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Outbreak of Duck Viral Enteritis in a Vaccinated Duck Flock

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Abstract: Duck viral enteritis (DVE) is a highly contagious disease of migratory waterfowl caused by herpes virus that causes internal bleeding and severe diarrhea and kills many infected birds. The disease is a potential threat to commercially reared, domestic and wild waterfowl. In the present study 67% morbidity rate and 42.2% mortality rate with 45% drop in egg production was observed in the migratory duck flock. The diagnosis was made based on the clinical signs, pathology and supported by the laboratory confirmation. To control further outbreak the healthy birds were vaccinated with live attenuated duck plague vaccine.
Keywords: Duck Viral Enteritis, Vaccinated flock, Outbreak, Live attenuated vaccine

INTRODUCTION

Duck viral enteritis (DVE), also known as duck plague is an acute, contagious viral disease of ducks, geese and swans, caused by duck plague virus (DPV), a virus of the *Herpesviridae* family accounting for a high mortality rate in flocks of ducks, geese and swans and decreased egg production, leading to heavy economic losses [1-3]. Control of the disease is recognized as one of the biggest challenges in avian medicine. In domestic ducks and ducklings DVE has been reported in birds ranging from 7 days of age to mature birds. The present report records an outbreak of duck plague in a vaccinated migratory duck flock of 1000 birds in the age of around 8 months.

MATERIALS AND METHODS

A disease outbreak with sudden mortality in the migratory duck flock of 1000 birds in the age of around 8 months was reported in Nattapatti, Valanthur village, Madurai district, Tamil Nadu. The reported duck flock was vaccinated with the chicken embryo adopted vaccine. The mortality was said to be sudden and persistent with a drop in egg production. A morbidity rate was 67% (670 birds) and mortality rate was 42.2% (422 birds) with drop in egg production of 45% within 4 days of disease outbreak.

Clinical examination of the affected birds revealed depression, inappetance, photophobia, droopiness, ataxia, nasal discharge, ruffled feathers, greenish white watery diarrhea, soiled vents and paresis in the affected birds. Post mortem lesions in the present study were petichal haemorrhages in the intestine (Fig.1), thoracic cavity, abdominal cavities, pericardium, heart, liver and spleen. Free blood in the thoracic and abdominal cavity and intestinal lumen, hepatomegaly, haemorrhages with foci of necrosis (Fig.2), mild diphtheria in the trachea and bran like crusted plaque deposits on the esophageal mucosa were observed. Haemorrhages in ovarian follicles of the female birds were also observed.

Based on the history, clinical observations and gross pathological observations duck plague was suspected. The sample of liver, spleen, kidneys and intestines were collected from the dead birds in 10% buffered formalin for the isolation of the virus. Cloacal swabs were collected from both apparently normal and ailing ducks in 10% phosphate buffer saline for DPV antigen detection.

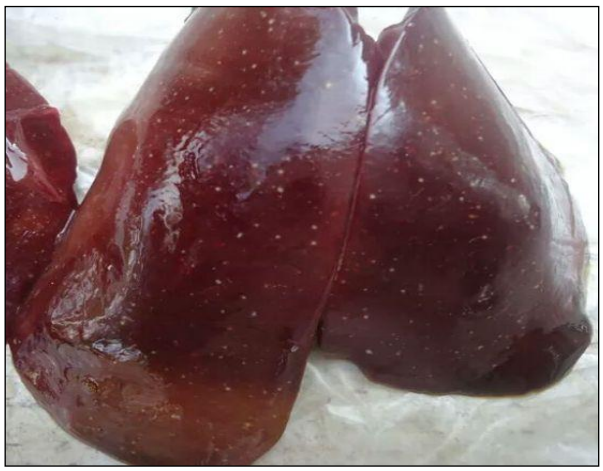

Fig-1: Gross pathological lesions of DVE- hepatomegaly, haemorrhages with foci of necrosis.

