

LUMPY SKIN DISEASE

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ABSTRACT

Lumpy skin disease is viral disease of cattle caused by lumpy skin virus (LSDV). The world organization for animal health categories LSD as notifiable disease. LSD characterized by fever, reduced milk production and skin nodules. It causes high morbidity and low mortality. Many common mammalian pathogen found in proteobacteria phylum, ex- Brucella and rickettsia, bordetella and Neisseria, Escherichia shigella and salmonella. lumpy skin is an infectious disease caused by virus of family poxviridae known as neethling virus. Lumpy skin disease is contagious disease spread among through mosquitoes, lice, wasps, flies and also through contaminated water and food. This review contain overall history, epidemiology, transmission, of lumpy virus.

KEYWORDS: Lumpy skin disease, notifiable, morbidity, mortality.

INTRODUCTION

Animal skin composed of three basic layers.

- 1) Epidermis
- 2) Dermis
- 3) Hypodermis.

Lumpy skin virus was detected within the cytoplasm of epidermal basal cells layer and prickle cell, within the cytoplasm of hair follicles epithelial outer and inner roots. Over 80,000 cattle died between July- September 2022, Rajasthan has a majority of deaths. There are two different approach to immunization against LSDV.

- 1) Artificial immunity
- 2) Natural immunity

Most cattle develop immunity after recovery from natural infection.

It spread among through lice, mosquitoes, flies.

Virus classification

Kingdom – Bamfordvirae

Phylum – Nucleocytoviricota

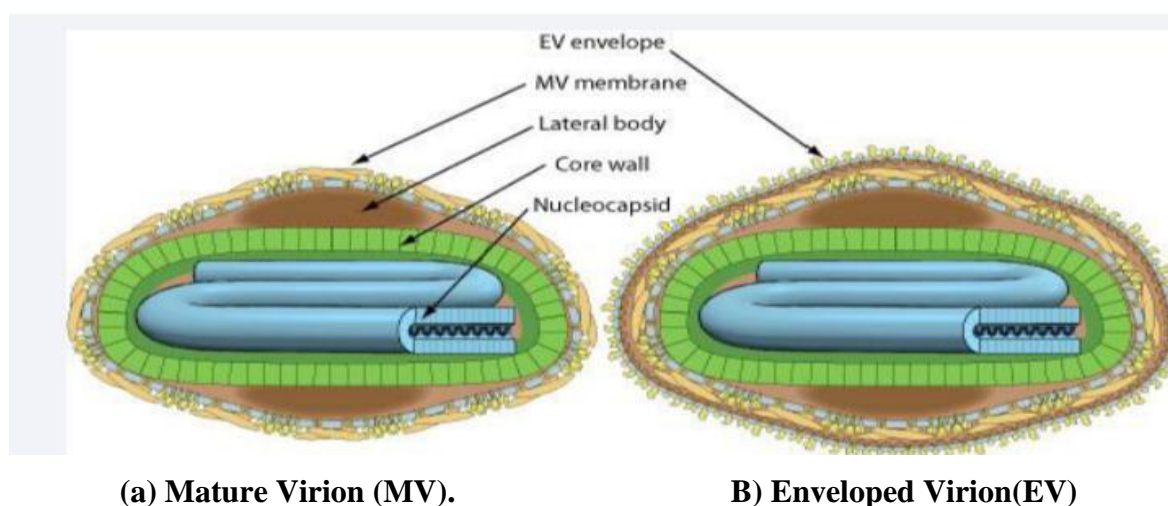
Class – Pokkesviricetes

Order- Chitovirales

Family- Poxviridae

Genus- Capri poxvirus

Species- Lumpy skin disease virus



LSD is highly infectious emerging viral disease of cattle and buffaloes in India.

History

Lumpy skin disease first seen as epidemic in Zambia in 1929. In the beginning LSD was considered as poisoning or hypersensitivity to insect bites. From Zambia spreading to African countries followed by West Asia, central Asia, Europe, and China in 2019, also to Syrian Arab, Turkey.

