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Popular Article

Deadly Cough: Understanding Infectious Laryngotracheitis (ILT) In Poultry

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Introduction

Poultry farming is expanding rapidly and plays a crucial role in ensuring global food security. However, this growth, combined with factors like climate change and an increasing poultry population, has led to the rise of various diseases. One such disease is Infectious Laryngotracheitis (ILT), a contagious respiratory illness that mainly affects chickens and has become a significant threat to poultry health and welfare.

While chickens are the main animals affected, other birds like peafowls and pheasants can also get sick. On the other hand, birds like crows, ducks, pigeons, and sparrows are generally not affected. ILT causes problems like more illness, moderate death rates, slower growth, fewer eggs, and higher costs for vaccines, health measures, and treating secondary infections.

Etiology

The disease is caused by Gallid alphaherpesvirus 1, commonly known as Infectious Laryngotracheitis Virus (ILTV). This virus belongs to the Herpesviridae family, which means it can establish lifelong infections in birds, sometimes reactivating under stress.

Transmission

Infectious Laryngotracheitis Virus (ILTV) spreads mainly through direct contact between birds, especially through their respiratory fluids. The virus enters through the nose, mouth, or eyes. Mixing vaccinated and unvaccinated birds increases the risk of transmission. Unlike some other diseases, ILTV does not pass from parent birds to chicks through eggs. Birds that recover from ILTV can still carry the virus and infect healthy ones, though birds that are actively sick spread it more easily.



ILTV can spread through direct contact with sick birds or indirectly through contaminated objects like equipment, litter, feed bags, feathers, dust, vehicles, footwear, and clothing. The virus has also been found in water systems, allowing it to infect other birds through drinking water. Insects like darkling beetles and mealworms can carry the virus for weeks after an outbreak. Dogs and cats may also spread it by moving infected bird carcasses. Additionally, wind can carry the virus from one farm to another, making it even harder to control.

Epidemiology

ILT was first reported in the USA in 1925 and later spread to many countries worldwide. It was also the first poultry viral disease for which a vaccine was used.

Today, ILT affects poultry in North America, South America, Europe, Asia, Africa, and Oceania. Factors like high flock density, poor biosecurity, and improper vaccination contribute to frequent outbreaks. The disease mainly affects birds over three weeks old, with mortality rates ranging from mild (0.1–2%) to severe (up to 70%).

ILT virus (ILTV) can remain hidden (latent) in recovered birds, especially in the trigeminal ganglion. Stress factors like transport, mixing flocks, or the start of egg-laying can reactivate the virus, leading to further spread. Backyard poultry can also act as a source of infection for commercial farms.

The disease was first reported in India in 1964 at a veterinary college poultry farm in Mathura, Uttar Pradesh. Subsequent cases were recorded in the late 1960s.

Since then, ILT has been detected in various states across India. Reports indicate its presence in northern regions such as Haryana, Rajasthan, and Uttar Pradesh. In southern India, cases have been observed in Andhra Pradesh, Telangana, Karnataka, and Tamil Nadu. The disease has also been documented in West Bengal.

The widespread occurrence of ILT highlights the importance of continuous surveillance and preventive measures to safeguard poultry health and production.

Pathogenesis

How Does the Virus Enter the Bird?

ILT mainly spreads through the air and infects chickens when they breathe in the virus or get it in their eyes. Once inside, the virus quickly starts multiplying in the lining of the eyes, nose, throat, and upper airways. The highest amount of virus is found in these areas between 4 and 6 days after infection.

What Damage Does It Cause?

As the virus spreads, it destroys the cells lining the trachea (windpipe) and eyes, causing severe damage. This can lead to symptoms like coughing, difficulty breathing, and even blood-tinged mucus.



The virus can also move deeper into the body, reaching organs like the liver and intestines, though scientists are still figuring out exactly how this happens. The infected trachea continues shedding the virus in secretions for up to 10 days, making it easy to spread to other birds.

How Does the Body Fight Back?

When ILT infects a chicken, the bird's immune system reacts by producing chemicals that cause fever, swelling, and a rush of immune cells to fight the virus. Special immune cells, like CD4+ and CD8+ T-cells, work to eliminate the infection. If the immune response is strong, the bird can recover, but the virus is never truly gone.

Can the Virus Come Back?

ILT is a herpesvirus, meaning it has a sneaky ability to "hide" in the bird's body, specifically in a nerve center called the trigeminal ganglion near the brain. Even after a chicken seems healthy again, the virus can stay dormant in its body. Stress, like overcrowding or illness, can wake the virus up, causing the bird to start shedding the virus again and spreading it to others.

Why Is This Important for Poultry Farmers?

Since recovered birds can still carry the virus and spread it later, ILT can be a long-term problem in flocks. Controlling stress, using proper biosecurity, and vaccinating birds can help prevent outbreaks. Understanding how ILT spreads and affects chickens can help farmers protect their flocks and reduce losses.

Clinical Signs of Infectious Laryngotracheitis (ILT)

ILT presents in three forms: per acute, acute, and chronic.

