditis along with massive airsacculitis may be found in severe cases of air sac diseases in chickens.

Bajwa *et al.*, (1994) In mixed infection with *E.coli* the pathological changes are gastroenteritis, hepatomegaly, hemorrhages on liver few pale colored foci ,per hepatitis and congestion of kidneys .In addition hemorrhages in lungs exudates and linear hemorrhages in trachea ,cloudiness and marked edema in the facial sub cutis and eyelids due to exudation are also found**.**

CHAPTER III

Materials & Method

Study area

The work was conducted at UVH Muktagacha, Mymensingh for two months (from 26th June to 24th August 2010) which was the 1st placement of my 12 months internship program.

Study population

Apparently healthy, sick & dead broiler birds at different age were presented to be examined. The influence of age, of year of birds (brooding, growing) and seasons on the occurrence of these disorders were analyzed.

Data collection

Information about the management systems and the clinical signs exhibited by the individual bird during illness were recorded in detail as provided by respective poultry farms owner/ attendant through asking questions and from the registered book of the hospital. Besides this number of birds affected, types of supplied feeds, rearing system, immunization and treatment measures if taken were also recorded.

Postmortem examination

The birds were subjected to examination in the Upozilla Livestock office, Muztagata, Mymensingh as soon as they died or diseased condition and gross pathological changes were observed and recorded carefully. The diseases of birds were diagnosed by post mortem examination.

Post mortem lesion found

Bacterial

Colibacillosis: Revealed pericarditis, petechial hemorrhages and formation of the fibrinous layer on the heart,air sac infection,dilation of last part of the intestine.

Salmonellosis: Enlarge and necrotic foci on the liver,greenish to bronze color liver.

Omphalitis:Thickend unabsorbed yolk in all the dead chicks,abdominal content cloudy and malodours.

Viral

Infectious bursal disease: Pin point hemorrhage on the thigh and brest muscle,enlarged and necrosed bursa of fabricius,hemorrhage on the bursa.

Mycoplasmosis: Catarrhal exudates in nasal and para nasal passages,trachea,bronchi and air sacs,congestion of the lungs.

Protozoal:

Coccidiosis: Hemorrhage on the caecal tonsil,loss of tonacity of two caeca,white foci present in the mucous membrane of intestine,catarrhal enteritis.

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CHAPTER IV

Result & Discussion

Characteristics necropsy method was used to investigate the pattern of diseases in 153 broiler chicks of 55 different commercial broiler farms at **Muktagacha** in Mymensingh.

Analysis of the data on the morbidity and mortality of diseases an the different broiler farms during 2 months period revealed that of 153 broiler birds of 55 different farms,45 (29.41%) farms of birds were affected with Enteritis, 16(10.45%) farms of bird were affected with Mycoplasmosis, 21(13.73%) farms of bird were affected with Salmonellosis, 13(18.50%) farms of bird were affect with Omphalitis, 8(5.23%) farms of bird were affected with Coccidiosis, 43(28.11%) farms of bird were affected with Gumboro, and 7(4.58%) farm of bird affected with Gumboro & Coccidiosis mixed infecti

Identified Diseases:

Table 1 - Frequency of different diseases in broilers.

Diseases	0-10 days	11-20 days	21-30 days	Total number
1. Enteritis	9	23	13	45
2. Mycoplasmosis	1	7	8	16
3. Salmonellosis	6	4	11	21
4. Omphalitis	9	4	0	13
5. Gumboro	17	20	6	43
6. Coccidiosis	0	2	6	8

Fig:I :- Age wise mortality of poultry chickens at Muktagacha in Mymensingh.

