8-1-1949

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Recommended Citation
Weaver, G. S., "Newcastle Disease: A Highly Contagious Disease of Chickens and Turkeys" (1949). SDSU Extension Leaflets. 125.
https://openprairie.sdstate.edu/extension_leaflets/125

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Newcastle Disease

A Highly Contagious Disease of Chickens and Turkeys

Extension Leaflet 123
Extension Circular 123

August, 1949
Newcastle Disease

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Newcastle disease is a highly contagious disease of chickens and turkeys caused by a virus and characterized by respiratory and nervous symptoms. The mortality will range from 50% in young birds to 10% in old birds. The control of this disease is largely a sanitary problem. Two types of vaccines—killed virus and live virus (modified or active)—are being used with varied results.

History

This disease of poultry has been recognized in several foreign countries during the past twenty years. The name of the disease is derived from Newcastle, England, where one of the more important outbreaks occurred in the late twenties. The disease probably was present in the United States for a number of years before it was properly diagnosed. In 1944, California recognized the disease under the name of "pneumo-encephalitis." Not long after, the disease was diagnosed in New Jersey and then in other states; by 1947 it had been diagnosed in thirty states, including South Dakota.

Cause of the Disease

The cause of the disease is a virus. A virus is a disease producing organism somewhat like a germ but much smaller, so small in fact that it can not be seen with an ordinary microscope. When a bird is infected with Newcastle disease it throws off this virus in the droppings and other excretions. Susceptible birds come in contact with this infected material such as contaminated feed, and the disease is introduced into the well bird. This virus may be killed by sunlight, heat and various disinfectants such as cresol compound.

The most common method of introducing the disease into a flock is by the purchase of new birds, either chicks or adult birds.

Chickens and turkeys of all ages are susceptible to the attacks of this virus. The average time between exposure and the development of symptoms is about five days.
Symptoms

Usually the first symptom noticed is difficult breathing. The birds may wheeze, cough, sneeze, gasp or rattle. They are depressed and weak and sometimes a stupor develops. Nervous symptoms soon are apparent. Twitching of the head and neck, paralysis, shaking, jerking, walking in circles and other convulsive movements frequently occur. Incoordination of the muscles may be complete or partial and this is manifested by twisting the head to one side, or even up-side-down, or drawing it backward or downward toward the breast. The onset of the disease is sudden and some unexpected deaths may take place. Diarrhea is an early symptom and the droppings are watery, profuse, and greenish white.

In laying flocks there is almost a total loss of egg production. Eggs are laid on the floor and they are soft shelled and misshaped. It may be six weeks before the flock is back to normal egg production. Occasionally the hens go into a molt which would delay egg production for an even longer period.

Diagnosis

The disease may be confused with other diseases of poultry. Infectious bronchitis, laryngotracheitis, chronic fowl cholera, fowl paralysis and vitamin deficiencies present similar symptoms. It requires technical skill and experience to diagnose this disease properly and a veterinarian should be consulted. The most conclusive evidence is obtained by laboratory procedures. Recently sickened living birds are the best subjects to submit to the laboratory for tests. The Animal Health Laboratory, South Dakota State College, Brookings, South Dakota, is equipped to make these tests.

Control

The first thing to do is get a diagnosis. Consult your veterinarian. It may be necessary to submit some sick birds to the laboratory. If Newcastle disease is diagnosed, the State Livestock Sanitary Board, Pierre, South Dakota, should be notified.

No medicinal treatment is known. Control depends on sanitary management practices. If any birds are sick the whole flock should be quarantined. If the birds are very sick they had better be destroyed as they will seldom make economical gains. All dead birds should be burned or buried. Thoroughly clean the brooder house and hen house. Scrub the floors with hot lye water—one pound of
lye to thirty gallons of water. Then disinfect the floor and walls with a good disinfectant such as a 5% solution of compound cresol. Disinfect all utensils such as feeders and tools.

Improperly managed hatcheries may spread the disease by the distribution of infected chicks. Physical facilities of hatcheries should permit thorough cleaning and disinfecting. The employees should be thoroughly trained in the practice of hatchery sanitation. Hatching eggs should be accepted only from flocks free of the disease. Frequent inspection of supply flocks and their egg records would help to prevent trouble. A hatchery should not accept eggs from a diseased flock for thirty days after the disease has abated.

