Infectious Bronchitis

- An acute, highly contagious respiratory disease of chickens.
- All ages infected; particularly a problem in laying flocks.
- Chicks - growth suppression & predisposition to other diseases.
- Hens - variable production loss and affects egg quality.
- Turkeys resistant.

Etiology

- Coronavirus - RNA - heat sensitive.
- Many serotypes and strains with great antigenic variation have been identified.
- Mass 41 & Conn 46 are used as vaccine and protect against closely related serotypes.
- Different strains affect different organ systems: respiratory, renal, reproductive.
- Some important field strains are JMK, Ark. 99, Fla. 88, Holland, 072, GA variant, and many others.

Incubation Period

- 18-36 hours - used in diagnoses.
- Rapid spreading and highly contagious.

Course of Disease

1-2 weeks, secondary problems can linger.
Predisposes birds to chronic respiratory problems.

Method of Spread

- Airborne aerosol from infected birds.
- Direct contact with short time carriers (about 1 mo.)
- Contaminated premises (about 1 mo.)

Mortality

- Respiratory IB usually not significant - although tracheal plugs at the bifurcation cause asphyxiation.
- Some serotypes can cause serious airsacculitis.
- Depends on secondary infection such as Mycoplasma.
- Nephrotropic strains may cause high mortality in chicks and layers. Causes urolithiasis.
- Nephrotropic strains include Holt and Gray.

Clinical Signs

CHICKS -

- May vary, usually rales
- Wet frothy eyes with conjunctivitis - swollen Harderian gland.
- Occasional bird swollen infraorbital sinus
- Depressed and cold
- Increased feed conversion
- Swollen head syndrome - the virus gets into the harderian gland located in the eyelid near the medial canthus. Secondary E. coli is involved.

TRT also causes a swollen head syndrome.

Conjunctivitis

Conjunctivitis

Clinical Signs

LAYERS -

- Rales - snicks.
- Seldom have nasal or ocular discharge.
- EP may drop 20-50%.
- Soft, misshapen and or rough surfaced shells.
  - Shell problems may persist due to prior oviduct infection.

Misshapen Eggs

Postmortem Lesions

CHICKS AND BROILERS

- Hyperemia of trachea
- Serous exudate in trachea
- Slight airsacculitis - severity varies with serotype of IBV.
  - Ark causes airsacculitis.
- Tracheal plugs at the bifurcation