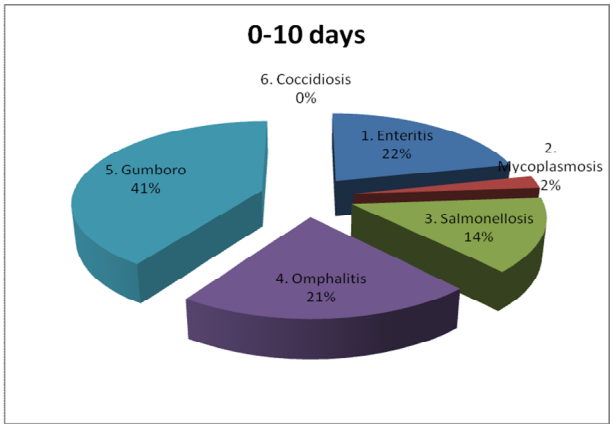

Fig. Frequencies of diseases of 0 -10 days of age

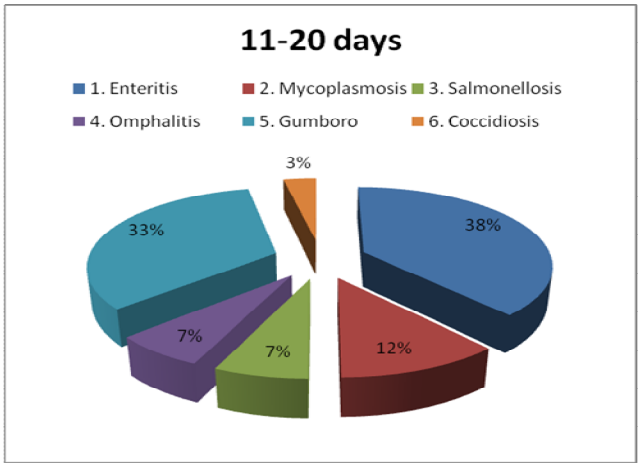

Fig. Frequencies of diseases of 11-20 days of age

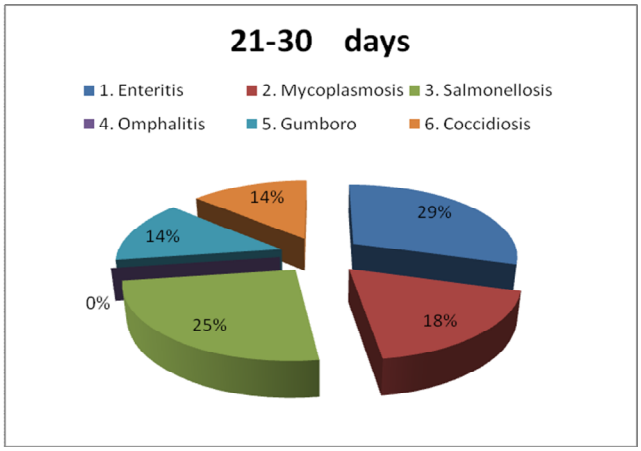

Fig. Frequencies of diseases of 21 -30 days of age

Bacterial disease:

Colibacillosis:-

The clinical signs showed that sick birds were dullness, depression, reduced intake of food and water, huddling at the corner of the shed, Loss of body weight, brown color droppings etc.In Post-mortem examination revealed pericarditis, petechial haemorrhages and formation of the fibrinous layer on the heart, air sac infection, enteritis, dilation of the last part of the intestine which is similar to **Gross (1988) & North and Bell (1990).**

The mortality rate of recorded Colibacillosis in broiler chickens is 46.80% (190 birds) of all age groups. Khan et al. reported 12% morbidity &75% mortality which is more or less similar of performed study.

Fig II:Pericarditis, perihepatitis & pseudo membrane on liver of *E.cli* infected bird

(2) Salmonellosis:-

Salmonellosis was diagnosed on clinical signs & necropsy examination of the dead and moribund broiler birds. This investigation recorded total 3(0.74%) cases of Salmonellosis out of 406 sick & dead broiler birds. The affected birds exhibited somnolence, ruffled feather, whitish to greenish diarrhoea, chalky white excreta adhered with the vent & anemic comb and wattle.

Postmortem examination revealed enlarged and necrotic foci on liver, greenish to bronze color liver. In this study the prevalence of salmonella organisms were less might be due to the age and breed of the birds and also for the resistance power of the scavenging poultry.

Chistti *et al*. (1985) reported that bronge discoloration of liver 75%, & necrotic foci on liver 11%.I also found 0.74% broiler birds are affected with Salmonellosis containing necrotic foci on liver.

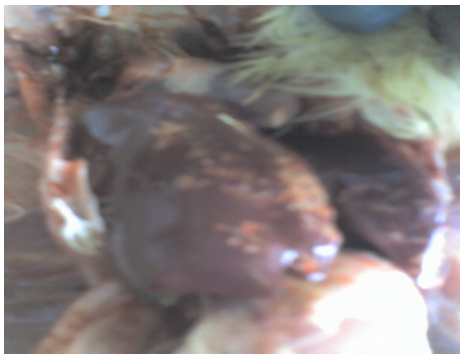

Fig III: A typical lesion of Salmonellosis (focal area of necrosis, and glistening of the surface of the liver).