1. Per acute Form

This is the most dangerous and rapidly spreading form of ILT, often leading to sudden deaths, with mortality rates exceeding 50%. Infected birds may appear dull, have swollen eyelids, and produce excessive tears. In some cases, healthy-looking birds may die suddenly without any warning signs. Common symptoms include difficulty breathing, gasping for air, and coughing as the birds try to clear mucus and clotted blood blocking their airways. Gurgling and rattling sounds can also be heard. Blood clots are often found on the floor, cages, and feeding areas. Birds affected by this form usually die within three days.

2. Acute Form

This form is less severe than the per acute form but still causes breathing difficulties. Initially, birds may become weak, eat less, and show signs of depression. Between 4 to 6 days after infection, their body temperature rises. The airways may get blocked with blood and mucus, making birds breathe with their beaks open. They may produce a high-pitched squawk and wet breathing sounds. Other



symptoms include foamy secretions in the inner corners of the eyes, nasal discharge, and sinus swelling. The disease can infect nearly all birds in a flock, with death rates ranging from 10% to 30%, lasting up to 15 days. In layer flocks, egg production may drop sharply or stop entirely, though it gradually recovers over time.

3. Chronic Form

The chronic form is milder and often resembles other respiratory diseases. Birds may look weak, cough, shake their heads frequently, and produce wet breathing sounds. Swelling of the sinuses may lead to a characteristic "almond-shaped" eye appearance. Egg production may drop slightly (up to 10%), and affected birds may experience slower weight gain. The infection rate can go up to 5%, but deaths are rare, usually below 2%.

This form is commonly seen in flocks that have previously recovered from an outbreak, as the virus can persist in some birds, making them long-term carriers.

Gross Lesions of Infectious Laryngotracheitis (ILT)

The severity of gross lesions in ILT varies, but they are mainly confined to the upper respiratory tract and sinuses.

In the per acute stage, affected birds exhibit inflammation of the nasal passages with excessive mucus (mucoid rhinitis) and severe tracheal bleeding (haemorrhagic tracheitis). In some cases, the infection extends into the lower respiratory system, leading to the accumulation of thick, yellow, cheese-like exudate (caseous plugs) in the primary bronchi.

During the acute phase, thick, yellow diphtheritic membranes firmly adhere to the larynx and upper tracheal lining, sometimes accompanied by haemorrhages. If these membranes grow excessively in the larynx and syrinx, they can block airflow, potentially causing asphyxiation and death. In birds with chronic or mild infections, the trachea may contain excessive mucus, with or without diphtheritic material. Pseudo membrane formation, consisting of fibrino-necrotic exudates attached to the upper respiratory tissues, is also observed in some cases.

Apart from tracheal involvement, ILT may also cause conjunctivitis, leading to swelling, congestion, and excessive eye discharge. The nasal passages often show inflammatory changes with heterophilic exudate. Although the lungs and air sacs are not commonly affected, some birds may develop lung congestion and thickened air sacs with caseous material inside.

Microscopic lesions In Infectious Laryngotracheitis (ILT)

Mainly affect the conjunctiva, trachea, and lungs. The conjunctiva shows redness, swelling, and cell loss, leading to inflammation and debris accumulation. In the trachea, early inflammation progresses to epithelial thickening, necrosis, and sloughing, exposing blood vessels that rupture,



causing bleeding. Intranuclear inclusion bodies appear in the early stages but disappear as cells die. The tracheal lumen fills with exudates, including fibrin, dead cells, and blood. By six days, regeneration begins with immature epithelial cells forming new layers. In the lungs, epithelial cells degenerate and slough off, with immune cell infiltration and syncytial cells containing inclusion bodies.

Diagnosis of Infectious Laryngotracheitis (ILT)

- First, observe symptoms like difficulty breathing, conjunctivitis, and bloody mucus.
- Perform a necropsy to check for tracheal damage and mucus plugs.
- Confirm with laboratory tests, choosing from traditional methods (virus isolation, histopathology, ELISA)
- PCR and qPCR are the most common modern tests because they are fast, accurate, and sensitive.

Differential diagnosis Infectious Laryngotracheitis (ILT)

Other respiratory diseases with similar symptoms need to be distinguished from ILT. The diphtheritic lesions caused by ILT can spread along the entire trachea, resembling those seen in fowl pox (wet form) infections. In mild cases or infections with less aggressive ILT strains, the tracheal damage looks similar to that caused by other respiratory viruses, such as avian influenza, Newcastle disease, infectious bronchitis, and fowl adenovirus.

Conclusion

Infectious Laryngotracheitis (ILT) is a serious respiratory disease in poultry that can cause significant economic losses. Early detection, biosecurity measures, and vaccination are key to controlling its spread. If you notice any symptoms of ILT in your poultry, consult your nearest veterinarian immediately.

Reference

- Gowthaman, V., Kumar, S., Koul, M., Dave, U., Murthy, T. G. K., Munuswamy, P., ... & Joshi, S. K. (2020). Infectious laryngotracheitis: Etiology, epidemiology, pathobiology, and advances in diagnosis and control—a comprehensive review. *Veterinary Quarterly*, 40(1), 140-161.
- Mishra, A., Thangavelu, A., & Malik, Y. S. (2021). Infectious laryngotracheitis (ILT) in Indian subcontinent-threat to poultry industry. *Indian Vet. J*, 98(11), 20-24.