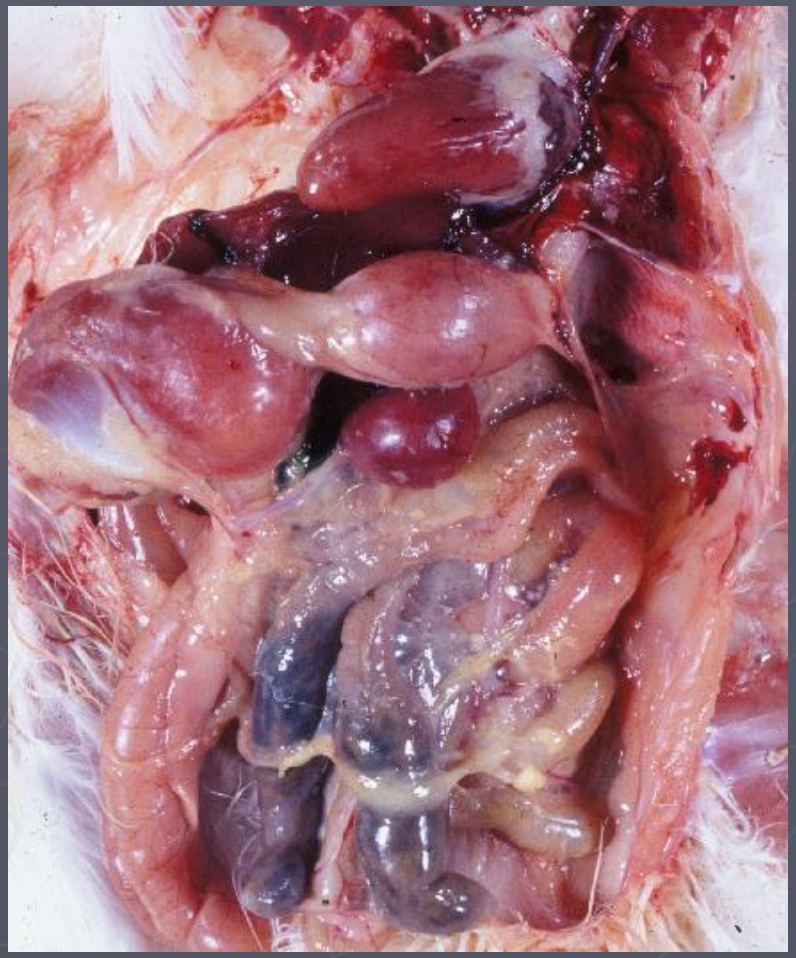
Tracheitis

Tracheitis

Bronchial Plugs

Bronchial Plug

Airsacculitis



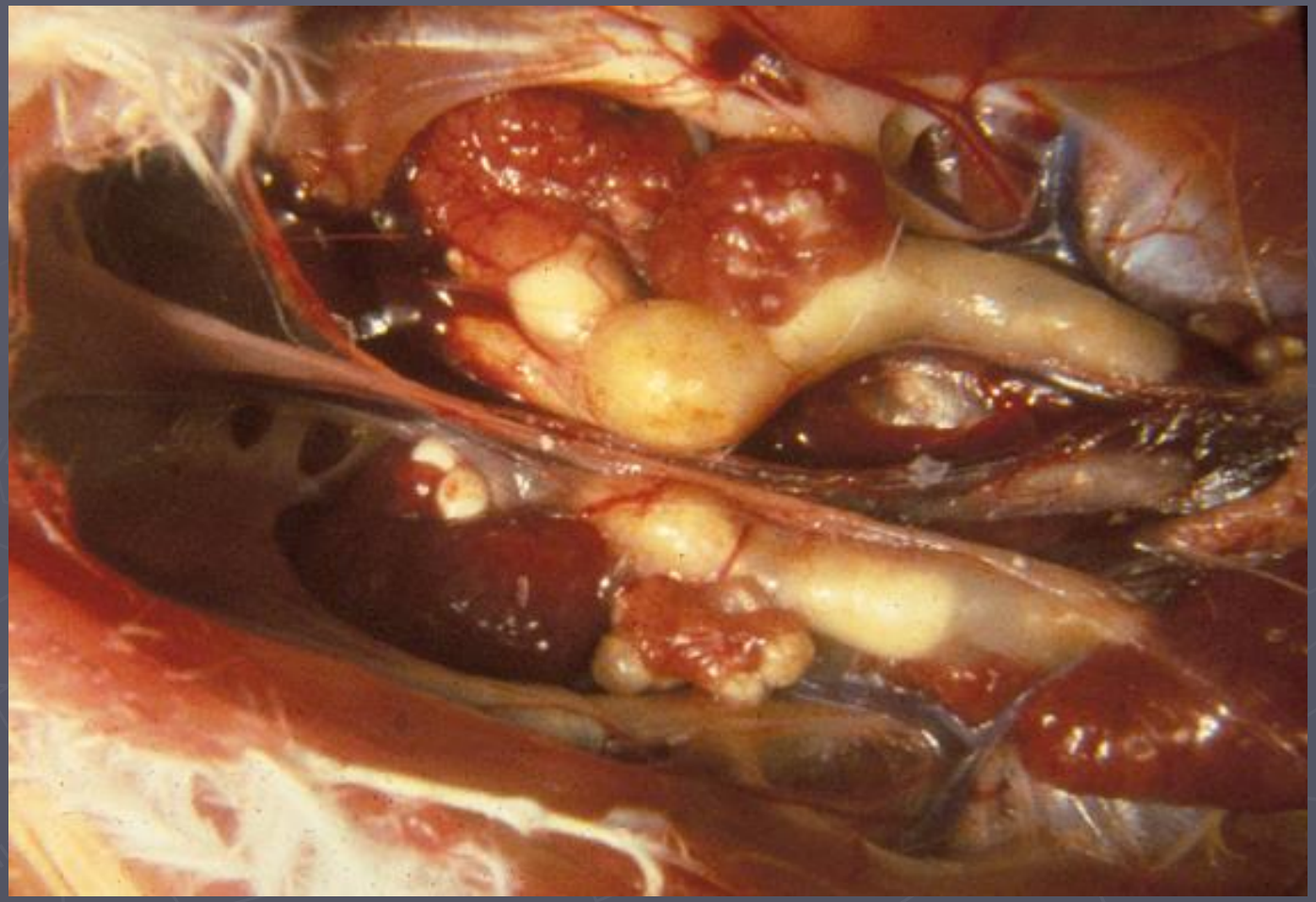
Postmortem Lesions

PULLETS AND LAYERS

- Hyperemia of trachea
- Serous & catarrhal exudate of trachea
- Egg yolk peritonitis
- Salpingitis & permanently damaged oviduct.
  - Infection of 2-3 week old pullets with IBV may cause infertility, salpingitis, and internal laying.
- Swollen kidneys with urates

Airsacculitis

Urolithiasis



Differential Diagnosis

- Newcastle Disease
- Laryngotracheitis - slow moving
- Infectious Coryza - swollen head
- Avian Influenza

Diagnosis

- History of fast spreading respiratory disease
- ELISA - uses Mass. antigen but get cross reaction with other serotypes.
- HI - less cross reaction early in an outbreak but difficult to interpret later.
- VN - rises in titer between paired serum samples (2 wks. apart)

Diagnosis

- Isolation and identification of virus- embryonating eggs – stunting, curled, and hemorrhagic - vaccine strains are embryo adapted and often affect embryos on the 1st or 2nd passage whereas field strains may require additional passages before lesions appear.
- Identification of IBV serotype - PCR, monoclonal antibody test, etc.

Stunted, Curled Embryos

Treatment

- Isolation and identification of virus- embryonating eggs – stunting, curled, and hemorrhagic - vaccine strains are embryo adapted and often affect embryos on the 1st or 2nd passage whereas field strains may require additional passages before lesions appear.
- Identification of IBV serotype - PCR, monoclonal antibody test, etc.

