

Duck Hepatitis



Definition

Duck hepatitis (DH) is a highly fatal, rapidly spreading viral infection of young ducklings characterized primarily by hepatitis. The disease affected ducklings during the first week of age, and death was rapid after signs were observed.



Duck hepatitis is of **economic importance** to all duck-growing farms because of the high potential mortality if the infection is not controlled.

Cause

It can be caused by any of three different viruses, namely duck hepatitis virus (DHV) types 1, 2, and 3. DHV types 2 and 3 of low pathogenicity, they are belonged to RNA picornavirus -No serologic relationship was demonstrated between this virus and that causing duck plague (duck virus enteritis)

Resistance to Chemical and Physical Agents.

-resistant to ether and chloroform, relatively heat stable, and capable of survival for long periods under usual environmental conditions.

-Under more natural environmental conditions, the virus survived at least 10 weeks in uncleaned infected brooders and for longer than 37 days in moist feces stored in a cool shed At 4°C, the virus survived over 2 years and at 20°C for as long as 9 years

Natural and Experimental Hosts.

- In naturally occurring outbreaks, DH type 1 occurred only in young ducklings
- Adult breeders on infected premises did not become clinically ill and - continued in full production.
- Field observations indicated that chickens and turkeys were resistant-
- propagate the virus in the allantoic sac of 9-day-old chicken embryos. From 10—60% of the embryos died by the 5th or 6th day and were stunted or edematous
- Goose embryos were found to be susceptible to the virus, and embryo deaths occurred 2—3 days after allantoic inoculation

cell cultures of duck and chicken embryo origin

Cytopathic effects (CPE) (rounding of cells) and maximum virus titers occurred after 2 days produced growth and CPE in goose embryo kidney cells

.

Transmission, Carriers, and Vectors.

- Under field conditions, DH type 1 spreads rapidly to all susceptible ducklings in the flock. Although high mortality and rapid spread of the disease on farms indicate extreme contagiousness
 - Egg transmission presumably does not take place.
- Recovered ducks may excrete virus in feces for up to 8 weeks PI

Morbidity and Mortality.

- Morbidity is 100%, and mortality is variable in young ducklings infected with DHV type 1.
- In some breeds less than 1 week old, mortality may reach 95%.
In ducklings 1—3 weeks of age, mortality may be 50% or less.-
 - In ducklings 4—5 weeks of age, morbidity and mortality are low or -negligible.

Signs.

Onset and spread of DH type 1 are very rapid, with practically all mortality occurring within 3—4 days.

1-stop moving and squat down with eyes partially closed.

2- Birds fall on their sides, kick spasmodically with both legs, and die with heads drawn back

3-Death occurs within an hour or so after signs are noted. During the height of severe outbreaks

Gross Lesions.

Principal lesions due to DHV type 1 are found in the liver,

1-enlarged and contains punctate or ecchymotic hemorrhages Frequent reddish discoloration or mottling of the liver surface

2-The spleen is sometimes enlarged and mottled.

3-kidneys are swollen and the renal blood vessels are congested



Normal 15-day-old chick embryo (right). Fifteen-day-old chicken embryo inoculated 6 days previously with duck hepatitis virus (DHV) type 1 (left). Note small size, hemorrhage, and edema.



Duckling dead from infection with DHV type 1. Note typical opisthotonos.





Liver with hemorrhagic lesions caused by DHV type 1 infection.





Diagnosis:

- 1- history of high mortalities in young ducklings**
- 2- clinical signs and post mortem findings**
- 3-laboratoris diagnosis**

a-Virus Isolation and Identification of DHV Type 1 :

1-Inoculation, subcutaneously (SC) or intramuscularly (IM), of the isolate into 1—7-day-old DHV type I-susceptible ducklings. The characteristic clinical disease should follow, with deaths often occurring within 24 hours. Ducklings should show the gross pathology attributable to DHV type 1. The virus should be reisolated from the livers to confirm the diagnosis.

2-Inoculation of serial dilutions of the liver homogenate into the allantoic sacs of embryonated duck eggs (aged 10—14 days) from a DHV type 1-freeflock or chicken eggs (aged 8—10 days). DHV type 1- infected duck embryos should die within 24—72 hours; chicken embryos are more variable and erratic in their response and usually take 5—8 days to die. The allantoic fluid is opalescent or a pale greenish- yellow. Gross pathological changes in the embryos include stunting and subcutaneous hemorrhages measured must be questioned in the light of other reports

b- serological tests:

1-A rapid and accurate diagnosis of DH type 1 can be made using the direct FA technique on livers of naturally occurring cases or inoculated duck embryos

2- VN test and AGPT

DD

Differentiate from Duck plague (viral enteritis), Duck septicaemia (anatipestifer), coccidiosis, Newcastle disease, Influenza and a 'Type II Variant' hepatitis caused by Astrovirus

Prevention and Control

Management Procedures:-

Duck hepatitis type 1 can be prevented by strict isolation, particularly during the first 4—5 weeks. Where the disease is prevalent,
- vaccination of breeder ducks was used as part of the program.

Immunization.

Resistance against DH type 1 may be conferred to ducklings by three methods:

1-injection of immune serum or yolk as described under “Treatment; Antiserum, 0.5 ml serum of recovered birds given intramuscularly.

2-immunization of breeding stock to ensure high levels of passively transferred antibody in the hatched ducklings

3- direct active immunization of ducklings with live avirulent strains of DHV type 1.



Attenuated DHV type 1 strains suitable for vaccine use have been

produced by passage in chicken embryos day-old ducklings inoculated by the IM, intranasal, or foot-web route.