

Infectious Bursal Disease IBD

Disease Overview

Plan of Talk

- › Introduction
- › History
- › Etiology
- › Types of infections
 - Subclinical
 - Clinical
 - › Classic
 - › VV

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Definition

- › Acute highly contagious viral infection of young chickens.
- › Its primary target is the lymphoid tissue as with a special predilection for the bursa of Fabricius.

Bursa Life Cycle

1. First 2 weeks:
 - Immature B lymphocyte
2. Week 3-6:
 - Well developed B lymphocyte
3. After 6 weeks:
 - Bursa regression in short life birds
4. After 12 weeks:
 - Bursa regression in long life birds

Cont. ...

Inside Bursa of Fabricius

Virus infects and destroys B lymphocytes.

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History

- › **1962**
 - First recognized in area of Gumboro, Delaware.
- › **Until 1987**
 - The strain of virus were of low virulence causing less than **2% mortality** and were **satisfactory controlled by vaccination.**



Cont. ...

1986-1987 in Europe (VV)

- › Vaccination failures appeared in different parts of the world.
- › Acute outbreaks occurred in broilers at the end of the fattening period (**3 weeks and older**) caused **mortality** up to **50%** or more , strains of increased virulence were identified.



Cont. ...

1986-1987 in USA (variant)

- › New isolates showed antigenic drift where classical IBD vaccines were not satisfactory protective.
- › These isolates showed immunosuppression without IBD clinical signs.



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Etiology

IBDV

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Types of IBD Infection

- › Two types of IBD infection:
 1. Subclinical
 2. Clinical

Subclinical IBD

In the 1980's

- The United States saw an increase amount of downgrades in the slaughter plant.

Investigations

- Birds are suffering from respiratory and other secondary infections i.e. Staphylococcus and E. coli.

Conclusion

- The underlying reason for this was found to failure of IBD, ND and IB vaccinations.
- The presence of an IBD virus that is different from the classic Type 1 isolate that has been diagnosed for years.
- The maternal derived antibodies (MDA) were not protecting the broilers from the infection.

Cont. ...

- › Immunosuppression caused by the virus had increased its susceptibility to all the other health challenges resulting in sub-standard performances and poor economic returns.

Cont. ...

What is the variant strain?

- › These are the strains that **do not express certain virus epitopes** typical for classical strains.
- › No cross protection between both.
- › Variant strains are able to cause an **early IBDV infection** with severe bursal damage (**atrophy**), resulting in immunosuppression.
- › Mortality is less than 5%.

Cont. ...

How does variant infection appear?

- › Early infection (before 3 weeks)
 - Immature bursae containing low quantity of B cells leading to low viral replication.
- › No clinical signs but severe immunosuppression.
 - Bad performances, vaccination failures, ...

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Clinical IBD

- › Clinical IBD may be:
 1. Classic IBD
 2. vvIBD

Classic IBD

- › **Susceptibility**
 - 3-6 weeks old are the most susceptible.
- › **Morbidity:**
 - From 10% to 90%
- › **Mortality**
 - Seldom exceed 3%.
- **Incubation period**
 - About 2 to 4 days.

Cont. ...

- › Affected birds can start shedding the virus 24 hours post-infection.
- › Able to break through a moderate level of maternal derived antibody.

Cont. ...

Clinical signs are:

1. Severe depression
2. Vent picking
3. Presence of urate stains on the vent
4. Diarrhea
5. Dehydration
6. Loss of appetite and elevated water consumption.

These signs can vary depending on the age of the birds and the general health status prior to the onset of infection.

Cont. ...

Gross and Microscopic Lesions:

1. **Ecchymotic hemorrhages** in muscles and fascia of the breast and thighs due to the **impairment of the clotting mechanism**.
2. Hemorrhages on the mucosa at the junction of the proventriculus and gizzard.
3. Kidneys are enlarged and urates are accumulated in the tubules.
4. Spleen is enlarged.

Cont. ...

The bursa of Fabricius is the main organ affected:

1. The size is **doubled 4 days post-infection** and shows paleness with straw colored transudate.
2. Sectioning of the bursa would demonstrate hemorrhages in the follicles as well as exudates.
3. From the **5th day post-infection**, the bursa will start receding in size until it is about **1/3 the size of an unaffected bursa**.

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Very Virulent IBDV

History

- › At the same time that the US is dealing with variant IBD viruses, Europe, Africa and Asia start seeing acute cases of IBDV.
 - Diagnosed in flocks at **a later age.**
 - In farms that are on **very good vaccination, biosecurity and management.**



Cont. ...

- › Mortality
 - >20% with bursal lesions.
- › Able to break through higher levels of antibody than classical strains.

Cont. ...

Occurrence and Clinical signs:

- › Clinical signs produced are similar to the classic virus but with higher morbidity and mortality (80% and 30% respectively).

Cont. ...

Gross and Microscopic Lesions:

- › The gross and microscopic lesions of the hypervirulent IBDV are similar to the classic virus but the acute phase is more severe and more generalized in the flock.
- › Hemorrhages are prominent in the pectoral and thigh muscles and in the Bursa of Fabricius.
- › The bursal lesions are very diagnostic.
- › The thymus, spleen and bone marrow are affected more severely.

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