

Clinical Insights of Lumpy Skin Disease in Cauvery Delta Region of Tamil Nadu

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Abstract

Lumpy Skin Disease (LSD) is a contagious and life-threatening affliction affecting both cattle and calves, marked by the emergence of nodules on the skin and various body areas. Notably, in calves, the impact extends beyond generalized lesions, leading to a frequent occurrence of respiratory distress. Secondary bacterial infection also often aggravates the condition. A total number of 36 animals among which 29 animals were less than six months age and 7 were above six months of age were presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu during the period of April to June 2023 with the history of eruptive lesions all over the body showing signs of Lumpy skin disease with various clinical manifestations like nodular lesions all over the body, fever, nasal discharge, lymphadenopathy, inspiratory dyspnoea, along with diffused edematous swelling of all limbs and diarrhoea in calves. In Indigenous adult cattle, diffused edematous swelling of limbs either unilateral or bilateral along with brisket and jowl edema were observed. Mortality rate in calves less than 3 months is 75 %. In adult animals, the mortality rate was high in Indigenous breeds compared to cross bred cattle. Animals were treated to combat secondary bacterial infections with antibiotics along with supportive like Syr. Lavitone H 3ml per os daily as supportive therapy. The cases with severe clinical manifestation were even treated with steroid Inj. Prednisolone @1mg/kg b.wt. Animal treated for 15 days, gradual recovery was noticed. Vector control need to be implemented to prevent the disease associated with economic losses.

Keywords: Lumpy skin disease, Limb edema, lymphadenopathy

Lumpy skin disease is caused by Lumpy skin disease virus (LSDV), which belongs to the genus Capripox virus, a part of the Capripox viridae family, that affects cattle, calves and water buffaloes. The LSDV shares antigenic similarities with sheeppox virus and goat pox virus. It is transmitted by vectors like blood-sucking insects, certain species of biting flies and mosquitoes, or ticks (Tuppurainen *et al.* 2013). According to the United Nations Food and Agriculture Organisation (FAO), infected animals shed the virus through oral and nasal secretions which may contaminate common feeding and water troughs. Thus, the disease can either spread through direct contact with the vectors or through contaminated fodder and water. Studies have also shown that it can spread through animal semen during artificial insemination (Farag *et al.* 2020). The incubation period is around 4 and 14 days post infection. Initially It causes high fever with swollen lymph nodes, nodules on the skin which is around 5cm in diameter and can also lead to death, especially in young animals that have not previously been exposed to the virus (Tageldin *et al.* 2014). It also causes depression, anorexia, rhinitis, conjunctivitis, excess salivation. Necrotic lesions can

develop in respiratory and gastrointestinal tract. It causes severe damage to the hides of the animal and also there will be drop in milk production and leads to economic loss to farmers (Tageldin *et al.* 2014). The LSDV can remain viable in infected tissue for more than 120 days and quarantine restrictions are of limited use (Gumbe, 2018). Nasal discharge could be seen as a result of extent upper respiratory tract infection (Irons *et al.* 2005). Our study provides valuable clinical insights into the recent shifts in LSD, shedding light on diagnostic challenges and the impact on affected cattle populations. We discuss observed changes in lesion morphology, severity of clinical signs in calf.

A total of 36 animals, among which 29 were less than six months age and 7 were above six months of age which were presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu during the period of April to June 2023 with the history of anorexia, pyrexia, eruptive lesions all over the body showing signs of Lumpy skin disease with various clinical manifestations like edema of limbs, diarrhoea, nodular lesions all over the body along with respiratory distress and two cases with corneal opacity. The confirmatory diagnosis was made by PCR. Blood and serum samples collected from those

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animals and haemato-biochemical parameters revealed the presence of anemia and leucocytosis along with hypoproteinemia and hypoalbuminemia. These animals treated with antibiotic Inj. Ceftiofur @1.1 mg/Kg B.W, antihistaminic Inj. Chlorpheniramine maleate @ 0.5 mg / kg B.W, anti-inflammatory Inj. Meloxicam @ 0.5 mg / kg B.W and along with supportive like syr. Lavitone H @ 3ml s.i.d for 30 days per os. Ocular wash also done with 1% Boric acid and nasal and oral wash with 10% Potassium permanganate solution. Animals with respiratory distress treated with Vitamin C 3ml IV and N-acetyl cysteine @ 10mg/kg B.W IV. After 10 days of vigorous treatment animal showed uneventful recovery without any complications.

