Infectious Laryngotracheitis (ILT) in Poultry

Infectious laryngotracheitis (ILT) is an acute, highly contagious respiratory disease primarily affecting chickens.

ILT is caused by Gallid herpesvirus type 1, an enveloped DNA virus. Different strains show marked differences in virulence. Respiratory symptoms can therefore range from mild to severe. Flocks affected by ILT may show mortality and/or reduced egg production in layers. Although there is no treatment for ILT, vaccines can be used to prevent infection.

Occurrence
ILT is present worldwide in areas where dense poultry production takes place. Chickens are the natural host for the virus, but pheasants can also be affected. It most commonly affects chickens older than 20 days of age, but it can also affect younger birds in areas with high bird density.

Transmission
Contaminated equipment, contaminated premises (litter), or carrier birds can bring viable viral particles into contact with naïve animals. It is thought that air currents play an important role in the transmission of this disease. The portal of entry for the ILT virus is the ocular and upper respiratory mucosa, where the virus replicates without evidence of viremia. Incubation is relatively long in field cases, about 1-2 weeks from the introduction of the virus to the appearance of clinical signs.

Clinical signs
For infections involving low pathogenic strains of ILT, clinical signs may be the same as those for many other respiratory diseases of poultry (non-specific upper respiratory signs). Watery eyes, lacrimation, swollen eyelids, oral and nasal discharge, and/or inflamed infraorbital sinuses are seen in combination with rales and coughing. For infections involving more pathogenic strains of ILT, dyspnea (difficulty breathing) is evident. Birds may extend their necks to facilitate the air transit through the inflamed and mucus-filled trachea while making loud wheezing sounds. Affected birds may cough and shake their heads and necks in an attempt to eliminate the tracheal secretions. Consequently, blood can be seen in the beak and feathers of some animals. Decreased egg production and mortality vary depending on the pathogenicity of the strain. For uncomplicated infections, birds generally recover after 2 weeks.

Necropsy findings
For infections involving low pathogenic strains of ILT, common lesions include edema of the conjunctiva, nasal turbinates, sinuses, larynx, and trachea. The tracheal mucosa may have some marked congestion with mucoid exudate. For infections involving highly pathogenic strains of ILT, it is common to find hemorrhage of the mucosal surfaces of the trachea (Figure 1). Tracheal mucus is often mixed with blood and necrotic epithelial cells. On occasion, this material hardens, forming tracheal plugs that lead to suffocation.
Infectious Laryngotracheitis (ILT) in Poultry

Figure 1. Trachea of a broiler chicken presenting edema, congestion, and petechiae. Photo credit: Dr. G. Lorenzoni.

Diagnosis

With pathogenic strains of ILT, clinical signs and necropsy findings are sufficient for a presumptive diagnosis. However, in cases involving milder ILT strains, clinical signs may not clearly indicate ILT. The most classic test for diagnosis of ILT is microscopic examination of the trachea (histopathology). In positive samples, multinucleated epithelial cells with eosinophilic intranuclear inclusion bodies can be detected. The virus can also be isolated into chicken embryos.

Relevant differential diagnoses

Pox, avian influenza, Newcastle, and infectious bronchitis.

Prevention

Avoid mixing susceptible animals with those that have previously recovered from ILT, or with those that have been vaccinated with live vaccines of ILT, as recovered/vaccinated birds can be expected to be asymptomatic carriers.

Vaccination of layers in endemic zones is a common practice. Several types of vaccine are available: chick embryo origin (CEO), tissue culture origin (TCO), and Pox-vectored. The CEO vaccine is quite effective, but there is a risk for this strain to become more pathogenic as it multiplies in birds. It can also have a negative impact (full-blown disease) in unvaccinated birds that are housed in proximity with the vaccinated flocks. Show birds should be vaccinated with TCO several weeks before taking them to the show. Due to the slow replication of this virus, vaccination of unaffected birds in the face of an outbreak can be effective to stop the disease, but this requires early diagnosis. Broilers can be vaccinated in the case of a regional outbreak.

If the premises have been affected by an ILT outbreak, disinfect the buildings and wait 3-4 weeks before repopulating. Most commercially available disinfectants, used at recommended concentrations, will inactivate the virus. The agent is heat-labile and can be destroyed by increasing the temperature of the barn to 38 °C (approx. 100 °F) for 3 consecutive days. Composting of the litter inside the barn can be useful to bring the temperature of the building up, which will inactivate the virus.

References


Authors

Gino Lorenzoni
Assistant Professor, Poultry Science and Avian Health
agl20@psu.edu
814-863-7302

eXtension.psu.edu

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability, or protected veteran status.

This article, including its text, graphics, and images ("Content"), is for educational purposes only; it is not intended to be a substitute for veterinary medical advice, diagnosis, or treatment. Always seek the advice of a licensed doctor of veterinary medicine or other licensed or certified veterinary medical professional with any questions you may have regarding a veterinary medical condition or symptom.

© The Pennsylvania State University 2022
Code: ART-6419