

PREVALENCE OF DUCK HEPATITIS IN AN EXPERIMENTAL FARM IN BHUBANESWAR

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A study was made of duck hepatitis for a period of five years at a duck farm in Regional Station, Central Avian Research Institute, Bhubaneswar. Out of 6928 deaths, a total of 199 ducks died of hepatitis. The mortality due to hepatitis was 0.17%. Of the total hepatitis death 121 were adults, while ducklings and grower of 39 each. Mortality of females was more in comparison to males. Hepatitis was more prevalent during the month of December, November, January and February than other months of years. Affected ducks revealed, lethargy, anorexia, blindness, opisthotonus, progressive weakness and ruffled feather. Highest prevalence of duck hepatitis was found in Khaki Campbell followed by Desi, White Pekin and Moti (Muscovy) respectively. Necropsy showed splenomegaly, congested and enlarged kidney, distended gall bladder, haemorrhagic and necrosis in liver and ascites with pendulous abdomen.

Key Words: Clinical signs, Duck, Hepatitis, Prevalence

Duck is said to be the resistant to many infectious and non infectious diseases but they are susceptible to many diseases like hepatitis, aflatoxicosis and bumble foot. Infectious diseases with hepatic disorders are duck viral hepatitis type 1, 2 and 3, egg drop syndrome - hydropericardium syndrome -inclusion body hepatitis

complex, Muscovy duck reovirus infection, infectious hepatic amyloidosis, duck plague (Campagnol *et al.*, 2001; Xin *et al.*, 2008). Several non infectious causes of duck hepatitis are alatoxicosis, ochratoxicosis, zearalenon, paralysis etc.

During young age, ducks are very

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susceptible to these infections and non infectious diseases. Hepatitis is very common due to aflatoxicosis in growing birds. Clinically, hepatitis is characterized by sudden death, dullness, lethargy, opisthotonus, paresis to paralysis, weakness, emaciation, inappetance, photophobia, partial closure of eye, ocular discharges (Davis *et al.*, 1994; Bibu, 2011). As the hepatitis in duck is an important ailment for their propagation and production, care is needed to their well management. Present work was undertaken to ascertain the mortality pattern due to hepatitis in an organized government duck farm for period of 5 years (since 2010 to 2014).

MATERIALS AND METHODS

Regional Centre, Central Avian Research Institute, Baramunda, Bhubaneswar maintains sufficient numbers of breeds of duck for experimental purpose. Dead ducks were presented at the Health Section for disease diagnosis through necropsy. Necropsy was conducted during January 2010 to December 2014. Mortality in different seasons of summer (March to June), rainy (July to October) and winter (November to February) as well as in different age groups (duckling upto 5 weeks, grower from 6-20 weeks and adult above 20 weeks) were considered. The necropsy was performed within 8-10 hours of death with standard protocol (Haque *et*

al., 2011). Disease diagnosis was confirmed based on pathological lesions showed in different organs in a particular disease entity. In hepatitis, the characteristic post mortem lesions were enlargement of hepato-biliary organs, degenerative and colour change in liver, patches of mottles on the liver surface, congestive and haemorrhagic liver and ascetic condition of carcass. The data generated was statistically analyzed as described by Snedecor and Cochran (1989).

RESULTS

A total of 6928 ducks were died during five years period of which only 199 deaths were reported due to hepatic disorders. The mortality due to hepatitis estimated to be 0.17%. Population wise female and male ratio of hepatitis was 36% and 64%. Present communication revealed that female ducks were more prone to hepatitis than male (Bryden *et al.*, 1980; Sercy *et al.*, 1996). Month wise significant ($p>0.05$) higher mortality was revealed in December, followed by November, January, February, June, July, April, September, May, October, and least in March (Table 1). Present communication revealed that the mortality due to hepatitis was high during winter (49.74%) followed by summer (29.14%) and rainy season (21.10%). Age wise mortality revealed highest in adult (121, 60.80%), followed by grower (39, 19.59%) and ducklings (39, 19.59 %, Table 3).

Table 1. Month wise and year wise mortality due to hepatitis in duck

Month	2010	2011	2012	2013	2014	Total	Mortality* %
January	0	3	1	0	11	15	7.53
February	0	0	12	0	3	15	7.53
March	1	2	3	0	3	9	4.52
April	18	0	5	0	2	25	12.56
May	1	4	3	2	0	10	5.02
June	3	2	7	2	0	14	7.03
July	1	3	1	3	6	14	7.03
August	0	2	3	1	1	7	3.51
September	1	3	0	1	6	11	5.52
October	0	3	0	1	6	10	5.02
November	3	2	0	12	11	28	14.07
December	3	15	0	16	7	41	20.60
Total	31	39	35	38	56	199	
Mortality (%)	0.35	0.40	0.14	0.10	0.16	0.17	
Total death	896	1216	2142	2292	382	6928	
Population	8770	9579	23624	34941	34513	111427	
Annual mortality (%)	10.21	12.7	9.06	6.55	1.10		