The calves affected with lumpy skin disease showed severe nodular lesions all over the body especially on face, eyes, nostrils and muzzle region (Fig: 1, 1a, 1b and 1c), fever, nasal discharge, lymphadenopathy, inspiratory dyspnoea, along with diffused edematous swelling of all limbs and diarrhoea with straining in calves. The nodules were converted to ulcers and scab like lesion on later stages (Fig. 2 and 2a). Some of the animals were presented with few lumpy nodules on the body without affecting the appetite. The nodules were ruptured between 7-15 days of onset followed by oozing of white to serosanguinous purulent discharge with big ulcers formation. Some animals showed peculiar signs like lymphadenomegaly (Fig: 3) and limb edema (Fig: 5) and corneal opacity (Fig: 4) and facial deformity (Fig: 6

and 7). Animals presented with diffused edema recovered after discharging sero - haemorrhagic fluid from the edematous site. Most of the clinical observations were coincided with other published data (Farag *et al.* 2020). The calves with severe respiratory distress had more complications comparatively. Mortality rate in calves less than 3 months is 75 % (22/29). In adult animals, the mortality rate was high in Indigenous breeds compared to crossbred cattle. Leucocytosis was observed in the LSD infected animals presented in this study 2 days post infection, hypoproteinemia and hypoalbuminemia was also noticed. Animals were treated to combat secondary bacterial infections with antibiotics along with supportive like Syr. Lavitone H 3ml per.os daily for 15 days. The cases with severe clinical manifestation were even treated with steroid Inj. Prednisolone @1mg/kg B.W for 5 days, Inj. Ascorbic acid @ 10 mg/ Kg B.W (G-Vit -C®) was given as anti-oxidant, Inj. N-acetyl cysteine @10 mg/Kg B.W (Muconix®) as mucolytics for 5 days, and the owner was also advised to give milk from the animals recovered from Lumpy Skin Disease as passive immunization to calves. Gradual recovery was noticed only after 15 days of clinical presentation. It was evidenced in this study that, prognosis of LSD in calves was poor when animal showed symptoms of diarrhoea. This is the last clinical manifestation of LSD noticed in all calves died. LSD complications like facial deformity, corneal opacity, permanent scar noticed on the body. Vector control need to be implemented to prevent the disease associated with economic losses.



Fig 1 and 1a: Nodular lesions all over the body



Fig 1b: circumscribed Nodules noticed in the neck and ear region



Fig 1c: Swollen eyelids with ocular discharge in LSD affected calf



Fig 2: Ruptured LSD nodule – scab formation



Fig 2a:Ulcerative scab on the nasal bridge



Fig 3: Lymphadenomegaly in LSD affected calf



Fig 4: Ocular discharge with mild corneal opacity in LSD calf



Fig 5: LSD Calf with limb edema and severe respiratory distress



Fig 6: Facial deformity in LSD affected calf



Fig 7: Ruptured LSD nodule – Deformed Facial structure

N-acetylcysteine (NAC), recognized as both a mucolytic and antioxidant pharmaceutical agent, exhibits potential influence on various inflammatory pathways. Functioning by supplying sulfhydryl groups, it serves as a precursor for reduced glutathione, while also directly scavenging reactive oxygen species (ROS). This dual action contributes to the regulation of cellular redox status. Additionally, functioning as a mucolytic, NAC has the capacity to reduce sputum viscosity, potentially enhancing bronchial clearance. This effect, in turn, holds promise for alleviating dyspnea and optimizing lung function (Sadowska *et al.*, 2006). In viral diseases, treatment focused on controlling secondary infections to combat clinical severity and mortality. Further studies need to be conducted in identifying various other clinical manifestation in evolving new strains of LSD.

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