LUMPY SKIN DISEASE IN CATTLE: AN EMERGING DISEASE IN INDIA

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INTRODUCTION

Lumpy skin disease (LSD) is an economically devastating emerging viral disease of cattle. It is an infectious disease of cattle, which often occurs in epizootic form. It was first described in Zambia in 1929 and was considered to be the allergic reaction due to insect bite. After that in 1943-1945, similar type of cases occurred in Botswana, Zimbabwe and Republic of South Africa. A panzootic of LSD occurred in South Africa which lasted until 1949 causing huge economic losses. In 1957, LSD was first identified in East Africa in Kenya. The World Organization for Animal Health (OIE) categorizes LSD as a notifiable disease because of the substantial economic impact of an outbreak. Recent outbreak of LSD was reported from India, China & Bangladesh in 2019. In India, first outbreak of LSD was reported from Mayurbhanj, Odisha state in August 2019. Apart from Odisha, the disease has been reported from Karnataka, West Bengal, Chhattisgarh, Jharkhand, Assam, Maharashtra, Madhya Pradesh, Kerala, Tamil Nadu, Telangana and Andhra Pradesh.

ETIOLOGY OF LSD

LSD is an acute or inapparent cattle disease caused by lumpy skin disease virus (LSDV). The virus is classified in the genus *Capripoxvirus* within the subfamily *Chordopoxvirinae* of the family *Poxviridae*. The prototype strain is known as the Neethling poxvirus.

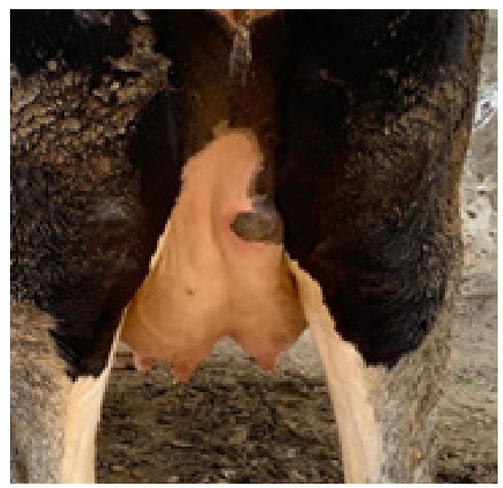
TRANSMISSION

This virus is mainly mechanically transmitted by insect vectors (mosquitoes, flies, ticks, etc.) or by contaminated needles. This disease can also spread through contaminated feed, water, and equipment. The virus is not transmissible to humans.Virus transmission occur through the movement of cattle. This virus may be transmitted to suckling calves through infected milk, or from skin lesions in the teats.

SYMPTOMS OF LSD

The incubation period of the disease in natural outbreaks is estimated to be 1–4 weeks. Clinical signs include lachrymation and fever (40–41°C), but some cases are non-febrile. Subscapular lymph nodes become noticeably enlarged. Shortly after the onset of fever, skin nodules (1–5cm in diameter) become apparent, in varying numbers, from only a few to multiple lesions covering the entire animal. In severely affected animals, ulcerative lesions appear in the mucous membranes of eye and oral/nasal cavities causing excessive salivation, lachrymation and nasal discharge. All these secretions may contain LSDV. Pox lesions may also be present in the pharynx, larynx, trachea, lungs and throughout the alimentary tract. Lesions on the udder and teats may cause mastitis and oedema with secondary bacterial infection. Pneumonia is a common and often a fatal complication of LSD. Abortion is also noticed in pregnant animals. Bulls may have painful lesions on their genitalia, which can prevent them serving, and may remain infertile for 4-6 months after the disease.

In outbreaks of the disease, the morbidity rate varies widely depending on the immune status of the hosts and the abundance of mechanical arthropod vectors and usually ranges from 3% to 85%. The mortality rate is generally low (1–3%) but may sometimes reach 40%. It is mainly spread through arthropods like flies, mosquitoes & ticks. Incidence of disease is higher in wet & warm weather. Disease is more severe in cows in the peak of lactation and causes a sharp drop in milk yield because of high fever caused by the viral infection itself and secondary bacterial mastitis. Deep skin lesions leave permanent scars and decrease the value of hides.



DIAGNOSIS

The tentative diagnosis of LSD is usually based on characteristic clinical signs, and the clinical diagnosis is confirmed by using conventional PCR. Electron microscopy examination and serum/ virus neutralization tests are also still widely used as gold standard methods for the detection of capripoxviral antigen and antibody.

TREATMENT

There is no specific antiviral treatment for LSD infected cattle. Infected animals may be separated from the herd and should be given supportive treatment. Systemic antibiotics may be given to prevent secondary bacterial infection.

PREVENTION AND CONTROL

Disease can be prevented by implementing biosecurity measures, vector control & restrictions of movement of susceptible animals from infected areas. Mass vaccination is an effective measure to control the disease. Attenuated LSDV strains (Neethling strain) and sheep or goat pox virus, these two types of viruses have been successfully used as LSD vaccines in Europe and Africa, respectively. Because of antigenic homology and cross-protection between sheep pox, goat pox and LSD viruses, any of these viruses can be used as a vaccine strain to protect cattle against LSD. The live attenuated vaccines give good immunity and are considered suitable in an emergency situation. Currently, there is no specific vaccine available for the disease in India.

CONCLUSION

Lumpy skin disease is a vector borne disease caused by genus Capripox virus. LSD causes a significant economic losses to farmers due to decreased milk production, abortions and infertility and damaged hides due to cutaneous nodules and fibrous tissue growth. Due to the infectious nature of LSD and its implications on the economy, the World Organisation for Animal Health (OIE) declares it as a notifiable disease. The control of LSD can be achieved through vaccination, restriction of animal movement and eradication of infected and exposed animals.The government should establish strategic policies for effective control and eradication of the disease. Research is required to elucidate insect vectors incriminated in the transmission of LSDV and their dynamics in different agro-ecologies.