

**MJF COLLEGE OF VETERINARY AND ANIMAL SCIENCE,  
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**DEPARTMENT OF VETERINARY PATHOLOGY**

# **FOOT AND MOUTH DISEASE**

# FOOT AND MOUTH DISEASE

- Foot and mouth disease is a contagious viral disease of cloven footed animals caused by a picorna virus and characterized by presence of vesicles in oral mucosa and foot.

## Etiology

- RNA virus of picornaviridae family
- Serotypes A, O, C, SAT-1, SAT-2, SAT-3, Asia-1
- Serotype 'O' is most common in India

# FOOT AND MOUTH DISEASE

## Pathogenesis

- Inhalation, ingestion, inoculation, semen, fomites
- Replication starts in pharynx
- Viraemia- tissues and organs like epithelium of mouth
- Viral excretion 24 hours prior to the onset of disease

# FOOT AND MOUTH DISEASE

## Characteristic symptoms

- Fever(102-104°F)
- Drooling of saliva
- Vesicular mouth lesions
- Lameness



# FOOT AND MOUTH DISEASE

## Macroscopic features

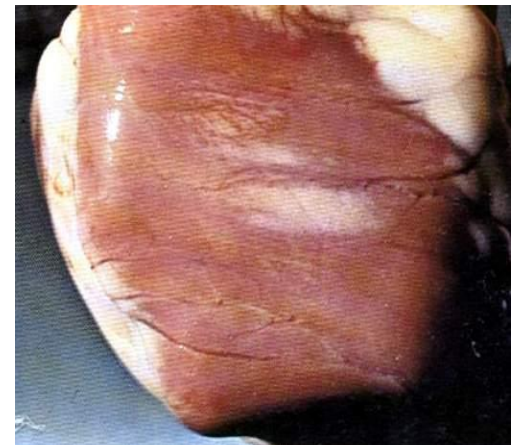
- Presence of vesicles in mouth cavity
- Damaged vesicle leaves a raw surface having red areas
- Gastroenteritis



# FOOT AND MOUTH DISEASE

## Macroscopic features

- Myocarditis-*Tigroid* appearance
- Enlargement of spleen





**Bovine, gingiva. There is an elongate erosion (ruptured vesicle) ventral to the incisors**





**Goat, oral mucosa. There is a large erosion (ruptured vesicle) on the rostral mandibular buccal mucosa.**



**Bovine, tongue. A large area of undermined epithelium (bulla) is centrally eroded; this lesion probably resulted from coalescence of several smaller lesions.**



**ovine, tongue. Several healing vesicles have yellow-tan margins.**



**Pig, tongue. Many ("dry") vesicles are ruptured and lack fluid.**



**Teat. There is a ruptured vesicle on the end of the teat.**



**Pig, foot. A ruptured vesicle of the coronary band extends into the interdigital skin.**



**FMD: interdigital space with widespread ulceration**



**Sheep, heart. There is a pale area of myocardial necrosis visible from the epicardial surface.**



# FOOT AND MOUTH DISEASE

## Microscopic features

- Hydropic degeneration in stratum spinosum cells of epidermis
- Presence of micro vesicles
- Infiltration of neutrophils
- Hyaline degeneration and necrosis of muscles of myocardium
- Infiltration of neutrophils and mononuclear cells in myocardium

# FOOT AND MOUTH DISEASE

## Diagnosis

- Symptoms and lesions
- Immunodiagnostic tests for demonstration of antigen/antibody
  - CFT
  - ELISA
- Isolation of virus and its typing
- Electronmicroscopy

# **VESICULAR STOMATITIS**

# VESICULAR STOMATITIS

- Vesicular stomatitis is a contagious viral disease of animals caused by vesiculovirus and characterized by the presence of vesicles in oral cavity, necrosis and intercellular oedema. It is also known as *sore mouth* of cattle.

## Etiology

- *Vesiculovirus* of *rhabdoviridae* family
- RNA virus with 70-175 nm size, bullet shape

# VESICULAR STOMATITIS

## Pathogenesis

- Transmitted through insects
- Viraemia and virus settles in oral mucosa causing vesicular glossitis

# VESICULAR STOMATITIS

## Characteristic symptoms

- Hypersalivation
- Rubbing of lips with manger

# VESICULAR STOMATITIS

## Macroscopic features

- Vesicles on tongue and snout of pigs



# VESICULAR STOMATITIS

## Microscopic features

- Intercellular oedema in malpighian layer
- Necrosis of epithelial layer
- Infiltration of neutrophils and mononuclear cells



# VESICULAR STOMATITIS

## Diagnosis

- Symptoms and lesions
- Detection of antibody or antigen using ELISA

# **VESICULAR EXANTHEMA**

# VESICULAR EXANTHEMA

- Vesicular exanthema is a viral disease of swine characterized by fever and vesicle formation in snout, lips, nostrils, tongue, feet and mammary gland.

## Etiology

- Calcivirus of 35-40 nm diameter

# VESICULAR EXANTHEMA

## Pathogenesis

- Direct contact- viraemia- buccal mucosa and skin

# VESICULAR EXANTHEMA

## Characteristic symptoms

- Fever, anorexia
- Vesicles on mouth, snout, teats, claws
- Rupture of vesicle leads to ulcer

# VESICULAR EXANTHEMA

## Macroscopic features

- Vesicles on snouts, lips, tongue, coronary band and mammary gland
- Ruptured vesicles covered by brown and dry dead tissue
- Ulcer on secondary bacterial infection



# VESICULAR EXANTHEMA

## Microscopic features

- Vesicles, hydropic degeneration on stratum spinosum
- Infiltration of mononuclear cells

# VESICULAR EXANTHEMA

## Diagnosis

- Symptoms and lesions
- Detection of antibody or antigen using ELISA