ABSTRACT
Fifty broiler farms of district Peshawar suspected for infectious bursal disease (IBD) were studied during the period of 25th September to 20th October 2007. On the basis of history and detailed postmortem pathological lesions, the prevalence of IBD in district Peshawar was 7.75% and was highest in town 3 of Peshawar district (8.085%). The mortality and morbidity rates were found to be 6.38% and 1.35%, respectively. In district Peshawar the highest mortality rate was recorded in town 1 of district Peshawar with 7.037% and morbidity was highest in town 2 with 1.847%. The major macroscopic lesions observed in this study were hemorrhages on thigh and breast muscles, kidneys were found swollen and principal lesions were in the bursa of fabricius which appeared inflamed, edematous, hyperemic and finally hemorrhagic and atrophied. Four weeks old broilers were highly susceptible to IBD (38%) followed by 3rd week (28%) and 5th week (28%) and no clinical case was found positive for IBD in first two weeks of age.

Keywords: chicken, broiler, bursal disease, peshawar.

INTRODUCTION
Infectious bursal disease (IBD) was first described as a specific new disease by Cosgrove in 1962 in the town of Gumboro, Delaware, USA. Variant IBD virus (IBDV) strains were first reported in the USA in 1986/87. Hyper or very virulent IBDV strains were first reported in Belgium and Netherlands in 1987. Currently IBDV has a worldwide distribution, occurring in all major poultry producing areas (Dr Sjaak Wit and William Baxendale, 2004). Chicken is the only host known to develop clinical disease and distinct lesions following exposure to IBDV. The most likely route of infection is oral ingestion of contaminated feaces or other contaminated organic material.

Gumboro, AIDS like disease, is one of the highly infectious diseases of poultry, especially broiler, causing 20 percent mortality per annum by destroying immune system despite vaccination in Pakistan. The outbreaks of infectious bursal disease occurred both in private and government poultry farms. The past year had seen an increase incidence and severity of clinical gumboro in Pakistan and the problem was particularly high in the commercial egg industries than in broiler flocks. The IBD problem in Pakistan begun in the north, in Islamabad region, but now it is more severe in the Karachi, IBD outbreaks noted in both vaccinated and non vaccinated flocks at Karachi (Bhatti, 1994). Despite the fact that no systemic work has been done on the incidence and prevalence of infectious bursal disease, IBD did not receive adequate attention in Pakistan in general and in N.W.F.P in particular.

MATERIALS AND METHODS
The clinical and postmortem examinations were carried out for diagnosis of infectious bursal disease at Veterinary Research Institute (Poultry Postmortem Room) Peshawar. Died birds brought by the farmer for diagnosis were examined. Fifty cases of gumboro were diagnosed between 25th September and 15th November, 2007. The study was restricted only to broiler farms.

Clinical examination
a. History
Previous and present history of farms was taken from each farmer. The following data was collected from the farmers:
Name of farmer, name of area, total number of birds in farm, daily mortality and total mortality.

b. General examination
The preliminary general examination was carried out to observe any obvious abnormality, general condition of the chicken, condition of vent, feathers and diarrhea.

Postmortem examination
It was conducted with the help of rubber gloves, a pair of shears, scissor, knife, scalpel and forceps.

Technique
To expose the internal organs, the bird was laid on its back and each leg, in turn drawn outward away from the body while the skin was incised between the leg and abdomen on each side. Both legs were then grasped firmly in the area of the femur and bent forward, downward, and outward, until the heads of both femurs were broken free of the acetabular attachment so that both legs lied flat on the table. The skin was cut between the two previous incisions at a point midway between keel and vent. The cut edge was then forcibly reflected forward, cutting was necessary, until the entire ventral aspect of the body including the neck, was exposed. For exposing of the viscera, knife was used to cut through the abdominal wall transversely midway between the keel and vent, then through the breast muscle on each side. Positioning shears were used to cut first the rib cage, the coracoid and clavicle on both sides. With some care this was done
without severing the large blood vessels. Thorough examination of the organs was done. The bursa of fabricious was located by opening the cloaca, laid on its distal side.

RESULTS

The suspected chickens of infectious bursal disease (IBD) were subjected to postmortem examinations; the gross lesions were noted on different parts of body, especially on bursa of fabricious for confirmation of IBD.

The gross pathological lesions were present on the following body parts. Carcass was dehydrated and darkened in colour. Haemorrhages were present on the pectoral, leg and thigh muscles, kidneys were swollen. The principal lesions were found in the bursa of fabricious, it was swollen (inflamed); appeared edematous and hyperemic and has a gelatinous yellowish transudate. Haemorrhages and areas of necrosis were present in more severe cases. In prolonged cases the bursa of fabricious were atrophied as compared to hemorrhagic and normal bursa of fabricious.

According to the research work conducted in district Peshawar, the total no of birds in 50 different poultry farms were 114,300. The total prevalence, mortality and morbidity of IBD were 7.75%, 6.38% and 1.35 %, respectively (Table-1, Figures 1 and 2).