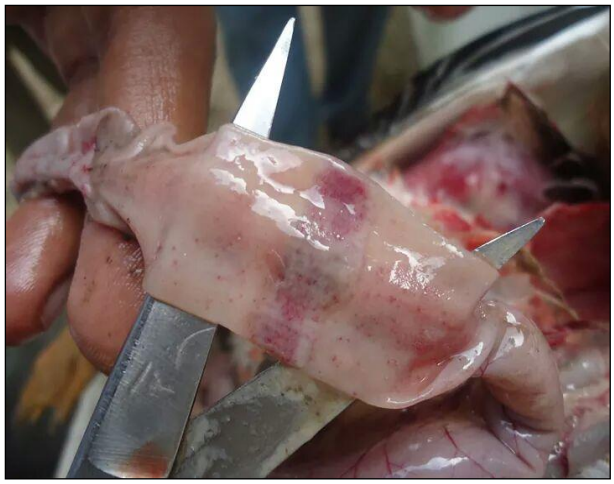

Fig-2: Gross pathological lesions of DVE - Petichal haemorrhages in the intestine

RESULTS AND DISCUSSION

The collected samples were sent to Central Research Laboratory, Chennai, Tamil Nadu and confirmed the disease as Duck Viral Enteritis. The duck flock owner was adviced for proper disposal of carcasses, manure and other wastes, disinfection and thorough cleaning of the duck facilities, fields, tools, utensils and devices, as well as emergency vaccination of the remaining ducks. Live attenuated duck plaque vaccine (Holland Strain) obtained from IVPM, Ranipet, Tamil Nadu was given @ 0.5 ml subcutaneously in the fold of skin inside the wing to all the remaining ducks.

Duck viral enteritis (DVE) also known as Duck plague (DP) is a worldwide disease caused by duck plaguevirus (DPV), a virus of the *Herpesviridae* family. DPV is an important pathogen of ducks, which has caused serious losses in commercial duck production in domestic and wild waterfowl as a result of mortality, condemnations, and decreased egg production [4]. Though ducks are considered relatively resistant birds compared to other members of domestic poultry, infection caused by duck plague virus is important for all age groups of ducks which is characterized by high morbidity and mortality varying from 5-100% depending on the virulence of the infecting viral strain and the immunologic status of the birds [5].

Migratory water fowls are a major factor in the spread of this disease. DVE is usually spread by infected waterfowl that shed the virus in their droppings. It survives in water and may persist in polluted, stagnant and slow moving pools, ponds and waterways. Waterfowl pick up the disease by drinking or swimming in polluted water or by eating contaminated food. The virus may enter susceptible birds through the mouth, nose, cloaca or breaks in the skin. [2,6,7]. The reported duck flock was also migratory in nature and they would have picked up the infection from the contaminated water.

Many outbreaks are associated with the stress factors like extremes of weather and the breeding season on the susceptible birds. In domestic ducks the incubation period ranges from 3–7 days. Mortality usually occurs from 1-5 days after the onset of clinical signs and is often more severe in susceptible adult breeder ducks. In chronically infected, partially immune flocks only occasional deaths occur. Recovered birds may be latently infected carriers and may shed the virus in the faeces or on the surface of eggs over a period of years [8].

Ducks infected with DPV may die without any detectable symptoms or be observed with signs of photophobia, ataxia, watery diarrhea, marked reduction in egg production and high mortality. Adult ducks usually die in higher proportions than young ones, increasing the economic significance of the disease [1]. Diagnosis of the disease is based on the clinical signs, pathology supported by the isolation and identification of the virus. DOT ELISA and counter immuno electrophoreses test are used for the confirmation of the disease by the detection of antibodies to DPV in the serum samples [9, 10]. Immunization of ducks is an efficient way to prevent DEV infection and commonly used DVE attenuated live vaccine provides a good protection [11, 12]. But it is also reported that sometimes this vaccine fails to protect the ducks despite regular vaccination as observed in the reported flock and this might be due to low titre and poor immunogenicity [13].There is no treatment but vaccination in face of outbreak is of value, probably through interference. Control is effected by depopulation, removal of birds from the infected environment, sanitation and disinfection.

CONCLUSION

Immunization of ducks with DVE attenuated live vaccine is an efficient way to prevent DVE infection. If vaccine fails to protect the ducks despite regular vaccination due to low titre and poor immunogenicity, there is no treatment but vaccination in face of outbreak is of value, probably through interference. Control is affected by depopulation, removal of birds from the infected environment, sanitation and disinfection.

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