

Foot-and-mouth disease (FMD, Aphthous fever)

It is a viral disease affected all cloven footed animals and characterized by oral vesicular stomatitis

Etiology.....

is associated with an aphthovirus (family Picomaviridae) which have seven major serotypes: A, O, C, Southern African Territories SAT1, SAT 2, SAT 3 and Asia 1. However, there are a number of immunologically and serologically distinct subtypes with different degrees of virulence, As there is no cross-immunity between serotypes,

Epidemiology...

1-FMD affects all cloven-footed animals and is endemic in Africa, Asia, South America and parts of Europe. The disease can occur in any country but Japan, New Zealand and Australia are disease free.

2-morbidity may reach to 100% but mortalities is 2% in adults and 20% in young animals ,however some times severe outbreaks may cause severe mortalities 100%.

3-the disease can be spread between animals by inhalation and ingestion of contaminated food and water .

4- infected animals considered as the main source of infection ,moreover the diseases can be spread through contaminated meat, abattoir waste, peoples ,vehicles ...etc.

5- The speed and direction of the wind are important factors in determining the rate of airborne spread.,as the virus can be travel for 250 km.

6-infected milk is the main source for infection of calves .

7- The disease is spread from herd to herd either directly by the movement of infected animals, or indirectly by the transportation of virus.

8- cattles ,buffalo,sheep,goats .pigs.deer are all susceptible .

9- Humans are believed to be slightly susceptible to infection with the virus and vesicles may develop in the mouth or hands. Very few cases have been reported in people working with infected carcasses and laboratories.

Pathogenesis...

1-Viremia occurs at 17-74 h followed by localization as buccal lesions in 75% and foot lesions in 25 % of cases.

2-Bacterial complications generally occur at the lesions, particularly those of the feet and the teats, leading to severe lameness and mastitis,

3-In young animals, especially neonates, the virus frequently causes necrotizing myocarditis and this lesion may also be seen in adults infected with some strains of the virus, particularly type O.

Clinical findings..

1-incubation period of 3-6 d, but it may vary between 1 and 7 d.

2- decrease milk production and a high fever (40-41°C; 104-106°F), accompanied by severe anorexia, followed by the appearance of an acute painful stomatitis.

3- salivation, and the saliva hanging in long, ropy strings, a characteristic smacking of the lips, and the animal chews carefully.

4-Vesicles and bullae (1-2 cm in diameter) appear on the buccal mucosa, dental pad and tongue. These rupture within 24 h, leaving a raw painful surface which heals in about 1 week.

- 5-vesicles appear on the feet, particularly in the clefts and on the coronet. Rupture of vesicles causes acute lameness, the animal may recumbent, with, painful swelling of the coronet.
- 6-Secondary bacterial invasion of foot lesions may interfere with healing and lead to severe involvement of the deep structures of the foot.
- 7-Vesicles may occur on the teats and when the teat orifice is involved, severe mastitis often follows.
- 8-Pregnant animals may abort or have stillbirths.
- 9-severe loss of condition and the convalescence may last for 6 months
- 10-Young animals are more susceptible and may suffer heavy mortality from myocardial damage, even when typical vesicular lesions are absent or seen in mouth and feet.
- 11-some times malignant form of the disease were seen in adults in which acute myocardial failure occurs after a typical course but a sudden relapse occurs on days 5-6 with dyspnea, and weak and irregular heart action, followed by death .
- 12-Occasional cases show localization in the alimentary tract with dysentery or diarrhea, indicating the presence of enteritis.
- 13-Ascending posterior paralysis may also occur in rare cases

A sequel of FMD...it include

Endocrine damage, which lead to

- chronic syndrome of dyspnea,(panting syndrome)
- anemia,
- overgrowth of hair and
- lack of heat tolerance.
- Diabetes mellitus has also been observed as a sequel in cattle.

Clinical pathology...

1-Virus isolation

2-Elisa and PCR

3-CFT

4-Identification of the virus by electron microscope

PM.....

1- The lesions of FMD consist of vesicles and erosions in the mouth and on the feet and udder. The erosions often become ulcers especially if secondary bacterial infection has occurred. In some cases, vesicles may extend to the pharynx, esophagus, fore stomachs, and intestines as well as trachea and bronchi.

2- The teats and mammary gland are swollen.

3- In the malignant form and in neonatal animals, epicardial hemorrhages with or without pale areas are also present.

4-Grossly, the ventricular walls appear streakedمخطط with patches of yellow tissue giving the typical'tiger heart' appearance.the heart become fibrosis and flabby مترهل .

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Treatment

1-Non specific by using mild antiseptic such as 0.5 gentian violate ,pot. permanganate, with dressing of the foot affections .

2-A good symptomatic response is reported to the administration of flunixin meglumine.

Control...it done by eradication or vaccination or both of them

'1-In areas with only little outbreaks,(non-endemic areas) slaughter of all infected and in-contact animals is usually carried which call control by surveillance and slaughter

2-dispoe all suspected meat and milk

3-disinfection of human clothes ,moters ,machines bedding ...etc

4-prevent movement of infected animals

5-vaccination

a-Regular vaccination against FMD is a way of life for most of the world

b-Killed trivalent vaccine (containing O, A, and C strains) are used but because of the increasing occurrence of antigenically dissimilar substrains, the production of vaccines from locally isolated virus is becoming a more common practice

c- attenuated living-virus vaccine were also used in endemic areas .