The first case in south Asia found in July 2019 in Bangladesh and then followed by India in August that year in Odisha and west Bengal. The virus has affected over 16 lakh cattle in 197 districts upto 11 September more than 50,000 deaths, reported from Rajasthan. LSD has killed 127 cattle in Maharashtra. The infection was spread more than 10 state. In 2016, LSD reported from Russia and European nation. In 2019, in India it was observed in Bangladesh followed by Hong Kong, Bhutan, Nepal, Myanmar. In India the outbreaks of disease reported from 20 Indian states- Assam, Andhra Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Jharkhand, Kerala, Karnataka, Maharashtra, Madhya Pradesh, Manipur, Odisha, Tamilnadu. 1st case of LSD observed in India was reported in Kutch, Gujarat, then spread to 33 district. 27000 cattle was suffered from LSD in Rajasthan.

Epidemiology

LSD most commonly occur in wet summer also occur in winter. LSD virus transmit through infected saliva. Pseudo lumpy skin disease is milder disease than true lumpy skin disease, only difference based on isolation and identification. Morbidity 10&20%, Mortality 1-5%.

Pathogenesis

LSD is spread through the lumpy skin virus belong to poxviridae family. It spread through flies, ticks, mosquitoes.

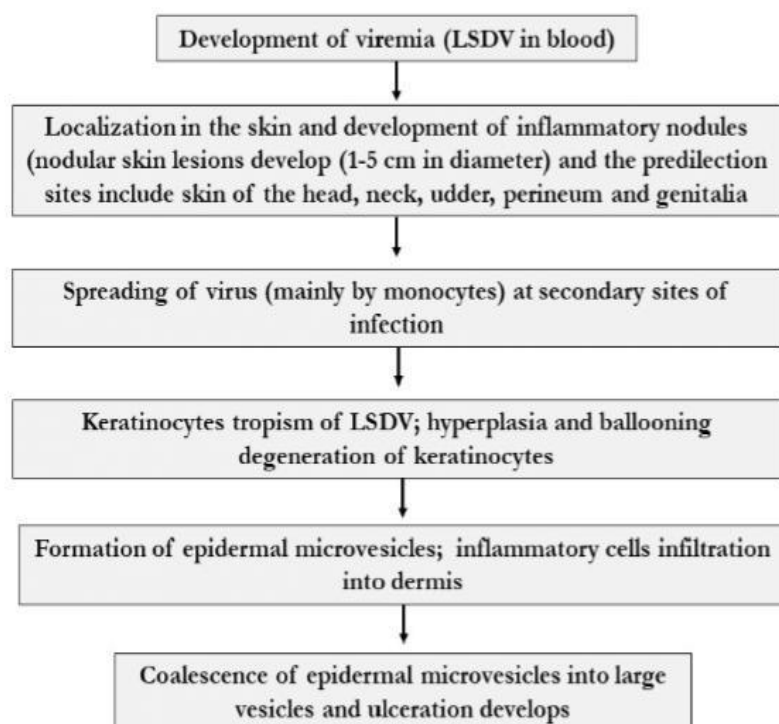


Fig. Pathogenesis of LSD virus.

Risk factors – humid and warm climate.

Symptoms

Lumpy skin disease lesions explode from 7 to 14 days. It distinguished as few (mild forms) to multiple (severe form) skin nodules. LSD causes mucos membrane of respiratory system, urogenital system and other internal organ. Skin nodules of two to five centimeters occurred. skin nodules occur on neck, back, tail, limb, perineum, genital organ. LSD causes

- 1) High fever
- 2) Reduced milk production
- 3) Loss of appetite
- 4) Watery eyes
- 5) Lachrymation and nasal discharge
- 6) Lymph node become enlarged
- 7) Painful ulcerative lesion in cornea of one or both eyes
- 8) Skin lesion in legs and joints.



