

**Lumpy Skin Disease (bovine nodular exanthema). الاسم المرادف مهم**

It is a highly infectious skin disease of cattle and less common in buffalo characterized by generalized cutaneous nodules.

**Cause:مهم**

Lumpy skin disease is caused by a virus in the genus **Capripoxvirus** of the family Poxviridae. Lumpy skin disease virus (LSDV) is closely related antigenically to sheep and goat poxviruses. Although these three viruses are distinct, they cannot be differentiated with routine serological test

**Transmission:**

**LSDV is thought to be transmitted primarily by biting insects.** This virus has been found in mosquitoes in the genera Aedes and Culex during some outbreaks. Experimentally infected Aedes aegypti are infectious for 6 days and can transmit LSDV mechanically during this time. Flies (e.g. Stomoxys calcitrans) and other insects might also be involved in transmission, but this remains unproven.

Direct contact could be a minor source of infection. **LSDV occurs in cutaneous lesions, saliva, respiratory secretions, milk and semen. Shedding in semen may be prolonged;** viral DNA has been found in the semen of some bulls for at least 5 months after infection. Animals can be infected experimentally by inoculation with material from cutaneous nodules or blood, or by ingestion of feed and water contaminated with saliva. LSDV is very resistant to inactivation, surviving in desiccated crusts for up to 35 days, and can remain viable for long periods in the environment.

Susceptible hosts:الحيوانات الحساسه للمرض:

Lumpy skin disease is primary a disease of **cattle and less common** in buffaloes.

**Signs**

The disease usually occurs is hot season. The **incubation period** is about **two to five weeks**.

Persistent fever, anorexia, reduce milk production, emaciation besides generalized suddenly skin nodules is observed. The skin nodules are most numerous on the neck, brisket, back, thighs, legs, perineum, udder, scrotum, and around the muzzle and eyes. Morbidity is high but mortality is generally low, but may be approach 10%.

**Post Mortem Lesions: مهم**

The post mortem lesions can be **extensive. Characteristic grayish-pink deep nodules with necrotic centers are found in the skin; these nodules often extend into the subcutis and underlying skeletal muscle, and the adjacent tissue exhibits congestion, hemorrhages and edema. The regional lymph nodes are typically enlarged.**

**Flat or ulcerative lesions may also be found in the mucous membranes of the oral and nasal cavities, pharynx, epiglottis and trachea. Nodules or other lesions can occur in the**

gastrointestinal tract (particularly the abomasum), udder, urinary bladder, lungs, kidneys, uterus and testes. In the lungs, the lesions are difficult to see and appear as focal areas of atelectasis and edema. The mediastinal lymph nodes are enlarged in severe cases, and pleuritis may be seen. Some animals may have synovitis and tendosynovitis with fibrin in the synovial fluid.

Aborted fetuses do not always have the characteristic external lesions, but some may be covered in nodules.

### **Microscopically: 🦋**

The dermis shows edema, perivascular infiltration by lymphocytes, macrophages and neutrophils.

Acanthosis, parakeratosis and hyperkeratosis are seen in the epidermis. Moreover, eosinophilic intracytoplasmic inclusion bodies are seen in keratinocytes, macrophages and fibroblasts. Later on the hyperplastic cells undergo vesiculation and necrosis, which requires three to 5 weeks to heal.

The lungs show coagulative necrosis, surrounded by mononuclear cells mainly lymphocytes and plasma cells and finally followed by fibrous tissue. Other organs show necrosis infiltrate by round cells.

Diagnosis

Clinical

Lumpy skin disease should be suspected when the characteristic skin nodules, fever and enlarged superficial lymph nodes are seen. The mortality rate is usually low.

Laboratory tests

Confirmation of lumpy skin disease in a new area requires virus isolation and identification. LSDV will grow in bovine, caprine or ovine cell cultures; the best growth is seen in lamb testis cells. LSDV can be distinguished from the herpesvirus that causes pseudo-lumpy skin disease by the cytopathic effect and the intracytoplasmic location of inclusion bodies. .  
Nucleic acid

recognition methods have also been described. LSDV can be detected in cell cultures or directly in tissues by polymerase chain reaction (PCR) assays.

Typical capripox virions can be seen in biopsy samples or desiccated crusts using transmission electron microscopy. This finding, in combination with a history of generalized nodular skin lesions and lymph node enlargement, can be diagnostic in cattle in endemic areas. Electron microscopy can distinguish capripoxviruses from the parapoxviruses that cause bovine papular stomatitis and pseudocowpox, but not from orthopoxviruses (cowpox and vaccinia virus.)

Serological tests include an indirect fluorescent antibody test, virus neutralization, ELISA.

Differential diagnosis

Differentials include pseudo-lumpy skin disease/ bovine herpes mammillitis, dermatophilosis, ringworm, insect or tick bites, besnoitiosis, ringworm, Hypoderma bovis infestation, photosensitization, bovine papular stomatitis, urticaria and cutaneous tuberculosis. Most of these diseases can be distinguished from lumpy skin disease by the clinical signs, including the duration of the disease, as well as histopathology and other laboratory tests.