

Popular Article

A Review on Lumpy skin disease Prevention and its Control

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<https://doi.org/10.5281/zenodo.6984159>

Abstract

Lumpy skin disease is an emerging bovine viral disease, which the currently rapid spread of disease in different countries and even different states of countries. The causative agent capripoxvirus, can also induce sheeppox and goatpox. LSD can be transmitted by both the vector and non-vector routes. Though the disease has less mortality rate but causes great economic loss. The disease has not any specific treatment only given to supportive and symptomatic treatment but it is reported that control and prevention are possible by immunization, controlling the vector, maintaining biosecurity in the herd, and isolating the infected animal. The present review is to understand various aspect of disease like transmission clinical symptoms, diagnosis prevention and control.

Introduction

Lumpy skin disease (LSD) is an infectious viral disease of cattle and buffaloes caused by the Capri pox virus of family Poxviridae. All ages and breeds of cattle are affected, but especially the young and cattle in the peak of lactation. It is transmitted by arthropod vectors such as mosquitoes, biting flies and ticks. In India the disease is first reported during the year 2019. The disease 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 is around 1-5%.



Causative Organisms

The disease is caused by lumpy skin disease virus (LSDV). The causative agent is a member of genus Capri pox virus (CaPV) in the family Poxviridae. LSDV is a double stranded DNA containing virus enclosed in lipid envelope, which is genetically related to the sheep pox virus (SPPV). Transmission of virus occurs through infected lesions in the skin, and mucus membrane of mouth and nasal cavities, secretions like saliva, nasal and ocular discharges. Blood feeding vectors can transmit the virus. Virus may transmit through infected bull semen and through infected milk and teat lesions.

Clinical Symptoms

Lumpy skin disease can occur in acute, sub-acute and chronic forms. Affected animals showed the symptoms of anorexia, ocular and nasal discharge, hyper salivation and 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, sub cutaneous tissue and sometimes muscles. Some marks of crust are seen after bursting the nodules on whole body. Symptoms may include lesions in mouth, pharynx and respiratory tract, emaciation, enlarged lymph nodes, oedema in legs, dewlap and brisket region, reduction in milk production, abortion, infertility and sometimes death.

Diagnosis

Diagnosis of disease mainly depends upon typical clinical signs, differential diagnosis from other related diseases. In the laboratory confirmatory diagnosis can be done by using various advance techniques like isolation of virus, serological test, indirect Enzyme-Linked Immunosorbent Assay (ELISA) test and Polymerase chain Reaction (PCR) test.

Samples like (EDTA blood and skin biopsies/scabs) from animals in LSD suspected outbreaks should be referred to ICAR-NIHSAD, Bhopal for confirmatory laboratory testing.

Treatment

There are no specific antiviral drugs available but supportive treatment can be given to diseased animals which control the skin lesions and secondary bacterial infections.

- a. Sick animals are to be kept in isolation.



- b. Symptomatic treatment of affected animals may be carried out in consultation with veterinarian.
- c. Administration of antibiotics for 5-7 days to check secondary infection may be considered on case-to-case basis to check secondary bacterial infection.
- d. Administration of anti-inflammatory and anti-histamine preparation may also be considered.
- e. In case of pyrexia, paracetamol can be given.
- f. Application of antiseptic ointment with fly-repellent property over the eroded skin is recommended.
- g. Supportive therapy likes vitamin B-complex, parenteral/ oral multivitamins are advised.
- h. Feeding of liquid food, soft feed and fodder and succulent pasture is recommended for the infected animals.

Prevention and Control

The following measures should be imposed for prevention of LSD (Lumpy Skin Disease)

- Immediate isolation of sick/ infected animals from the healthy animals.
- Movement control of animals- Ensure strict control of animal movement from affected areas to free areas and to local animal markets to check the transmission/spread of LSD.
- Movement of people to and from the affected area should be restricted. The animal handlers and those attending to the affected animals should be advised to keep away from healthy animals. It is therefore, of utmost importance to ensure these safety measures.
- Ecto-parasiticide should also be applied to healthy animals on the infected and on surrounding farms.
- The persons dealing with the infected animal should wear gloves and face mask. All biosecurity measures and strict sanitary measures for disposal of personal protective equipment (PPE) used during sampling from affected animals should be followed.
- Care should be taken to report any unusual sickness of other animals to nearest veterinary Hospital/Dispensary.
- Disinfection of premises at regular intervals: 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 like sodium



hypochlorite (2-3%), iodine compounds (1:33 dilution), and quaternary ammonium compounds (0.5%).

- Farms with affected animals should be visited regularly by the field veterinarians until all the cases are recovered. The veterinary staff should take all precautionary hygiene measures to avoid further spread of disease to other farms households.
- In case of mortality, carcass should be disposed of by deep burial method observing all hygienic measures.
- Cattle markets located within 10 km radius of the epicenter of infection should be closed. Trade of live cattle, participation in fairs, shows should be banned immediately upon confirmation of the disease in the affected areas.
- Vector control: Control of vector population in the premises and the animal body should be carried out using the insecticide, repellents and other chemical agents. Unaffected animal should be applied with insect (ticks, flies, mosquitoes, fleas, midges) repellent to minimize mechanical transmission of LSD.
- Affected bull should not be used for natural breeding and semen production for artificial insemination.
- Mass awareness campaign to be taken up to make the public aware of the disease and report to the veterinary authority immediately when suspected cases are detected. This will help in prevention and control of LSD.

Vaccine and Vaccination

Vaccination is the only effective method of control the disease in the endemic area along with movement restrictions and removal of affected animals. Most commercially available vaccines against LSD are live attenuated vaccines based on a LSDV strain, sheep pox virus (SPPV), or goat pox virus (GTPV). LSD vaccines are safe to use in all age groups, both sexes, and all breeds and bovine species. Cattle and buffaloes should be vaccinated with Goat pox vaccine (cattle and buffalo at the age of 4 months and above through S/C route) with $10^{3.5}$ TCID₅₀ of GTPV vaccine (Uttarkashi Strain). The same dose of $10^{3.0}$ TCID₅₀ used for prophylactic vaccination/ring vaccination in cattle and buffalo

The infected villages to be identified so that precautionary plans will be carried out in a specific area and ring vaccination will be carried out in villages upto 5 km around the affected village. However, affected animals should not be vaccinated.



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