Fig.- LSDV Affected Cattle.

Transmission

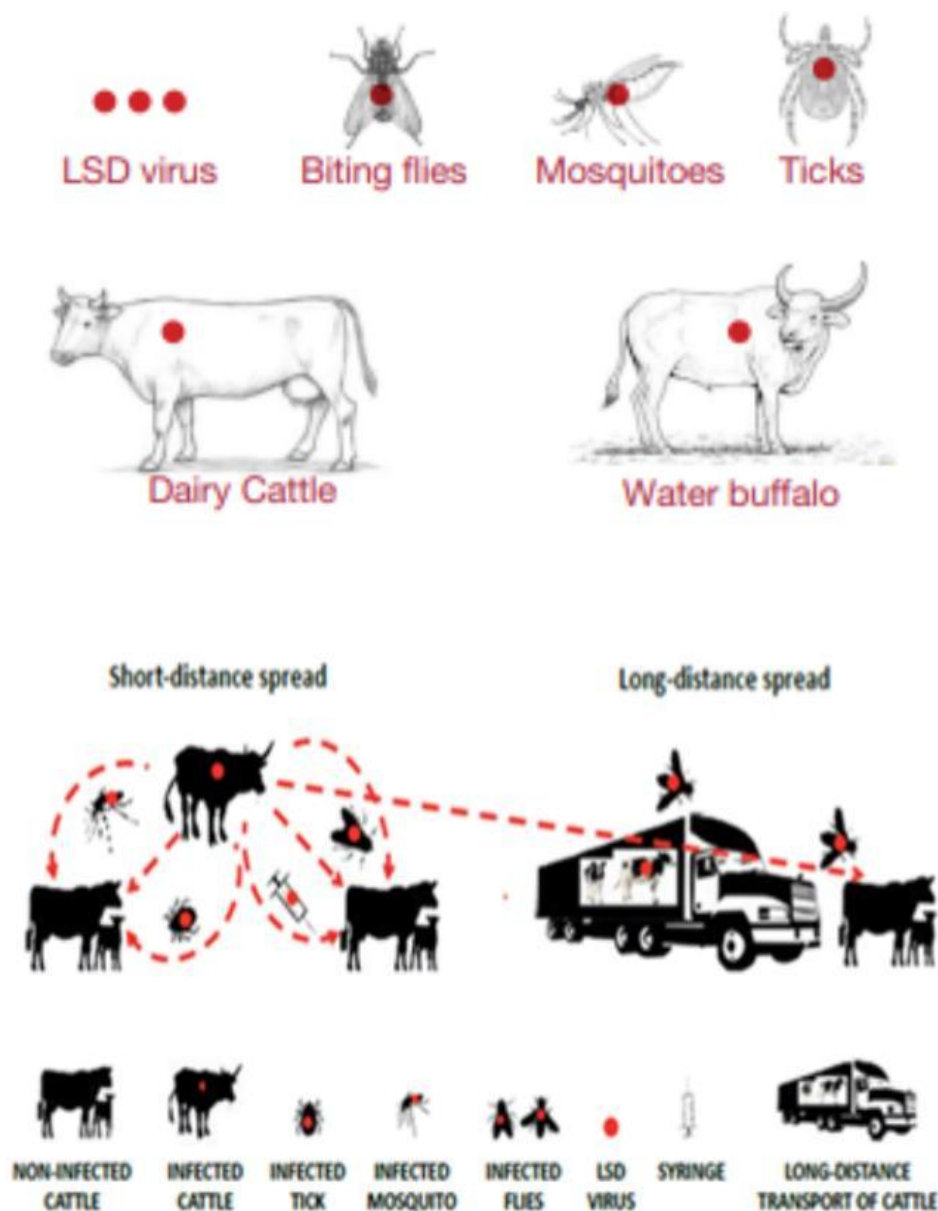
Flying and non flying blood feeding insect transmit mechanically, transmitted mechanically by blood feeding insects other route are direct or indirect and artificial insemination.

