

MAREK'S DISEASE

Pathology description

Marek's disease is a viral tumor-causing disease of chickens and is caused by 6 different herpes viruses that primarily affect young birds. There are 4 different forms of Marek's:

- Cutaneous (skin form)
- Visceral (internal-organ form)
- Neural (nerve form)
- Ocular (eye form)

There are four phases of infection:

- Degenerative changes caused by early productive-restrictive virus infection,
- Latent infection,
- Another phase of cytolytic infection associated with permanent immunosuppression
- Nonproductive infected lymphoid cells that may or may not progress to lymphoma formation, a "proliferative" phase.

The route of infection is inhalation. The virus then replicates in the lungs (in non-lymphoid cells). An acute phase of the disease can be seen within 72-96 hours where the lymphoid system, primarily bursa and thymus, undergoes cytolytic changes. Infected birds normally recover from the acute phase of the infection after 6-7 days and become latent. Infected lymphocytes carry the virus throughout the body, causing cell-associated viremia. Eventually, virus will be shed in the environment via feather debris and dander after the secondary cytolytic infection occurs in the feather follicle epithelium (~2 weeks post infection)

Symptoms

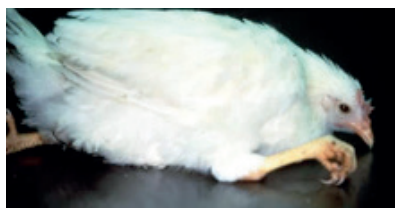
The signs and symptoms of Marek's Disease vary depending on the form of disease present:

Cutaneous form: Enlarged reddened feather follicles and white bumps on the skin that form brown crusty scabs.

Visceral Form: Tumors on internal organs including heart, ovary, liver and lung.

Neural form: Characterized by one, all, or none of the following symptoms -

- Progressive paralysis, usually of the leg or wing, a typical leg-paralysis victim will have one leg extended forward and one leg extended back. A swelling of the sciatic nerve is the cause.
- Weight loss
- Labored breathing
- Diarrhea
- Starvation and death due to an inability to reach feed and water and to trampling by penmates.



Ocular form:

- Gray eye color
- Misshapen iris
- Weight loss
- Blindness
- Death

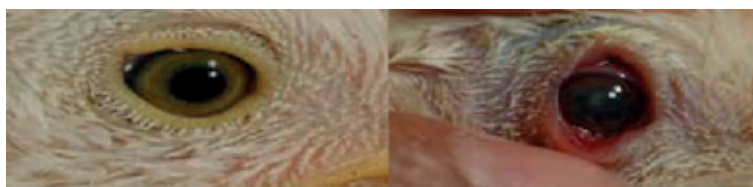


Figure 1: The normal eye on the left had sharp margins of the pupil where as within the affected eye, the pupil margins were irregular and the cornea is cloudy.

Costs of the disease

- Morbidity (number affected) in unvaccinated flocks can reach 60 percent. Vaccinated flocks fare better with less than 5 percent affected. Mortality is high in affected birds reaching nearly 100 percent over a 10-week period.
- Increased feed cost

- Less weight gain

Vectors

- **Environment**

The virus particles that cause Marek's disease can survive for months in chicken house dust, dander and litter.

- **Material**

Contaminated equipment

- **Animal**

MDV can be transmitted by direct and indirect contact between birds. Transmission is primarily by airborne route as the virus is shed in epithelial cells of the feather follicle, dander, chicken house dust, feces and saliva.

- **Working method**

Insufficient cleaning

→ MAIN VECTOR: contaminated birds

Preventive action

- Breed for resistance.
- Good sanitation and ventilation.
- Brood chicks separately from adults until 5 months of age.
- Keep turkeys with chickens (this may help the chickens with Marek's, but can lead to black head disease in the turkeys).

Controlling action

A wide variety of drugs is available for the treatment of Marek's disease, frequent use of drugs has led to widespread drug resistance.

Advised Protocols

For every possible vector, a hygiene protocol must be implemented. See these Specific Purpose Protocol:



PERSONAL
HYGIENE



TRANSPORT



HOUSING
HYGIENE