



MAREK'S DISEASE

(MD, Range Paralysis, Gray Eye)

Sarah Tilley, North Carolina State University

David D. Frame, Utah State University Extension Poultry Specialist

Mark C. Bland, Cutler Associates International

What is it?

Marek's disease (MD) is the most commonly diagnosed disease in backyard chickens. Many types of birds can be affected, but chickens seem to be the most susceptible. Marek's disease is caused by a herpes virus that results in tumors in various parts of the bird. Once infected, the birds become carriers for life. The virus is present everywhere in the environment where chickens are raised. The virus does not cause harm to human beings. It must be noted that most, if not all, chicks hatched in North America are vaccinated for MD.^{1,2,3,4,6,7}

How is it spread?

Feather dander (white covering that wraps the developing feathers) is the most common culprit of transmission; this dander can be carried and stored in dust. Other routes of infection include feces, saliva, and blood. Virus particles in the dust can be blown from farm to farm or carried on clothes, people, and equipment. The virus can survive in the environment for months to years without proper cleaning. It has not been shown to pass on through the egg.^{1,2,3,4,7}

What are the symptoms?

There are three forms of symptoms that the virus can cause:

- **Neural form.** This results in tumors in the nerves (Figure 1) and brain. Tumors of the nerves will cause weakness to paralysis (Figures 2 and 3) of the wings and legs causing the chickens to have trouble moving and thereby unable to get to food and water.
- **Visceral form.** This causes tumors of the internal organs, such as liver, spleen (Figure 4), gonads, feather follicles (Figure 5), heart, kidney, and proventriculus.
- **Ocular form.** This form results in changes in color of the iris in the eye from the normal orange/red/yellow to gray. It may also cause the pupil to be irregularly shaped (Figure 6).

A chicken affected with MD can show any one or combination of these forms. Marek's disease does not usually result in immediate death; instead, birds will often die of dehydration, starvation, and persecution from being weak and down. Birds will become progressively weaker and will begin losing weight. If affected birds are not paralyzed, they may suddenly die without warning from the internal tumors.^{1,3,4,7}

How do I know if my chickens have Marek's disease?

Diagnosis of MD can be made on a combination of flock history, symptoms, necropsy findings, and tests run on affected organs. Marek's disease will often affect chickens from 4 to 16 weeks old up to 3 years of age, but can occur any time throughout their lifetime. Chickens showing weakness or paralysis should be considered for euthanasia (humane death) and submitted to a qualified diagnostic laboratory for examination. Submitting affected birds to a lab is important so that a cause of illness or death can be identified. The information gained from submitting birds to the lab can provide valuable information as to what is going on in the flock. There is no treatment for MD, and affected chickens will continue to shed virus and be a constant source of infection to surrounding flock mates.^{1,2,3,4,6,7}

How did my chickens get sick if they have been vaccinated?

In general, vaccination does not prevent the virus from entering the bird; instead, it prevents or decreases the potential for clinical signs and tumor formation from occurring. The MD vaccine does not cause clinical signs in vaccinated birds. The field MD virus is everywhere and is found in the environment. Chickens contract the field strain of MD virus from their environment. A small percentage of vaccinated chickens will develop signs of MD because of the immune system not being fully functional, overwhelming exposure to a field strain of MD virus, and/or possibly from exposure to a pathogenic strain of MD virus.^{2,4,7} There are many reasons why vaccinated chickens may occasionally show clinical disease associated with MD. Among these reasons are:

- Improper vaccine storage.
- Improper handling and injection of vaccine.
- Time difference between vaccination and when the bird was exposed to field virus.
- Weak vaccine strains interacting with strong virus strains.
- Breed or strain susceptibility differences.
- Stresses that may affect the birds' immune system, such as concurrent infection with

other diseases, environmental conditions, age of bird, etc.

What do I do if I my chickens seem to have MD?

The following steps should be taken if you suspect that birds in your flock are affected with MD:³

- Isolate affected bird(s) to an area away from other chickens.
- When tending to your flock, visit the isolated affected chickens last, at the end of the day.
- Contact the local veterinary diagnostic laboratory for instructions on what needs to be done to arrive at a definitive diagnosis. Normally, affected chickens are submitted to the laboratory, euthanized, and tests done to investigate the cause of the problem.
- If a diagnosis of MD is made:
 - a. Do not put young and/or unvaccinated chickens in a pen from which affected birds were housed.
 - b. Before introducing a new flock of chickens, remove dust, feathers, and fecal material from the "infected" pen. Clean thoroughly. Follow up by sanitizing with 10% chlorine solution on all cleaned non-porous surfaces such as roosts, wire enclosures, nests, feed pans, and waterers.

What can I do to help prevent illness associated with MD?

Prevention of tumor formation is done through vaccination. Vaccination is done at the hatchery (if the hatchery has the capabilities) by injection into the egg during incubation or as an injection under the skin immediately after hatching. It is important that MD vaccination take place either prior to hatch (at 18 days of incubation) or shortly after hatch. The MD vaccine is very protective in reducing clinical signs of MD caused from infection by field strains of MD virus. However, the vaccine is very fragile, and the effectiveness can be compromised if not handled properly. Because of the high transmission potential of field MD virus, it is very important to raise young chickens (<6 months) away from adults.^{1,2,3,4,6,7}

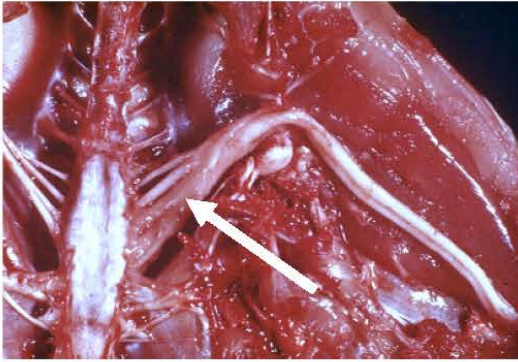


Figure 1. Sciatic nerve; left normal, right enlarged with tumor (arrow).



Figure 2. Paralyzed chicken with huddling stance.



Figure 3. Chicken with one paralyzed leg and one normal leg.

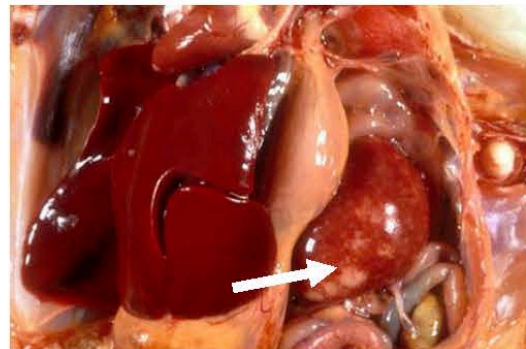


Figure 4. Tumor in the spleen (arrow).



Figure 5. Tumors in the feather follicles of the skin.



Figure 6. "Gray eye" (discolored iris) and irregular pupil size.

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