



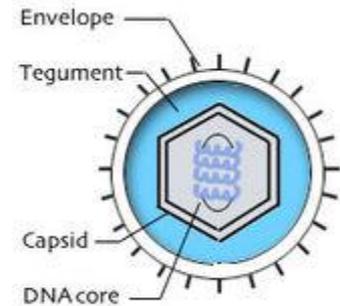
Infectious Bovine Rhinotracheitis (IBR)

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Etiology

- Alfa herpesviridae
- subtypes
 - Bovine herpes virus-1
 - BHV-1 .1 (respiratory)
 - BHV-1.2a and 1.2b(genital)
 - BHV- 1.3 (BHV-5; encephalitic)



Epidemiology

- **Occurrence:** Asia, Africa, Europe, North America, Australia, News Zealand
- **Host:** cattle, buffaloes, small ruminant, wild ruminants
- Endemic in white-tailed deer in certain parts of Canada, wild and farmed red deer in Britain
- Buffaloes & wild ruminants may reservoir host

Morbidity & case fatality:

- Uncomplicated form of the respiratory disease in cattle is not highly fatal
- most losses being due mainly to secondary bacterial bronchopneumonia.
- The morbidity and case fatality rates in dairy cattle are about 8% and 3%
- feedlot cattle the morbidity rate is usually 20-30% in unvaccinated

Mode of transmission

- **Respiratory form**: droplet, nasal secretion
- **Genital form**: semen, genital fluid, foetal fluid, venereal

Risk factor

- All ages and breeds of cattle are susceptible
- most common- above 6 months of age (probably because of their greater exposure)
- Unvaccinated herd -breeding cattle are highly susceptible to epidemics of respiratory disease and abortion

Clinical signs

- Respiratory, Rhinitis (red nose)
- Ocular form
- Abortive form (IPV)
- Systemic disease in newborn calves
- Encephalitic form

Rhinitis, tracheitis and conjunctivitis (red nose)

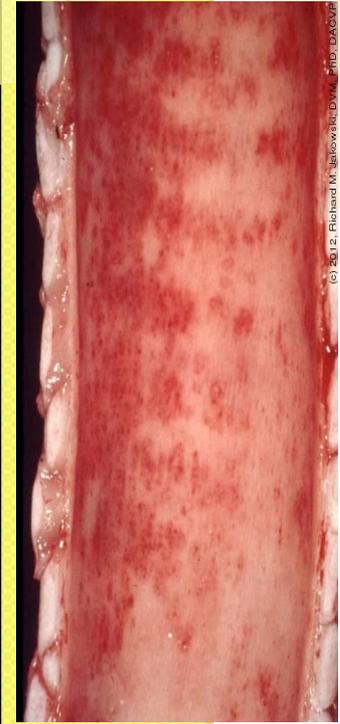
- Anorexia, pyrexia (up to 42°C, 108°F)
- Salivation
- Nasal and ocular discharge
- loud coughing

severe hyperemia of the nasal mucosa

Severe (viral or secondary bacterial)
tracheitis, Inspiratory dyspnoea

abnormal tracheal breath sounds

Respiratory distress is evident on exercise



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Ocular form



- Conjunctivitis

- Conjunctiva- reddened and edematous
- Profuse serous ocular discharge
- (DD: infectious keratoconjunctivitis (**pink eye**))
- IBR lesions: confined to the conjunctiva and there are no lesions of the cornea except diffuse edema
- Calves below 6 months of age may develop encephalitis, incoordination, Excitement, depression, Salivation, bellowing, convulsions and blindness
- high mortality rate.

