

## Infectious bovine rhino-tracheitis (IBR, RED NOSE),

It is a viral disease caused by bovine herpesvirus type-1 (BHV-1) which have 3 subtypes, a respiratory, a genital, and an encephalitic subtype.

### Epidemiology...

- 1-The disease is distributed over all the world and affected cattle in all ages
- 2- morbidity rate is 8% and mortality is 3%, both were increase in unvaccinated animals .
- 3-the infection can be transmitted through nasal discharge ,genital secretions ,infected semen, and fetal fluids.
- 4-Venereal transmission is the method of spread of the genital diseases. The virus may survive for up to 1 year in semen frozen at -196°C .
- 5-Introduction of new animals into a group were predispose to an outbreak of the disease
- 6-Calves got colostral antibodies from dams with humoral antibody. The duration of the colostral immunity varies from 1 to 6 months of age.
- 7-Losses are due to abortion, infertility, loss of production and deaths from the respiratory form.

### Pathogenesis...

The virus causes disease through several different pathways including a primary infection restricted to the respiratory tract, eyes, and the reproductive tract then nervous system .

#### 1- Respiratory infection ....

a-The virus infects the nasal cavities and upper respiratory tract, resulting in rhinitis, laryngitis, and tracheitis, There is extensive loss of tracheal cilia which affected the defense mechanisms of the respiratory tract and predispose to severe pneumonia

b- Spread occur from the nasal cavities to the ocular tissues and causes conjunctivitis with edema and swelling of the conjunctiva, multifocal plaque formation on the conjunctivae, peripheral corneal edema, and deep vascularization.

#### 2- Encephalitis

The virus will transmitted from nasal mucosa via the trigeminal peripheral nerve to the trigeminal ganglion, resulting in a non supportive encephalitis.

#### 3- Abortion

The virus may be transported by peripheral leukocytes to the placenta and transferred to the fetus to cause abortion, Infection occur at trimester of gestation may result in mummification, abortion, stillbirth, or weak new born and predispose to necrotizing endometritis

4- The systemic form of the infection in newborn calves is characterized by severe inflammation and necrosis of the respiratory and alimentary tracts, including the pharynx, esophagus, lungs, larynx, lymph nodes, hepatitis , nephritis and encephalitis.

5- A severe, highly fatal syndrome characterized by diffuse erosion and ulceration of the upper alimentary tract, including the oral cavity, will occur in beef feedlot cattle.

### Clinical findings...

**1-Rhinitis, tracheitis and conjunctivitis (red nose)form...** which characterized by sudden onset of anorexia, coughing, fever up to 42°C, ,severe hyperemia of the nasal mucosa, and nasal discharge with numerous clusters of grayish foci of necrosis on the mucous membranes of the nasal septum, corneal edema, conjunctivitis, and profuse ocular discharge, increased salivation, and sometimes a slight hyper excitability. A

marked fall in milk production , Sudden death within 24 hours after first signs appear some time occur which may result from extensive obstructive bronchiolitis and sever pneumonia.

#### **2-Ocular form of IBR...**

One or both eyes may be affected, which is easily misdiagnosed as infectious keratoconjunctivitis (pinkeye), the conjunctiva become severe red with diffuse edema , corneal edema.,and there is a profuse serous ocular discharge.

#### **3-Encephalitis form...**

It characterized by incoordination,excitement alternating with depression,and a high mortality rate. Salivation,bellowing, convulsions and blindness .

#### **4-Systemic disease in newborn calves...**

newborn calves under 10 days of age,show systemic form of the disease characterized by Sudden anorexia, fever,excessive salivation, and rhinitis, accompanied by unilateral or bilateral conjunctivitis,. The oral mucous membranes are usually hyperemic, with erosions of the soft palate, and an acute pharyngitis covered by mucopurulent exudate. The larynx is usually edematous and respiratory distress is common. Bronchopneumonia is common, and loud breath sounds, crackles and wheezes associated with consolidation are present. Diarrhea and dehydration, occur in some affected calves. The cause of the diarrhea is uncertain but it may be related to the ruminal lesions.

#### **5-Abortion...**

its most common in cows that are 6-8 months pregnant with Retention of the placenta and mostly infertility.

#### **6-Infectious pustular vulvovaginitis...(IPV)**

Is characterized by frequent urination, elevation of the tail, and a mild vaginal discharge. The vulva is swollen, and small papules, then erosions and ulcers, are present on the mucosal surface. Mucosal ulcers may coalesce and sloughing of brown necrotic tissue may occur. Recovery usually occurs in 10-14 days unless there are complications.

7-**Balanoposthitis** is characterized by similar lesions occur on the the glans penis and preputial mucosa.

Clinical pathology...

- 1- Virus isolation or detection
- 2- serological test such as Elisa
- 3- Bulk tank milk testing (Milk Elisa)

PM.....

1-In adult cattle, gross lesions are restricted to the muzzle, nasal cavities, pharynx, larynx and trachea, and terminate in the large bronchi, and There may be pulmonary emphysema, Lymph nodes in the throat and neck region are usually swollen and edematous.

2- In the systemic form in neonatal calves a severe epithelial necrosis has been observed in the esophagus and rumen, Bronchopneumonia is common with a thick white exudate coating the tracheal lumen and extending into the bronchi.

3- Aborted fetuses show moderately severe autolysis and focal necrotizing hepatitis

Treatment...

Broad-spectrum antimicrobials are indicated if secondary bacterial tracheitis and pneumonia were present .

Control...

1- Modified live-virus vaccines...by both intra nasal and parental administration

2- Inactivated vaccines

3- Subunit vaccines

The major surface glycoprotein of the BHV-1 are the antigens responsible for stimulating protective immunity.