Table 2: Occurrence of infectious diseases on the basis of etiology.

Sl.No.	Type of diseases	No of cases	Percentages (%)
1.	Bacterial Diseases	79	51.63
2.	Viral Diseases	43	28.10
3.	Mycoplasmal Diseases	16	10.45
4.	Protozoal Diseases	8	5.23
5.	IBD+Coccidiosis	7	4.58

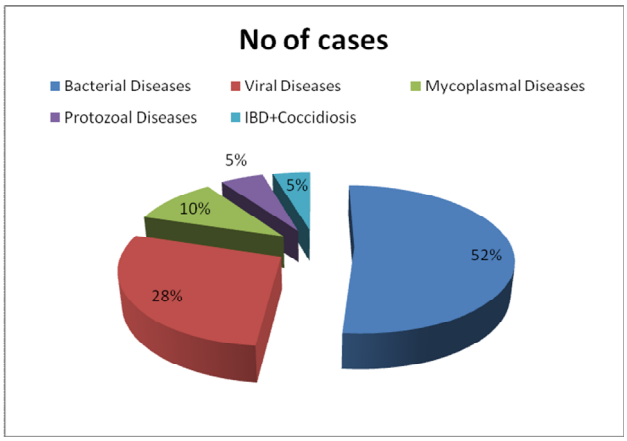

Fig IV: Occurrence of infectious diseases in broiler chickens at Muktagacha in Mymensingh.

(3) Infectious bursal diseases

It is also called Gumboro diceases. It was diagnosed on the basis of clinical signs and post mortem examination. The recorded clinical signs were soiled vent, feathers, whitish or watery diarrhea anorexia, trembling, severe prostration and death.

Post-mortem lesion includes pint point haemorrhage in the thigh and breast muscles, enlarged and necrosed bursa of fabricius, yellowish gelatinous membrane found over the swollen bursa, hemorrhage on the bursa. Mucous containing drooping found in the ascending part of small intestine.

Infections bursal disease was recorded in **50(12.32%)** broiler birds. Pathological investigation and prevalence of the disease is similar to **Saha & Majumder (1997)** prevalence of Gumboro disease have also been reported by **Anjum (1990); Kim *e .al.* (1996) & Talha *et al.* (2000) 3.1%, 27.3% & 19.6%** respectively.

Fig V: A typical lesion of Gumboro disease (pin point hemorrhage found in the barest muscle & thigh muscle).

4. Mycoplasmosis

Clinical signs included chronic respiratory diseases accompanied by lowered feed consumption. The clinical findings showed that oculo-nasal discharge, gasping on mouth etc. Post- mortem examination showed that catarrhal exudates in nasal and Para nasal passages, trachea, bronchi, and air sacs, congestion of the lungs.

Mycoplamosis was recorded **58(14.29%)** broiler birds. Clinical and pathological lesions are support **to Ley & Yoder (1997), & Bajwa *et al.*. (1994) Rodrigus *et al.* (2001)** reports.Prevalence of Mycoplasmosis have also been reported **by Anjum (1990)5.8%; Islam *et al*.(1998)20.9%.**

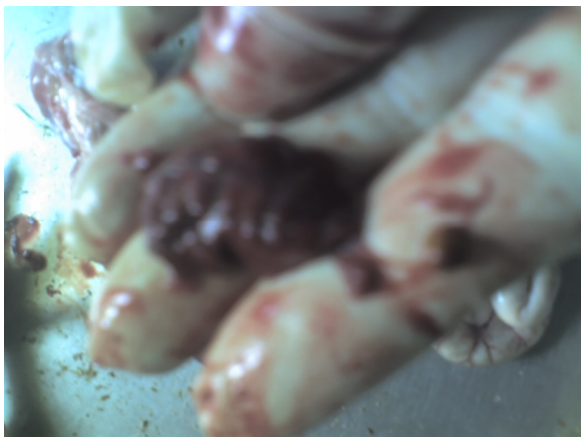

Fig VI: A typical lesion of Mycoplasmosis (congested lung).

5. Omphalitis:-

During first & 2nd weeks of age 52 birds out of 406 were investigated omphalitis. The mortality varied from 12.81%. The chicks were fund dead without showing any clinical signs. However, few birds were reported to be lethargic and found depressed with poor growth performance.