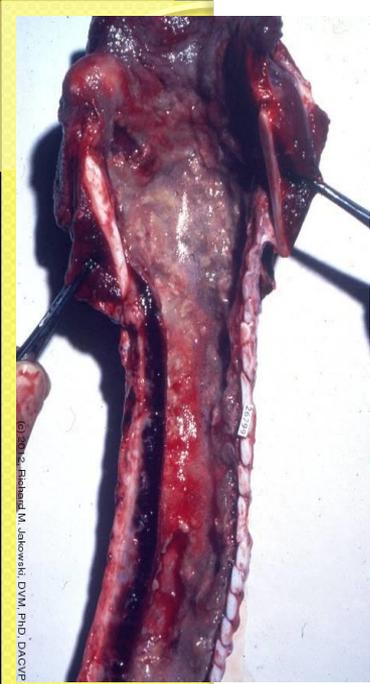
Systemic disease in newborn calves

- newborn calves under 10 days of age
- highly fatal
- Sudden anorexia, fever
- excessive salivation
- rhinitis
- unilateral or bilateral conjunctivitis
- Bronchopneumonia
- loud breath sounds, crackles and wheezes
- Outbreaks- unvaccinated herd (dams)

Abortion (IPV)

- 6-8 month of pregnancy
- Retention of placenta
- Endometritis
- Infectious vulvo vaginitis
- Short estrous
- Infertility