*The % was calculated on the basis of total population

Table 2. Season wise mortality due to hepatitis in duck

Season	2010	2011	2012	2013	2014	Total
Winter	6	20	13	28	32	99 (49.74%)
Summer	23	8	18	4	5	58 (29.14%)
Rainy	2	11	4	6	19	42 (21.10%)
Total	31	39	35	38	56	199 (0.17%)
Annual mortality%	0.35	0.40	0.14	0.10	0.16	0.17

Table 3. Age wise mortality due to hepatitis in ducks

Age	Number death	Mortality (%)
Duckling upto 5 week	39	19.6
Grower upto 20 week	39	19.6
Adult above 20 weeks	121	60.8
Total	199	100.00

Season wise highest mortality was recorded in winter (99, 49.74%) followed by (summer (58, 29.14%) and rainy (42, 21.10%). Year wise highest mortality was in 2011 followed

by 2010, 2014, 2012 and 2013 (Table 2). However, the overall mortality percentage due to hepatitis was 0.17% for the five years period (Table 1 and 2).

The breed susceptibility to duck hepatitis varied. Highest mortality on hepatitis was recorded in Khaki Campbell (77, 38.69%) followed by Desi (60, 30.15%), White Pekin (50, 25.12%) and Moti (Muscovy) (12, 03%) respectively.

A wide range of pathological lesions were observed. The cardinal post mortem lesions were enlargement and swollen liver and kidney, congested and haemorrhagic liver, distended gall bladder, yellowish patches of discoloration and signs of ascites (Table 4). Clinically, hepatitis was characterized by lethargy, anorexia, blindness, opisthotonus, progressive weakness and ruffled feather and death. The similar clinical signs with duck hepatitis were reported (Radostits, 1998). The susceptibility of death due to a disease may vary on many factors like age, sex, breeds, and season. Duck mortality due to various above cited factors also reported (Mondal *et al.*, 2018).

DISCUSSION

Hepatitis in duck is major problem that contributes morbidities and mortalities particularly in the early age of life particularly in duckling and growers (Chen *et al.*, 2016). Duck viral hepatitis, duck plague and aflatoxicosis are the main causes of hepatic pathology. It has been found that the females are more susceptible to hepatitis than males; it might be due to more reproductive and productive stresses in females. Month wise mortality was higher during winter months of November to February and least during rainy season. During winter months ducks particularly ducklings and grower remains under winter stress which can aggravate the hepatic deterioration and eventually dies of hepatic disorder. Out of the four breeds of duck, Khaki Campbell found to be most susceptible than desi (Pati), White Pekin and

Table 4. Different pathological lesions observed in liver

Pathological lesion in hepatitis	Number	%
Enlargement and swollen liver, kidney	105	52.76
Congested and haemorrhagic liver	48	24.12
Distended gall bladder with diluted bile	25	12.56
Thin fibrous liver	21	10.55
Necrosis of liver tissue and fissure	19	9.54
Yellowish hue of liver	18	9.04
Patches of discoloration	8	4.02
Ascites with hepatic involvements	8	4.02
Pendulous abdomen with ascites	7	3.51

Moti. Khaki being a synthetic birds with high productivity of about 250 egg per year remains under constant stress of egg production, coupled with poor physical fitness in comparison to other breeds (Canolas *et al.*, 2017). Hepatitis is complex disease with wide range of pathomorphological lesions as per different etiological factors, age of birds, nutritional status, immune status and breeds susceptibility. Considering upon these factors different individuals shows different extension lesion in liver and associated organs which have been categorized in Table 4. The causes of hepatitis in duck mainly due to duck viral hepatitis, goose hemorrhagic polyoma virus and non infectious cause of aflatoxicosis, lead

poisoning (Bono and Braca, 1973). Duck viral hepatitis causes severe hepatic pathology mostly in younger ducks. Duck is very sensitive to aflatoxins, the clinical signs may exhibits even in very low dose of aflatoxins in duck. In India, duck hepatitis due to aflatoxins is very epizootic as this species is 200 times more susceptible than chicken (Chen *et al.*, 2013). Metabolism of aflatoxins in duck occurs very quickly, as a result more metabolite of aflatoxin AFB 1-8, 9-epoxyde are accumulated in liver which is very toxic. This metabolite of aflatoxin binds to cell protein, DNA and RNA of the cells, hence reduce protein synthesis. The aflatoxin is also carcinogenic and immunosuppressive (Melissa *et al.*, 2015).

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