

Lumpy skin disease: A worldwide serious concern

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Abstract

Health management deals with monitoring the health status of animals on the farm. Animal health depends on nutrition and the environment. Farm animals' infectious diseases are caused by different micro-organisms such as bacteria, virus, fungi, protozoa, mycoplasma, and parasites. Among infectious diseases, the incidence of Lumpy skin disease (LSD) in cattle and buffaloes is recently higher in the Rajasthan state of India. In 1929, LSD was first time discovered in Zambia. The recent geographic spread of lumpy skin disease has caused international concern. This article intends to aware of LSD and its impact on the health of farm animals.

Keywords: Lumpy skin disease, infectious disease, farm animals.

Introduction

Lumpy skin disease (also known as Pseudo-urticaria or knopvelsiekte) is a contagious skin disease. LSD is an enzootic infectious, eruptive, and rarely fatal disease that causes nodules on the skin of cattle. Cattle and water buffalo are the only animal species affected with a high morbidity rate but low mortality; although, calves die at a greater rate. LSD leads to a reduction in milk and meat production, abortions in females, and male infertility. Secondary bacterial infection often aggravates the condition (Woods, 1988).

Cause of disease

Lumpy skin disease (LSD) is caused by the Lumpy skin disease virus (LSDV) in the family Poxviridae, genus Capripoxvirus.

Epidemiology

Morbidity and mortality rates: The incubation period is 8-15 days. Morbidity is 10 to 20% while mortality is usually very low about 1 to 5%.

Susceptible animals: Cattle and water buffaloes are mostly get infected with LSD. Although all age groups of animals are susceptible, young calves are more sensitive to LSD and can acquire

the typical lesion within 24 to 48 hours. During field outbreaks, no other domestic ruminant species become infected naturally.

Transmisión: Diseased cattle movement can play a major role in the spread of LSD over large distances. The virus is present in the nasal and lacrimal secretions, semen, and milk of infected animals.

Mechanical transmisión: The mechanical spread of the LSD virus has been associated with arthropod vectors. Mechanical transmisión by blood-sucking mosquitoes such as *Aedes aegypti*, *Stomoxys calcitrans*, *Musca spp.*, and Tse-tse flies. Mechanical transmisión by ticks such as *Boophilus spp.*, *Amblyomma spp.*, and *Hyalomma spp.* observed (Lubínga, 2014).

Fomites: Contaminated feed and water also spread LSD.

Clínical signs

1. Infected cattle develop a fever. The temperature of the infected animals rises to 104-106 °F for 3 to 4 days.
2. The affected animals exhibit lacrimation, increased nasal and pharyngeal secretions, anorexia, general depression, reluctance to move, and a sudden decrease in milk production.
3. The prominent skin lumps may cover the entire body. The head, neck, perineum, udder, genitalia, and limbs are the main site of nodules. The characteristic LSD lesions are round, circumscribed areas of upright hairs, measuring 5 to 50 mm in diameter. They are hard and somewhat elevated above the regular skin around them, which is typically bordered by a narrow ring of hemorrhage. The full skin thickness viz. epidermis, dermis, and surrounding sub-cutis all are involved in the lesions. They solidify with time, forming a (dimple) depression in the center (Figure 2).
4. The regional superficial lymph nodes are enlarged and oedematous.
5. The skin nodules contain a firm, creamy-grey or yellow mass of tissue.
6. Sloughing of the necrotic lesions from the healthy surrounding epithelium resulting in a characteristic ring-like lesion on the muzzle (Alí *et al.*, 1990).
7. The skin lesions gradually get thicker and necrotic after 2-3 weeks. Various lesions related to the production of hard oedematous plaques produce considerable discomfort and suffering, as well as restricted mobility.
8. These nodular areas slough to leave ulcers, which heal and scar. They may also slough away to leave a hole of full skin thickness, known as "sítfast". There is a distinct ring of living tissue around the lesions (Figure 2).

9. Abortión is a typical consequence of the acute phase of the disease; LSD skin lesions have been seen on the aborted fetus and living calves. Females remained anoestrous for several months, and the most affected cows undergo ovarian activity cessation, which is mostly seen in animals with poor body conditions.
10. Bulls may become permanently or temporarily infertile.
11. The recovered animals suffered from weakness and debility for up to 6 months.



Figure 1: Photograph showing characteristic lumpy skin disease with small circumscribed active cutaneous lesions covering the body surface



Figure 2: Cattle skin showing lumpy skin disease infection: nodular skin lesions and scars with solidified lesions forming a depression in the center in the later stage.

Economic loss

Reduced milk output, loss of health, and rejection or reduced value of the hide account for the majority of the losses.

Díagnosís

The presence of clinical symptoms is used to diagnose LSD.

Skin lesions (excisión or bíosy): skin bíosies from early lesions (those without necrosis) can be sampled for viral isolation and electron microscopy.

Blood: One each of clotted/serum tube and EDTA blood tube. In tissue culture of bovine, ovine, or caprine origin LSD virus grows differentially.

Identificación of the agent: virus isolation, PCR, Electron microscopy

Serological tests: Virus neutralization, Western blot, ELISA test

Treatment

There is no particular antiviral therapy available for LSD-infected cattle. However, systemic antibiotics may be given for skin infections, anti-inflammatory drugs or a shot of vitamins are used in some cases to treat secondary bacterial infections or to deal with fever or inflammation and improvement of the animal's appetite.

Control

To prevent future transmission, local administrations of insecticides have been applied to affected animals. It is recommended that strict movement restrictions be implemented. Quarantines, depopulation of affected and exposed animals, careful disposal of carcasses, cleaning and disinfection of the buildings, and insect control can help to stop LSD outbreaks (Al-Salihí, 2014).

Vaccination

The only way of preventing LSD is the vaccination of all farm animals (Ayelet *et al.*, 2014). Currently, live attenuated vaccines, based on LSDV strain, sheep pox virus (SPPV), or goat pox virus (GTPV) make up the majority of commercially available LSD vaccines.

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