

***HEMORRHAGIC NEPHRITIS-  
ENTERITIS OF GEESE  
(HNEG)***

**“Goose polyomaviriosis.”**

**by**

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**It is a systemic, highly lethal disease and it is also the only polyomavirus infection described to date in a poultry species.**

**Polyoma viruses are supposed to have a very narrow host range.**

# CAUSE

1. The HNEG is a member of Polyomaviridae.
2. Virus is naked, spherical and show icosahedral symmetry,
3. Genome is a circular, ds-DNA, resistance to Heat ,freezing-thawing and lipid solvents.
4. GHPV replicate in nucleus of cultured or tissues cells of infected goslings.
5. Virus is easily detected in by immunofluorescence, using serum of HNEG recovered geese.
6. No genetic variability among field isolates and are highly stable.
7. HNEG was reproduced by s.c or i.p. inoculation of 1-day-old goslings, death occurs between 6-8 days pi..
8. Virus can propagated in primary culture of kidney epithelial cells from 1-day-old goslings,;Cytopathic (granulations and vesicles are seen in the cytoplasm).by day 5 PI.

# **EPIDIMIOLOGY**

- 1. Cases of HNEG are observed in winter due to climatic conditions or weakness of goslings hatched from light-conditioned breeders.**
- 2. HNEG affects only growing geese.**
- 3. Other waterfowl species appear to be refractory.**
- 4. Infection of birds over 4 weeks of age seemed to be carrier.**

# **TRANSMISSION**

- 1. Infected birds excrete virus in their feces, resulting in environmental contamination.**
- 2. Vertical transmission of the virus through egg has not been confirmed or excluded.**
- 3. No biologic vector appears to be involved.**

# **INCUBATION PERIOD**

- 1. Inoculation of day-old goslings results in death within 6-8 days.**
- 2. The incubation period in 3-week-old goslings lasts for up to 15 days.**

# **SIGNS**

## **ACUTE:**

**Clinical signs develop only in goslings from 4-10Ws.**

**A few hours before death; birds sit alone, away from the flock, stay in a coma, and die.**

**Morbidity is ranged from 10 to 80%.**

**Nervous signs, such as opisthothonos, are observed after experimental or infections of goslings.**

## **Chronic:**

**Form leads to urates deposits on viscera and in joints, resulting in lameness. Mortality is limited to a few birds every day, up to 12 weeks, lasting until the beginning of the force-feeding period.**

# **LESION**

- 1. Edema of s.c connective tissues, gelatinous ascites, inflammation of kidneys and HE.**
- 2. Renal dysfunction leads to an increase of blood uric acid concentration; geese that die after a chronic infection usually show visceral gout and urates in the joints.**
- 3. Gross lesions of enteritis are associated with necrosis of intestinal epithelium.**
- 4. Hemorrhagic foci observed in most tissues, particularly in acute infections.**
- 5. EM-examination of infected tissues shows aggregated virions in nuclei and large vesicles of dense material, including optically clear centers, in the cytoplasm of about 20% of the infected cells, in culture cells or goose tissues.**

# **IMMUNITY**

**Immunological aspects of HNEG have so far received little attention.**

- 1. Neutralizing antibodies are detected in previous infected birds, and their transmission to the progeny seems very efficient.**
- 2. Goslings hatched from infected breeders are refractory to experimental infections even with a high titer virus inoculums.**
- 3. Duration of immunity has not been determined.**



# **DIAGNOSIS**

- 1. Isolation and Identification of GHPV can be detected in material from actively infected or non clinically infected carrier geese.**
- 2. Detection of GHPV genome is a more reliable way. using DNA extracted from infected tissues (liver, spleen, and kidney) are efficient and reliable. In carrier birds, PCR assays can be performed on blood samples or cloacal swabs.**
- 3. Serologic response is greatly variable, so serology received little attention as a tool for diagnosis. In contrast, virus persists in infected birds for months, or years, virus detection tests are more reliable.**

# **DIFFERENTIAL DIAGNOSIS**

**Lesions of ascites, s.c edema, visceral urates, and nephritis in 4-10 week-old goslings are suggestive of HNEG.**

**Similar lesions, may be associated with goose parvovirus.**

# PREVENTION

1. Hygienic measures to prevent spread of virus from carrier goose to susceptible ones.
2. Prevent exposure to stress or cold.
3. Hatchery sanitation to limit early exposure of goslings.
4. Vaccination against pasteurellosis should be practiced with extreme caution in flocks affected with HNEG.

# VACCINATION

- 1. Vaccination of breeders is indicated to provide maternal immunity to goslings, when they are critically susceptible to virus infection.**
- 2. An autogenous vaccine, inactivated, and alumin-adjuvante is currently under trials.**
- 3. A vaccination program in breeder flocks relies on two administrations before each laying period. In case of high field challenge,**
- 4. vaccination of growing goslings may be indicated to induce an active immunity to protect birds throughout their entire lives.**

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