NECROPSY FINDINGS

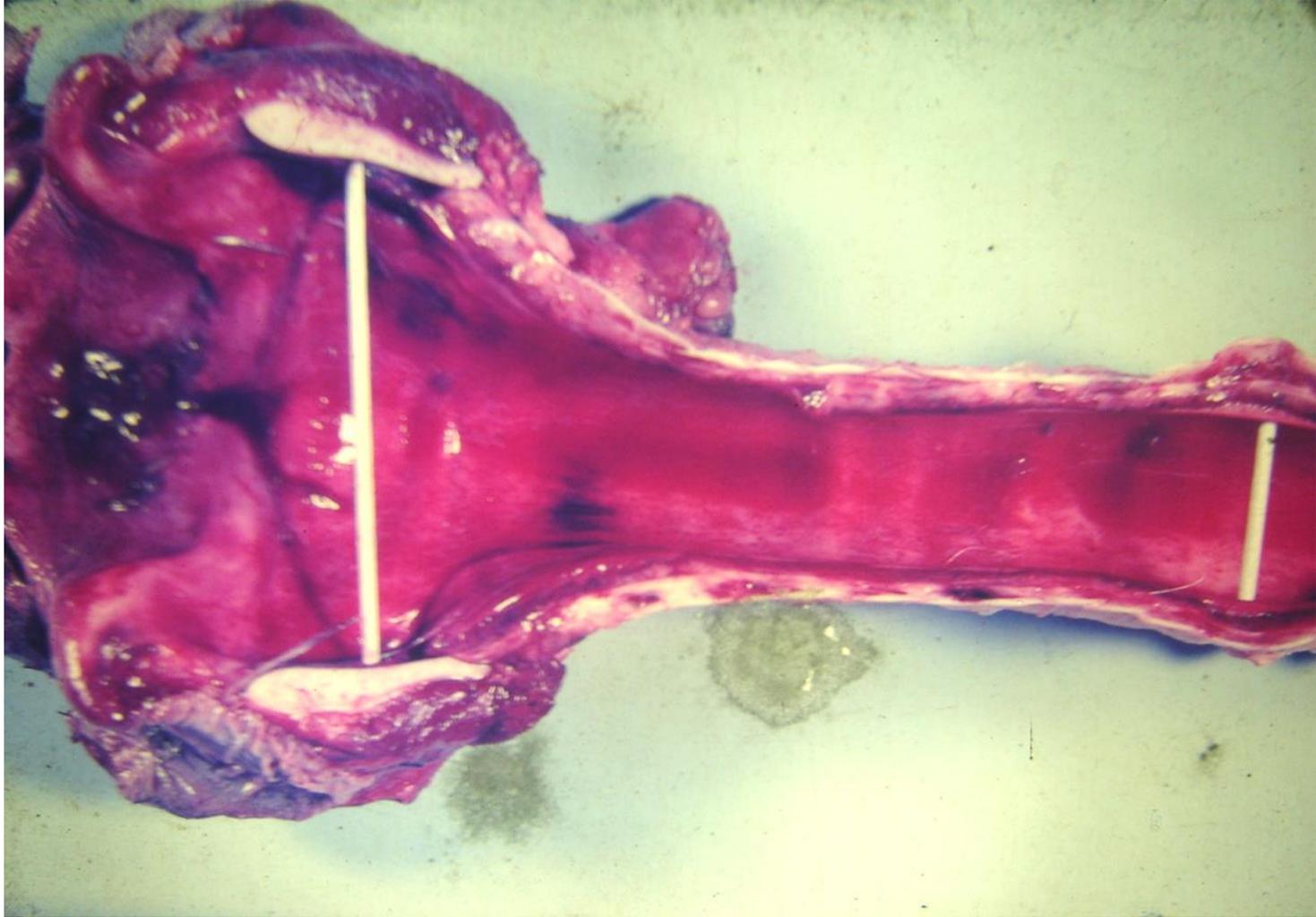


- Adult cattle- tracheitis, bronchitis
- Pulmonary emphysema or bronchopneumonia,
- Profuse and fibrinopurulent exudates
- **Lymph nodes:** throat and neck region are usually swollen and edematous
- **Aborted fetuses:** autolysis and focal necrotizing hepatitis

Rhinitis with congested nasal chambers



Tracheitis (IBR)



CLINICAL PATHOLOGY

- **Histology** – formalin-fixed samples:
- abortion/neonate: lung, liver, trachea, kidney, adrenal gland, rumen, esophagus, pharynx;
- respiratory form: nasal turbinate, trachea, pharynx, lung
- encephalitic form: half of mid sagittally sectioned brain
- **Virology** - abortion/neonate: lung, liver, kidney, rumen
- respiratory form: lung, trachea, nasal swab
- Encephalitic form: half of midsagittally-sectioned brain (FAT, PCR)

Isolation of virus

- **Cell lines** - Madin–Darby bovine kidney cell line (MDBK) used for BoHV-1 propagation
- Virus isolation from semen (a prescribed test for **international trade**)
- **Nucleic acid detection**
- DNA–DNA hybridisation and the PCR
- Real-time polymerase chain reaction (a prescribed test for international trade)

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- **Viral antigen detection**
 - Nasal, ocular or genital swabs can be directly smeared onto glass cover-slips
 - direct or indirect fluorescent antibody test
 - ELISA
 - VNT

Treatment

- No specific anti viral drug
- Broad-spectrum antimicrobials are indicated if secondary bacterial tracheitis and pneumonia are present
- OTC, Ceftriazone, Ceftiofur, Enrofloxacin
- Bronchodilator: Deriphylline
- Inhailation
- NSAID
- Supportive therapy

Control

- Vaccination
- Biosecurity
- Hygiene
- Isolation and quarantine

Vaccination

- (6-12 months of age)
- 1. **Modified live-virus vaccines** (2 types)
 - **parenteral** vaccine usually made with bovine foetal kidney tissue culture
 - **intranasal** vaccine of rabbit tissue culture origin
 - An intranasal vaccine of bovine tissue culture origin containing a temperature-sensitive mutant is also available
- Protection from infection and disease has been observed within 40-96 hours following vaccination

2. **Inactivated vaccine**

- require two doses of the vaccine
- Booster- 10-14 days after the primary
- But protection is observed after 7-10 days following the second dose of vaccine

.3. **Subunit vaccines**

- contains only one or more of the antigens of the pathogen necessary to evoke protective immunity, and lacks the components that might cause unwanted side-effects.
- Contain major surface glycoproteins of the BHV-1

Vaccination programs in herds

- Beef breeding herds.
- Beef calves -2-3 weeks before weaning
- Heifer and bull -at least 2 weeks before breeding
- Dairy cattle
- heifer 2-3 weeks before breeding.

Thank you