Peste des petits ruminants (PPR

Introduction

• Peste des petits ruminants (PPR) is a highly contagious, acute, or subacute viral disease of goats and sheep characterized by fever, erosive stomatitis, conjunctivitis, gastroenteritis and pneumonia.
• This disease was first described in 1942 in West Africa and it is closely related to the rinderpest virus, canine distemper virus and human measles virus.

Cause

• Peste des petits ruminants virus (PPRV) is a single-stranded, non-segmented RNA virus belonging to the genus Morbili virus, subfamily Paramyxovirinae, family Paramyxoviridae.
• It is primarily a disease of goats and sheep. Goats, particularly young ones, (4 months to 1 year of age) are usually more severely affected than sheep.
• The infection also occurs in wild ungulates.
• Cattle, buffaloes, camels and pigs are rarely susceptible. They do not exhibit clinical signs and are unable to transmit the disease to other animals.
• Transmission requires close contact between animals. Infection occurs mainly through inhalation of aerosols and by ingestion. There is no known carrier state. The spread is not dependant on vectors.

Predisposing factors

- History of recent movement or gathering together of sheep and/or goats of different ages
- Introduction of recently purchased animals
- Change in weather such as the onset of the rainy season or dry, cold periods
- Contact with a trade or nomadic animals.

Symptoms

• Incubation period is 6 days.

Acute form

- Fever and serous rhinorrhoea – Erosions in the mucous membranes lining the upper alimentary, upper respiratory, and urogenital tracts for the first 1-2 days followed by fever
- Profuse salivation, protruded and retracted tongue.
- Rhinorrhea becomes mucopurulent often blocks the nostrils
- Diarrhoea and pneumonia.

Per acute form

- Follow incubation period that is often as short as 2 days
- Profuse nasal catarrh precedes a sudden high fever with signs of depression, dyspnoea, anorexia and constipation
- Diarrhoea, leucopenia

Diagnosis

Samples collection

• Live animals: Buccal and rectal mucosa, tears, whole blood (buffy coat), nasal secretions, faeces and gum debris.
• Dead animals: Oral mucosa, tonsils, lungs, small, large intestines and mesenteric lymph nodes.

Diagnosis is based on

- Classical clinical signs
- Virus isolation and identification in cell cultures
- Demonstration of viral antigen in the buffy coat, body secretions, faeces, lymph nodes and tonsils by immunohistochemical methods, dot-ELISA, AGID and CIEP.

Note: unlike rinderpest, PPR viral antigen is still high in tissues of animals dying from the disease.

- Serology: Virus neutralization tests (VNT) and competitive ELISAs recommended serologically tests by OIE.

- Complement Fixation Test and AGID are most commonly. More recently ELISA has been developed based on monoclonal antibodies specific for the N or H proteins of PPR and rinderpest viruses, and which enable differential diagnosis of the two viruses.

Differential diagnosis

• **Rinderpest:** Affects both cattle and small ruminants. The symptoms are very severe in cattle than in small ruminants.

• **Pasteurellosis:** The disease is characterized by obvious respiratory signs, infrequent diarrhoea, and a mortality rate rarely exceeding 10 per cent. The bipolar organisms can be readily demonstrated in smears.

• **CCPP:** There is no digestive system involvement, and the clinical signs and lesions are confined to the respiratory system and pericardium.

• **Bluetongue:** Sheep are mostly affected. Swelling of the lips, muzzle, oral mucosa and coronitis are more common.

• **Contagious ecthyma:** Proliferative necrotic lesions seen in the lips rather than the whole oral cavity. The absence of nasal discharges and diarrhoea also distinguish orf from PPR.

Prevention and control

- There is no treatment for PPR.
- Oxytetracycline and chlortetracycline prevent secondary bacterial infections.
- Hyperimmune serum from cattle hyperimmunized against rinderpest
- Quarantine of the newly purchased animals, isolation of the affected animals, and following strict hygienic measures will help to control the disease.

Vaccines

- vaccinate sheep or goats with PPR vaccine at the age of 6 months and booster dose once a year.

- The tissue culture rinderpest vaccine at a dose of 102.5 TCID50 protects goats for at least 12 months against PPR.
- This vaccine is safe for pregnant goats.
- A homologous PPR tissue culture vaccine produced by attenuation in Vero cells is commercially available.
- Newly developed recombinant vaccinia or capripox viruses expressing the fusion (F) and Haemagglutinin (H) protein genes of the rinderpest virus are also effective against PPR.

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Source: Pirbright Institute