The most susceptible age for IBD was concluded to be 4th week, because the study conducted on 50 different poultry farms showed that 19 farms out 50 were affected in 4th week of age while 14 farms were found affected both in 3rd and 5th weeks of age, with percentage of 38%, 28% and 28%, respectively. While no case was found in first 2 weeks of age, and in 6th week of age only 2 farms were affected and just one flock affected in 7th week of age (Figure-3).

District Peshawar is divided into four towns (tehsils) and 92 Union Councils. During this research work, the prevalence of IBD was evaluated in 50 different poultry farms of district Peshawar. Out of total 50 broiler farms 5, 15, 17 and 13 broiler farms were examined in Town 1, 2, 3 and 4, respectively (Figure-4).

The highest prevalence was found in town 3 with 8.085%, while mortality was highest in town 1 with 7.037% and morbidity was highest in town 2 with 1.847 %.

Table-1. Total birds wise distribution of infectious bursal disease in district Peshawar.

| Variable      | No. of observations | Minimum | Maximum | Mean  | Total  |
|---------------|---------------------|---------|---------|-------|--------|
| Total birds   | 50                  | 550     | 6000    | 2286.00 | 114300 |
| Age/days      | 50                  | 15      | 45      | 25    | 1278   |
| Total mortality | 50               | 04      | 450     | 145.960 | 7298   |
| Daily mortality| 50                 | 01      | 95      | 11.540 | 577    |
| Morbidity     | 50                  | 0       | 100     | 30.92 | 1546   |
| Prevalence    | 50                  | 15      | 550     | 177.08 | 8854   |

Figure-1. Percentage wise distribution of infectious bursal disease in district Peshawar.
Figure-2. Total birds wise distribution of infectious bursal disease in district Peshawar.

Figure-3. Age wise distribution of infectious bursal disease in district Peshawar.

Figure-4. Percentage wise distribution of disease in four towns of district Peshawar.
DISCUSSIONS

The present study was conducted for the provision of reliable information regarding the actual status of prevalence, mortality, morbidity and pathological changes of infectious bursal disease (IBD) in broilers in district Peshawar. The diagnostic competence depends upon various factors such as, laboratory methods of diagnosis and their accuracy, budget requirement to support diagnostic facilities and their availability, professional approach of laboratory staff to problems, and procedures adopted to achieve an accurate diagnosis.

In this study diagnosis of IBD was made on the basis of farm history and gross pathological lesions as had been diagnosed by Sharoo, (2002). Laboratory procedures may be used to substantiate the diagnosis.

Rajaonarison et al., (2006); Nickolov, (2005); Okoyo and Dzonkwu, (2005); Paul, (2004) and Richard and Miles, (2004) examined that at necropsy the gross pathological lesions were dehydration and changes in the bursa of fabricious, skeletal, muscles, liver and kidneys. All affected birds had bursal changes characterized by swelling, changes in shape (oblong), colour (pink, yellow, red, black) and the formation of a gelatinous film around the bursa. Within a few days the bursa shrinks to half its normal size or smaller. In this study the gross pathological lesions observed on necropsy examination were dehydrated and darkened carcass, hemorrhages were present on pectoral, leg and thigh muscles. The kidneys were swollen. The principal lesion found on the bursa of fabricious.

Rajaonarison et al., (2006) reported that IBD affected birds were 3 to 5 weeks old, the mortality rate ranged from 5.70-27.4%. In the present study the affected birds were 4 weeks old conclusively.

Wyeth et al., (2003) carried out studies on IBDV in great britain and examined that IBDV can infect some birds were 4 weeks old conclusively.

Akhtar S., S. Zahid and A. Hussain. 2006. Relative susceptibility of six broiler chicken strain to infectious bursal disease (Gumboro disease) during an epidemic. Pakistan. Vet. J. 12: 18-20.

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Bacteriological studies for the presence of IBDV were carried out in all the farms included in the present study and no IBDV isolates were obtained. The present study was conducted during in district Peshawar and the number of farms selected was 50. The study was conducted for research purpose and data was collected from farms included in the study.

In this study diagnostic procedures may be used to substantiate the diagnosis.

The present study was conducted for the provision of reliable information regarding the actual status of prevalence, mortality, morbidity and pathological changes of infectious bursal disease (IBD) in broilers in district Peshawar. The diagnostic competence depends upon various factors such as, laboratory methods of diagnosis and their accuracy, budget requirement to support diagnostic facilities and their availability, professional approach of laboratory staff to problems, and procedures adopted to achieve an accurate diagnosis.

In this study diagnostic procedures may be used to substantiate the diagnosis.

Richard and Miles, (2004) determined the outbreak of acute clinical IBD in broiler chicken farms in Denmark. The analysis was performed using data from all broiler farms located in the jutland peninsula and the island of funen (168 municipalities). The moran’s Index 1, K-functions and scan statistics were used to describe the dynamics of the epidemic and a total 43 farms were used for research purpose infected with IBD. The present study was conducted in district Peshawar in 4 towns (Tehsils). Fifty (50) different broiler farms infected with IBD was selected for research purpose. Two software programs were used for analysis of data (1) Mstact C computer programme and (2) SPSS (Statistical Package for Social Sciences).
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