Isolation and quarantine are the first principles in controlling any contagious disease and especially in the control of Newcastle disease. It is absolutely necessary to break the contact between infected birds and well birds.

If the disease is present in the chicks the caretaker of the sick chicks should not go near the laying flock and vice versa. Visitors should not be allowed in the poultry yards or houses. Dogs and other animals should be kept out of the poultry yards. Poultry shows should be marked off. If any birds are exhibited they should be marketed directly from the show and not returned to the farm. Poultry crates should be thoroughly cleaned and disinfected. If it is necessary to bring new birds on the place, they should be quarantined to await developments. When egg shipments are resumed after an outbreak, new crates should be used. Contaminated feed bags may spread the disease. "Vigilance" is the watchword. Carelessness will lead to damaging results.

**Vaccination**

As an adjunct to sanitary management in controlling and preventing Newcastle disease, vaccination has a place in preventing the spread of the disease. On the basis of a large number of trials, the United States Department of Agriculture has authorized two types of vaccines — "live" and "dead." The live virus may be either active or modified. Which form of vaccine to use depends in part on the prevalence of the disease in the locality, and in part on the purpose for which the chickens are being grown. The killed or dead virus may be preferred for broilers and the live virus for young breeding stock. The dead or inactivated virus is a product in which the virus has been killed by the addition of formalin. It
gives only a temporary immunity. The main advantages of this product are that its use will not introduce an active virus onto the farm and that it produces no reaction in the birds. An important disadvantage is that some of the birds fail to respond to the treatment. This failure may be even as large as 40% in young birds and 15% in grown birds. The length of immunity may vary from three weeks to three months.

The modified virus is a live virus but propagated in a different way than the live virus. It may be propagated through duck eggs or some other special method of cultivation. The live virus is propagated on hen eggs. Whether modified or active, it is important to remember that they are both alive. With either of these products, the immunity is more durable than with the killed virus. Furthermore there is a higher percentage of “takes” as compared with the killed virus. This live virus has some disadvantages. By its use, an active disease-producing agent is introduced into the flock even though it may be a weak strain. There may be some systemic reaction and even some mortality. Any reaction in a laying flock would cut down egg production. However, vaccination of a laying flock should be only an emergency measure resorted to in case of an outbreak. If vaccination with live virus is to be done it should be done long before egg production begins.

**When To Vaccinate**

Vaccination is not out of the experimental stage. Widespread vaccination is not advisable and not necessary. The poultry flock on the general farm is fairly well isolated and unless there is an emergency it is not necessary to vaccinate this type of flock. There may be instances where just the young chicks are sick and the laying flock is well that it would be desirable to vaccinate the older birds but only if the laying flock is kept separate.

The difficulty in vaccinating exposed birds is that the incubation period of natural infection and the time it takes for vaccination to take effect is the same so frequently the vaccination is too late. If the birds are all sick vaccination is useless. Birds which are affected with some other disease should not be vaccinated until they have recovered. If it is necessary to vaccinate the young birds where there is also a laying flock there should be no contact between the two groups. A different caretaker should look after each group. Vaccination will lower the production in a laying flock.
Vaccination may be practiced on poultry farms in thickly populated poultry areas where just a wire fence may divide one poultry farm from another. After adult birds have recovered from the disease or if they have been vaccinated recently, they transmit some immunity to baby chicks through the eggs. This parental immunity in chicks is transient but is of protective value for about three weeks. In some areas where the disease is prevalent there is an advantage in using hatching eggs from immune hens and some hatcheries are making this a practice. Ordinarily the best time to vaccinate is when the birds are four or five weeks old. In case of an emergency they may be vaccinated at any age.

Turkeys are susceptible to Newcastle disease and when it is advisable to vaccinate chickens on any farm, the turkeys should be vaccinated also, especially when they are running with the chickens. Other farm birds may be ignored. Pheasants also are susceptible to this disease.

If your Flock has Newcastle...

1. Consult your Veterinarian.
2. Quarantine the whole flock.
3. Burn or bury all dead birds.
5. Clean and disinfect poultry houses and equipment.