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Understanding Infectious Bursal Disease (IBD) in Poultry: A Silent Threat to the Poultry Industry

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Abstract

Infectious Bursal Disease (IBD) is a highly contagious, economically important viral infection that mainly affects the immune systems of young chickens between the ages of three and six weeks. The disease causes high morbidity, mortality, and immunosuppression. Due to immunosuppression, the infected birds are prone to secondary bacterial infections. This article highlights the etiology, transmission, clinical manifestations, diagnostic approaches, and preventive strategies for IBD. Timely vaccination and stringent biosecurity procedures are essential for effective control and long-term productivity of the poultry industry.

Keywords: Infectious Bursal Disease, Poultry, Immunosuppression, Vaccination, Biosecurity measures

Introduction

India is an agricultural nation where small-scale farmers rely heavily on raising livestock and poultry to support their livelihoods. The poultry sector is a major contributor to the country's GDP, rural income, and national food security. Globally, India ranks second in egg production and fifth in poultry meat production. The poultry productivity and health are seriously threatened by viral diseases like Infectious Bursal Disease (IBD). IBD, also referred to as Gumboro disease, was initially discovered in the Gumboro region of Delaware, USA, in the early 1960s. Since then, it has become one of the most significant diseases affecting the global poultry industry.

Economic Impact

The immunosuppressive nature of IBD results in decreased feed conversion efficiency, heightened vulnerability to secondary infections, and poor response to other vaccinations. When taken as a whole, these elements raise mortality, degrade flock health, and raise production costs.

Consequently, there are direct and indirect financial losses, with commercial broiler production facilities suffering the most.

Causative Agent and Transmission

The causative agent is a double-stranded RNA virus, namely IBD Virus (IBDV), belonging to the *Birnaviridae* family. The main targets of the virus are the bursa of Fabricius, a vital organ of poultry involved in the development of the chicken's immune system. Oral–fecal route is the main route for transmission. Contaminated feed, water, litter, equipment, and even farm personnel may also spread the virus. Virus is highly resistant to many disinfectants and different environmental conditions, because of which they can persist for a longer period in poultry houses.

Clinical Signs and Post-mortem Finding

Dehydration, depression, ruffled feathers, watery diarrhea, vent pecking, and in rare instances, sudden death are all symptoms of IBD in chickens. An enlarged, edematous, and hemorrhagic bursa of Fabricius is the characteristic lesion of IBD. The bursa atrophies in chronic or recovered cases. The presence of urate (oxalate crystal) deposits, enlarged kidneys, and hemorrhages in the breast and thigh muscles are frequently additional findings that further validate the illness.

Diagnosis

A thorough process that incorporates flock history, clinical examination, post-mortem findings, and laboratory testing is used to diagnose IBD. Given that IBD primarily affects young chickens between the ages of three and six weeks and that unvaccinated flocks are at higher risk, a comprehensive review of the flock history is crucial, including the age of the birds and their vaccination status. When affected birds show clinical symptoms like diarrhea, ruffled feathers, depression, and dehydration, tissue and swab samples are taken for additional examination. Characteristic lesions, most notably a swollen, hemorrhagic, or atrophied bursa of Fabricius, are usually found upon post-mortem examination and strongly suggest IBD.

Prevention and Control

Since there is currently no specific treatment for infected birds, prevention and control of infectious bursal disease (IBD) are crucial. The main method of managing disease is vaccination, and both inactivated and live attenuated vaccines—which come in mild, intermediate, and intermediate-plus strains—are commonly used. While inactivated vaccines are given to breeder flocks to guarantee strong maternal antibody transfer to offspring, live vaccines are usually given via drinking water or eye drops to promote active immunity in young birds. Local virus strains and flock immunity status should be taken into consideration when choosing the vaccine type, dosage, and timing. Strict biosecurity measures, such as limiting the movement of people and vehicles, regularly cleaning and disinfecting housing, supplying uncontaminated feed, water, and equipment, and quickly isolating and safely disposing of infected or dead birds, are crucial in addition to vaccination

to prevent virus introduction and spread. Frequent serological testing aids in the evaluation of vaccine effectiveness, antibody titers, and the flock's general immunity level. In order to promptly contain possible outbreaks, an efficient surveillance system must also include rapid reporting and response protocols as well as training farmers and farm staff to identify early clinical signs of IBD.

Conclusion

With its immunosuppressive and highly contagious characteristics, IBD continues to pose a threat to the poultry industry. Strict biosecurity protocols and efficient immunization programs are necessary to stop its spread. Farmers' and farm workers' awareness and training are equally crucial because minimizing losses and protecting the health of poultry depend on early detection and prompt action.

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