



Popular Article

Lumpy Skin Disease (LSD)

¹Hukma Ram Parihar, ²Kartar Singh and ³Dilip Singh Meena

¹M.V.Sc., Department of Veterinary Pharmacology & Toxicology, College of Veterinary and Animal Science (CVAS), Bikaner, Rajasthan, India

²Teaching Associate, Department of Veterinary Pharmacology & Toxicology, Post Graduate Institute of Veterinary Education and Research (PGIVER), Jaipur, RAJUVAS, Bikaner, Rajasthan, India

³M.V.Sc., Department of Veterinary Medicine, Post Graduate Institute of Veterinary Education and Research, Jaipur (PGIVER), Jaipur, RAJUVAS, Bikaner, Rajasthan, India

Abstract

In recent times, Lumpy Skin Disease (LSD) has been portrayed as a terrifying threat to cattle in Southeast Asia. A lump like nodules in the external skin and mucous membrane with fever and swollen lymph nodes are the preliminary noticeable clinical signs of this overwhelming disease. It is commonly an arthropod-borne contagious disease. The incubation period ranges from one to four weeks leading to viremia. It produces great socio-economic loss by reduced quantity and quality of milk, udder infection, thinness, low quality hides, loss of draught power, abortion, infertility, limitation to meat ingestion, higher morbidity, etc. Animals of any age and gender are susceptible to the disease. The morbidity rate varies according to the immune status of animals and frequency of mechanical vectors. Strict quarantine, vector control, and prophylactic vaccine might be the best remedy for limiting the risk factors of the disease. Future studies should be directed towards determining the true burden of LSD on livestock and its potential risk factors with the perspective of geographic distributions.

Introduction

Lumpy skin disease (LSD) is an infectious viral disease of cattle and buffaloes caused by the *Capripox* virus of family Poxviridae. It is transmitted by arthropod vectors such as mosquitoes, biting flies and ticks. The disease is characterized by mild fever for 2-3 days followed by development of stiff, round cutaneous nodules (2 - 5 cm in diameter) on the skin all over the body. These nodules are circumscribed, firm, round, raised and involves the skin, subcutaneous tissue and sometimes muscles. Symptoms may include lesions in mouth, pharynx and respiratory tract, emaciation, enlarged lymph nodes, oedema of limbs, reduction in milk production, abortion, infertility and sometimes, death. Although infected animals often recover within a period of 2-3 weeks, there is reduction in milk yield in lactating cattle for several weeks. The morbidity rate is around 10-20% and mortality rate are around 1-5%.

Etiology

Lumpy skin disease virus (LSDV) is a member of the genus Capri pox virus and the family Poxviridae. It is closely related antigenically to sheep pox virus and goat pox virus because they cannot be distinguished by routine serological tests.

Epidemiology

Primarily the disease was endemic in most sub-Saharan regions of Africa, consequently extent to Middle East, Europe and Asia. In the South-Eastern part of Asia, the disease has first been introduced in Bangladesh in July 2019 followed by China, India, Nepal, Bhutan, Vietnam, Hong Kong and Myanmar. Bangladesh recorded the maximum attack rate in Chattogram whereas at Cuttack in India. Particular vulnerable locations of other countries are yet to be confirmed. There is no epidemiological proceeding considering the present LSD situation report from rest of Asia.

Zoonotic Importance

Humans are not at risk of developing lumpy skin disease.

Clinical Signs

- Young calves often have more severe disease.
- Nodules on the skin and mucous membranes develop; they vary from 1 cm to 7 cm and penetrate the full thickness of the skin.
- Nodules may occur on any part of the body, but they are particularly common on the head, neck, udder, genitalia, perineum, and legs.
- Swollen skin nodules may separate from the healthy skin and dry and harden to form a “sit-fast”.
- Secondary bacterial infections may occur.
- Rhinitis and conjunctivitis can also been seen.
- Lameness may result from inflammation and edema of the legs, and abortion and sterility may occur in both bulls and cows.
- Feed intake and milk yield may also decrease.