Mosquitoes – aedes aegypti, anopheles stephensi,

Flies- stomoxys calcitrans, haematobia irritans, haematopota

Midges- Culicoides nubeculosus

Ticks- *Rhipicephalus appendiculatus*, *Rhipicephalus*, *decoloratus*.



Occurrences

LSD is endemic in African countries, from 2012 spread through middle East, Europe, Russia. LSDV is double stranded DNA, stable in environment and remain up to 3 months on skin, an necrotic skin at least 39 days, it survives within PH 6.3-8.3, susceptible to sunlight, acidic or alkaline PH inactivated by detergent and detergent containing liquid solvents.

Treatment

- Affected animal kept in isolation

- Antibiotics are given to check the bacterial infection
- Anti inflammatory and anti histamine can considered
- Parenteral is advised
- In case of pyrexia paracetamol given

Vaccine

All the vaccine for to prevent LSD based on live attenuated virus. This vaccine divided into two class-

- 1) Homogeneous
- 2) Heterogeneous

Homogeneous vaccine contain neethling strain and Kenyan goat and sheep pox strain.

Prevention

- Affected animal should kept separate from unaffected animal
- Keep strict control of animal movement from affected areas to free areas
- Cattle Market within 10km radius should be closed
- Cleaning and disinfection of affected animal and area should carried out with chemical and disinfectant
- Isolation of infected animal from healthy animal
- Use proper protection, during clearing of affected animal

Outbreaks In India

2022 lumpy skin disease outbreak in India

Date- July- September 2022

Death- 97,000 +

Affected – 20,00,000 cattle

Vaccinated – 1.66 crore

Five state with Rajasthan, Punjab, Gujarat, Himachal Pradesh, Haryana. 1436 death in Maharashtra.

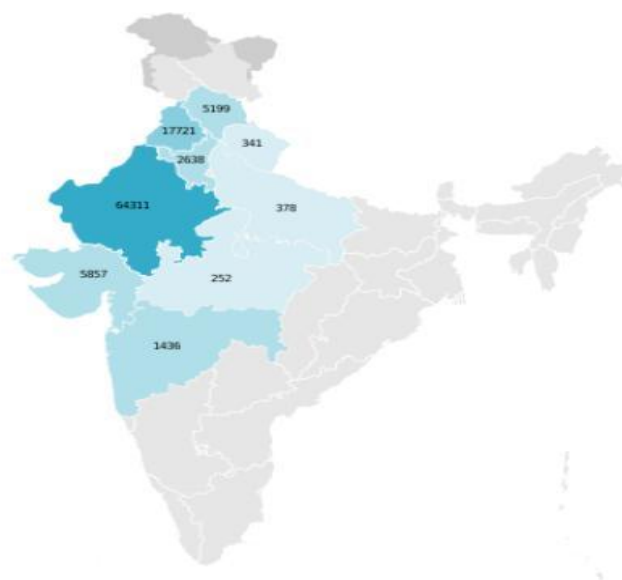


Fig- State wise representation of LSD virus.

Case study and management

Cases first reported in Gujarat in April 2022, In Maharashtra 1st case was reported on August 14, in Jalgaon district. On 14 September 2022 in Mumbai cattle transport was banned.

Case management can done by 10% Oxytetracycline 10mg/day for 5days, and dexamethasone 0.2mg/day, combination therapy can used. I.V treatment recommend regularly.

DISCUSSION

Based on history, symptoms, diagnosis, review indicate clinical manifestations, of lumpy skin disease. LSD developed on skin of animal head, neck, udder, limbs, perineum, LSD causes decrease milk production, weight conversion, abortion, fertility, damaged hides.

CONCLUSION

LSD is viral disease characterized by nodular lesion on skin, combination treatment saving the life has been successful using combination of anti inflammatory and anti microbial.

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