

## **Bovine Viral Diarrhea ( mucosal Disease)**

It is an acute infectious disease of cattle, which caused by *pestivirus* and characterized by diarrhea and erosions on the digestive tract.

### **Cause**

It is caused by RNA *pestivirus*. Antigenically related viruses cause the two syndromes.

### **Susceptible hosts**

Cattle and buffalo are the only susceptible hosts. Young animals without maternal immunity and less than 2 years of age are most susceptible to the disease.

### **Mode of transmission and pathogenesis**

The disease is transmitted by direct and indirect contact, particularly through ingestion and inhalation of infected saliva, oculonasal discharge, urine and feces. The virus is present in two forms, cytopathogenic BVDV (**cpBVDV**) and noncytopathogenic BVDV (**noncpBVDV**) according to its effect on tissue culture. Moreover, the cpBVDV has 80kDa protein. The cattle postnatally infected with cpBVDV between 6 months to 2 years develop bovine viral diarrhea with high morbidity and low mortality. Meanwhile, mucosal disease with low morbidity and high mortality developed in cattle infected intra-uterine with noncpBVDV and become tolerant. The disease develop when the virus undergoes transformation to cpBVDV BY RNA recombination

### **Signs:**

The diseased cattle show fever, anorexia, depression and diarrhea. Moreover, excessive salivation with stringy mucus hanging from the muzzle to ground is characteristic.

Erosion and ulcers are seen on muzzle and nose. The conjunctiva may be congested and the animal is emaciated and dehydrated.

Abortion and still birth are recorded in pregnant animals. Congenital cerebral hypoplasia, cataract, microphthalmia and others malformation are seen in calves born to infected dam. Calves born alive may be persistently infected and later develop mucosal disease. 2

### **Gross appearance**

the diseased animals are dehydrated and emaciated. The lesion usually restricted to the gastrointestinal tract.

Erosions or well circumscribe ulcers of irregular shape are seen on inside the lips, gums, check, dental pad, posterior part of the hard palate, and on the lateral surface of tongue .Ulcers are seen also on muzzle and external nares. The pharynx shows ulcer, which may be extended, to larynx. The esophagus shows ulcer and erosion. Rumen and omasum show ulcer and erosion beside erosions in the folds of the fundus and submucosal hemorrhage and edema of the abomasum wall.

Congestion and erosions are noticed in small intestine, cecum and colon particularly the areas above Payer's patches. Necrosis is seen in lymph node and spleen.

In cattle with chronic mucosal disease, chronic ulcer are seen on the oral cavity and on skin particularly perineum, skin horn junction and around hooves

### **Microscopic appearance**

Erosions are represented by necrosis of the cells of stratum spinosum and granulosus with intact basal cell layer followed by necrosis of the upper layers their removal leading to ulcer are seen on buccal cavity and esophagus

No vesicles are seen.

The abomasum shows atrophy and cystic changes of the gastric glands, besides edema and erosion and occasional hemorrhage are common in the lamina propria and submucosa. The intestine showed catarrhal and necrotic inflammation focal areas of necrosis and erosions of the epithelium particularly over Payer's patches are seen in small and large intestine. The lymphoid follicles and lymph nodes show necrosis of lymphocytic elements.

### **Differential diagnosis:**

1. Rinder pest
2. foot and mouth disease
3. parasitic and bacterial enteritis.