

Lumpy Skin Disease

Etiology

The causal virus is related to that of sheep pox.

The prototype strain is known as the Neethling poxvirus.

Epidemiology

- 1- Lumpy skin disease appears epidemically or sporadically.
- 2- Its incidence is highest in wet summer weather, but it may occur in winter.
- 3- biting insects have been suspected as vectors; however.
- 4-Because the disease can be experimentally transmitted by infected saliva,
- 5-contact infection is considered as another route of infection.
- 6-Cross-protection between LSDV and sheep- or goat pox viruses has been exploited by the use of sheeppox virus for the immunization of cattle against LSD .
- 7 -The disease is transmissible to suckling calves through infected milk.
- 8-The virus was isolated from the semen of bulls with inapparent disease.
- 9-. The virus may remain viable in scab or tissue fragments for several months.
- 10-Morbidity is 5%–50%; mortality is usually low.
- 11-The greatest loss is due to reduced milk yield, loss of condition, and rejection or reduced value of the hide.
- 12-Virus is also present in blood, nasal and lachrymal secretions, semen and saliva, which may be sources for transmission.
- 13-Immunity after recovery from natural infection is life-long in most cattle; calves of immune cows acquire maternal antibody and are resistant to clinical disease for about six months.

pathogenesis

Subcutaneous or intradermal inoculation of cattle with LSDV results in the development of a localized swelling at the site of inoculation after four to seven days and enlargement of the regional lymph nodes while generalized eruption of skin nodules usually occurs seven to 19 days after inoculation.

- Viremia occurred after the initial febrile reaction and persisted for two weeks. Viral replication in pericytes, endothelial cells and probably other cells in blood vessel and lymph vessel walls causes vasculitis and lymphagitis in some vessels in affected areas. In severe cases infarction may result.

Clinical Findings

- The incubation period is 4–14 days.
- A subcutaneous injection of infected material produces a painful swelling and then fever, lacrimation, nasal discharge, and hypersalivation,
- followed by the characteristic eruptions on the skin and other parts of the body in ~50% of susceptible cattle.
- The nodules are well circumscribed, round, slightly raised, firm, and painful and involve the entire cutis and the mucosa of the GI, respiratory, and genital tracts.
- Nodules may develop on the muzzle and within the nasal and buccal mucous membranes.
- The skin nodules contain a firm, creamy-gray or yellow mass of tissue.
- Regional lymph nodes are swollen, and edema develops in the udder, brisket, and legs.
- Secondary infection sometimes occurs and causes extensive suppuration and sloughing; as a result, the animal may become extremely emaciated,
- In time, the nodules either regress, or necrosis of the skin results in hard, raised areas clearly separated from the surrounding skin. These areas slough to leave ulcers, which heal and scar.
- Nodular skin lesions may extend into underlying tissue such as tendons and tendon sheaths resulting in lameness in one or more legs.

- Most affected animals have multifocal, roughly circular, necrotic areas on the muzzle and in the respiratory tract (nasal cavity, larynx, trachea and bronchi), and buccal cavity (the inside of the lips, gingivae and dental pad), but these lesions may also be present in the fore stomachs, abomasum, uterus, vagina, teats, udder, and testes.

- Generalized lymphadenopathy comprising lymphoid hyperplasia and oedema is a regular finding.

Differential Diagnosis

The disease may be confused with

1- **pseudo-lumpy skin disease,**

which is caused by a herpesvirus (bovine herpesvirus 2). These diseases can be similar clinically, although in some parts of the world the herpesvirus lesions seem confined to the teats and udder of cows, and the disease is called bovine herpes mammillitis, causes more superficial skin lesions, has a shorter course and is a milder disease than LSD.

In addition, the presence of histopathologically demonstrable intranuclear inclusion bodies in BHV-2 infection as opposed to intracytoplasmic inclusions in LSD, are characteristic.

Pox like intracytoplasmic inclusion bodies or eosinophilic intranuclear herpesvirus inclusions may be seen in the nodules.

2-*Dermatophilus congolensis* also causes skin nodules in cattle.

delayed hypersensitivity reactions following foot-and-mouth disease vaccinations;

3- insect bites;

4-streptothricosis,

5- globidiosis,

6-demodicosis. (Laboratory confirmation is desirable)

7-onchocerciosis

Necropsy finding

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Diagnosis

-clinical signs

Histopathological sections of the skin lesions show changes peculiar to LSD.

There is a vasculitis and perivascular infiltration with white cells which causes a thrombosis of the vessels in the dermis and subcutis.

- The cells infiltrating the lesion are of a predominantly epithelioid type, known as the *celles claveleuses*,

There are also eosinophilic intracytoplasmic inclusions in the epidermal elements of the lesion and the inflammatory cells

- The lesions gradually become necrotic as a result of the thrombosis.

Treatment

Rx

Administration of antibiotics to control secondary infection and good nursing care are recommended.

Prevention

Quarantine restrictions are of limited use.

Vaccination with attenuated virus offers the most promising method of control.

The viruses of goatpox and sheeppox passed in tissue culture also have been used.