The necropsy examination revealed that considerable thickened unabsorbed yolk in all the dead chicks. The abdominal contents were cloudy and malodorous. The covering of the yolk appeared to be highly inflamed, thickened, and edematous. The blood vessels around the yolk were highly congested. Yolk sac infection may occur due to Colibacillosis or Mycoplasmosis. These observations are similar to **Harry (1957) reports and kamal (1989) reports.**

Fig VII: A typical gross findings of Omphalitis due to colibacillosis.

6) Coccidiosis:-

The clinical finding were showed that, ruffled feather drowsiness, bloody diarrhea, anemia & high mortality. Post mortem examination showed that hemorrhage on caecal tonsil, loss of tonacity of two caeca, white foci present in the mucous membrane of intestine, catarrhal enteritis.

These lesions are more similar to **Rahman's (1992)** investigation. The coccidiosis was recorded in 20 (4.93%) broiler chicken which is related to **Anjum (1990); Kamaal & Hossain (1992) whose** reported the prevalence were **15%;17.36%;6.6%** respectively.

Fig:VIII: A typical lesion of Coccidiosis (clotted blood found in thecaecal tonsil)

Fig IX: Percentage of infectious diseases in broiler chickens at Muktagacha in Mymensingh.

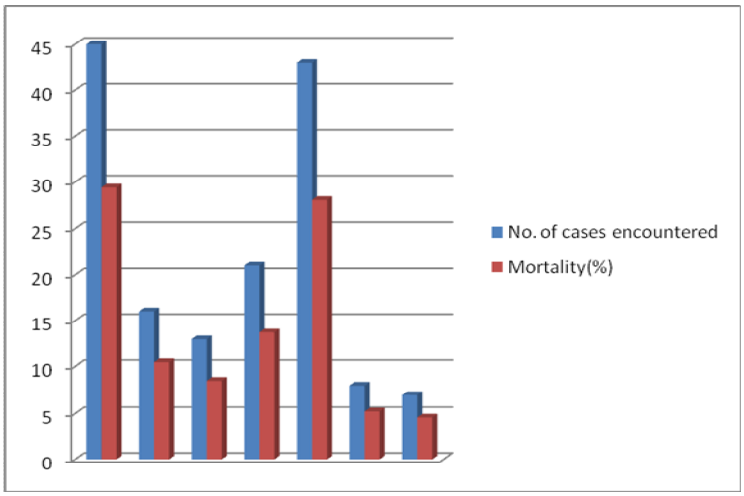

Table 3: Percentage of infectious diseases in broiler chickens at Muktagacha in Mymensingh

Diseases	**No. of Farm investigated**	**No. of cases encountered**	**Case (%)**
1. Enteritis	22farms	45	29.41
2. Mycoplasmosis	12 farms	16	10.45
3. Omphalitis	11 farms	13	8.50
4. Salmonellosis	1 farms	21	13.73
5. Gumboro	6 farms	43	28.11
6. Coccidiosis	2 farms	8	5.23
7. Gumboro + Coccidiosis	1 farms	7	4.58

CHAPTER V

Conclusion

Poultry farming is emerging as a strong agro based industry from the backyard poultry rearing system to commercial intensive rearing systems during the last two decades in Bangladesh. This rapid growth of poultry industry to supplement their income with the fast development of poultry industry, the occurrence of disease has increased many folds which remain the major problem affecting it's economy as a results disease play a vital role to better understand the status and pattern of disease. The study was conducted at the 199 broiler farms at Muktagacha in Mymensingh district to investigate the mortality pattern and prevalence of infectious diseases by post mortem examination. The clinical findings of various diseases study period was 16th October to 10th December. The clinical findings of various diseases of broiler chickens in different farms were recorded properly. The mortality, age of affection of various diseases or condition, were also noted. Diagnosis was made on the basis of clinical findings, and post-mortem lesions. The occurrence of Enteritis 29.41%, Mycoplasmosis 10.45%, Omphalitis 8.50%, Salmonellosoes 13.73%, Gumboro 28.11%, Coccidiosis 5.23%, Gumboro & Coccidiosis 4.58%. From the present investigations the following recommendation were drawn:-

1. Enteritis is the major problem for broiler production in concerned area. Poultry farmer can not earn their profit due to severity of the disease.
2. Other diseases are also economically important for broiler production.
3. Further laboratory examination is also needed to confirm the identified diseases.

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