Fig. - Nodular Lesion on Lumpy Skin Affected Cattle

Post Mortem Lesions

- Post mortem lesions can be extensive.
- Characteristic deep nodules are found in the skin which penetrate into the subcutaneous tissues and muscle with congestion, hemorrhage, and edema.
- Lesions may also be found in the mucous membranes of the oral and nasal cavities as well as the gastrointestinal tract, lungs, testicles, and urinary bladder.
- Bronchopneumonia may be present, and enlarged superficial lymph nodes are common.
- Synovitis and tenosynovitis may be seen with fibrin in the synovial fluid.

Diagnosis

- Based on history, clinical signs and vector population around the area.
- Confirmation of lumpy skin disease in a new area requires virus isolation and identification.
- Typical capripox (genus) virions can be seen using transmission electron microscopy of biopsy samples or desiccated crusts.
- Antigen testing can be done using direct immunofluorescent staining, virus neutralization, or ELISA.
- Serological tests include an indirect fluorescent antibody test, virus neutralization, Western blot, and ELISA.

Differential Diagnosis

- Differential diagnoses include:
 - pseudo-lumpy skin disease (a much milder disease cause by a herpesvirus),
 - bovine herpes mammillitis (a disease with lesions generally confined to the teats and udder),
 - dermatophilosis,
 - ringworm,
 - insect or tick bites,
 - besnoitiosis,
 - rinderpest,
 - demodicosis,
 - hypoderma bovis infestation,
 - photosensitization,
 - bovine popular stomatitis,
 - urticaria,
 - cutaneous tuberculosis and
 - onchocercosis.

Treatment

- Sick or infected animals are should be kept in isolation.
- Symptomatic treatment of affected animals may be carried out in consultation with veterinarian.
- Administration of antibiotics for 5-7 days to check secondary infection may be considered on case to case basis to check secondary bacterial infection.

- Administration of anti-inflammatory and anti-histamine preparation may also be considered.
- In case of pyrexia, paracetamol can be given.
- Application of antiseptic ointment with fly-repellent property over the eroded skin is recommended.
- Parenteral/ oral multivitamins is advised.
- Feeding of liquid food, soft feed and fodder and succulent pasture is recommended for the infected animals.

Prevention And Control

- Immediate isolation of sick/ infected animals from the healthy animals.
- Any animal suspected of febrile nodular skin disease should not be introduced into the unaffected holding or farm.
- In affected villages and animal holdings, the affected animal should be kept separate from unaffected animals by avoiding common grazing and thereby direct contact.
- Efforts should be made to reduce the vector population in affected areas. Unaffected animal should be applied with insect (ticks, flies, mosquitoes, fleas, midges) repellent to minimize mechanical transmission of LSD.
- Ensure strict control of animal movement from affected areas to free areas and to local animal markets.
- Trade of live cattle, participation in fairs, shows should be banned immediately upon confirmation of the disease in the affected areas.
- All biosecurity measures and strict sanitary measures for disposal of personal protective equipment (PPE) etc. used during sampling from affected animals should be followed.
- Cattle markets located within 10 km radius of the epicentre of infection should be closed.
- Thorough cleaning and disinfection of affected personnel, premises and contaminated environment including vehicles plying through the affected animal holdings should be carried out with appropriate chemicals/disinfectants [Ether (20%), chloroform, formalin (1%), phenol (2%/15 minutes), sodium hypochlorite (2–3%), iodine compounds (1:33 dilution), quaternary ammonium compounds (0.5%)].
- Semen should not be collected from animal affected with LSD.
- In cases of mortality, animal carcass should be disposed of by deep burial.

Conclusion

Lumpy skin disease is one of the most economically significant transboundary, viral diseases of domestic cattle. It is economically significant in animals because of chronic debility, decreased milk production and weight, damaged skins, abortion and mortality.