

Lumpy Skin Disease

Prateek Singh¹, Amit Kumar Singh² and Narendra Raghubanshi³

¹Subject Matter specialist (Animal Husbandry), Krishi Vigyan Kendra, Chandauli, U.P.

²Subject Matter specialist (Agriculture Extension), Krishi Vigyan Kendra, Chandauli, U.P.

³Senior Scientist and Head, Krishi Vigyan Kendra, Chandauli, U.P.

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Introduction

Lumpy Skin Disease (LSD) is an infectious viral disease affecting cattle that has become a major concern for livestock farmers worldwide, caused by the Capripoxvirus. LSD leads to significant health and economic challenges, particularly in regions with limited veterinary resources. The only animals impacted are cattle and water buffalo, which have low mortality and high morbidity rates, however calves die at greater rates. LSD results in sterility in males, abortions in females and a decrease in milk and meat output. The disease is characterized by firm nodules on the skin, fever, weight loss, and decreased milk production, making it a severe threat to cattle health and productivity.

Beyond its direct health impact, LSD causes considerable economic losses due to decreased milk yield, reproductive complications, damaged hides, and in severe cases, mortality. The disease also disrupts trade and can strain local economies heavily reliant on livestock production. Originally endemic to sub-Saharan Africa, LSD has now spread to regions in Asia, the Middle East, and parts of Europe, making global control efforts essential.

Etiology

The Lumpy Skin Disease Virus (LSDV), which infects cattle but shares genetic similarities with the poxviruses that infect sheep and goats, is the cause of LSD. The double-stranded DNA virus known as LSDV is comparatively large and has a stable envelope that helps it withstand a variety of environmental factors. Cattle, notably dairy and meat varieties are the main animals affected by LSD. Although cattle are the main hosts, recent research indicates that other ruminants may also act as accidental hosts or viral reservoirs. Cattle continue to be the primary animal impacted by clinical illness, nevertheless.

Transmission

Stable flies (*Stomoxys calcitrans*), mosquitoes (*Aedes*, *Culex* spp.) and ticks (*Rhipicephalus*, *Amblyomma* spp.) are the main biting insects that transmit the virus. The virus

is spread from diseased to healthy animals by insects, which serve as mechanical vectors. Close contact with diseased animals might result in direct transfer. Although less effective than vector-borne spread, this mode of transmission can happen in areas with high population density, such as feedlots or farms. The virus can spread through fomites, but this is a less frequent method, and can persist on contaminated materials (such as equipment, feed, water, or transportation vehicles).

Pathogenesis

The Lumpy Skin Disease Virus (LSDV), which attacks skin cells and blood vessel lining cells, is the cause of Lumpy Skin Disease (LSD) in cattle. Usually, the virus is contracted via direct contact with infected animals or by being bitten by an infected insect, such as a tick or a fly. The virus enters the animal and travels throughout the circulation, resulting in fever and enlarged lymph nodes.

Firm, spherical lumps or nodules appear on the skin as a result of the virus's invasion of skin cells and subsequent immunological reaction. As they heal, these nodules may leave behind scars if they turn into ulcers. Because of the inflammation and tissue damage, some animals may have trouble breathing, become lame, or produce less milk. Although LSD seldom causes death, it can cause serious agony, financial loss, and difficulties if secondary infections develop.

Clinical Signs

Cattle with Lumpy Skin Disease (LSD) exhibit unique clinical symptoms that aid in early identification. Fever, swollen lymph nodes and the development of hard, round, nodular skin lesions all over the body are symptoms of LSD. Lameness, nasal discharge, lacrimation and decreased milk supply are further symptoms. Firm and spherical nodules can develop in the skin and move into deeper tissues, leading to secondary infections and severe pain. Nodules are generally 2 to 5 cm in diameter and are seen on the head, neck, back, limbs, udder and around the genitalia. As these lumps grow, they may cause pain and eventually form ulcers or scabs. In the early stages of illness, a sharp increase in body temperature is frequently seen, frequently surpassing 40°C or 104°F. Particularly if the illness worsens over time, affected animals frequently show decreased appetite, weight loss and overall lethargy.

Diagnosis

Lumpy skin disease (LSD) is diagnosed by a combination of laboratory testing and clinical sign observation.

- **Clinical Signs:** Visible signs such as distinctive skin nodules, fever, enlarged lymph nodes, and drainage from the eyes and nose are frequently used to suggest LSD. Particularly during epidemics, these indicators can be very suggestive of LSD.
- **Laboratory Testing:** Samples from nasal discharge, blood, or skin lesions are examined to confirm LSD. The most used technique is polymerase chain reaction (PCR), which can accurately and rapidly identify the Lumpy Skin Disease Virus (LSDV). Specialized laboratories may also employ electron microscopy or virus isolation.
- **Differential Diagnosis:** Lab confirmation is essential for an accurate diagnosis because some of the symptoms of LSD are similar to those of other cow illnesses, such as bovine herpesvirus and insect bite allergies.

Prevention and Control

- **Vaccination:** One of the best preventative strategies is vaccination. Immunity may be offered by vaccinations against similar capripoxviruses (e.g., goatpox or sheeppox vaccines) or by modified live vaccines (MLVs) for LSDV. Programs for vaccination are essential for controlling epidemics, particularly in areas that are endemic or at high risk.
- **Vector Control:** Limiting spread involves controlling standing water sources, using pesticides and repellents to reduce exposure to biting insects.
- **Biosecurity:** To stop outbreaks, stringent biosecurity measures must be put in place, such as limiting the movement of cattle, disinfecting equipment, and quarantining new animals.
- **Surveillance:** Frequent surveillance aids in early discovery and guarantees prompt action to limit epidemics and stop their spread.

Conclusion

Because of its quick spread and effects on animal health and productivity, lumpy skin disease poses a serious threat to the livestock sector. Effective control requires an understanding of the etiology and mechanisms of transmission, and strategies such as immunization, vector management and strict biosecurity procedures are essential for controlling and stopping the spread of LSD.