Prevention

Vaccination - complete prevention of IB is difficult because of variation of field strains and the ability of the virus to change. There is little cross protection between serotypes.

Prevention (Cont.)

VACCINES:

LIVE - Monovalent - usually Mass
Bivalent - Mass. & Conn

Other attenuated strains such as Holland, Ark. 99 and Fla 88 are used as vaccines.

It is normal after administration of a live vaccine to have a reaction 5 days later. This reaction should be resolved within 5 days.

Prevention (Cont.)

VACCINES:

KILLED - used in breeders and layer pullets to prevent production losses and produce consistently high antibody titers.

Prevention (Cont.)

- Parental antibody influences success of vaccination in young birds.
- High maternal antibody may block the viremia from the 1-day-old vaccination but the Harderian gland is exposed and produces local protection.
- It is often applied in a spray cabinet. Chick will rub eye on vaccine moistened feathers.
- Therefore most breeders should have consistent antibody titers. These titer levels can be used as a guide for proper vaccination time in the progeny.

Prevention (Cont.)

- This involves a series of live and/or killed vaccines or a live vaccine every other month throughout the lay cycle.
- Progeny can be vaccinated at 2 wks. of age no matter what the parental antibody titers are at hatching. Even chicks that had high maternal antibody at 1-day of age will be susceptible. Those who responded to the 1-day vaccination may have a buffered vaccine response.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