

A Case Report on the Management of Lumpy Skin Disease in Cattle



A Clinical Report

Submitted by

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Roll No: 15/07

Reg. No: 01420

Internship ID: 07

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**Chattogram Veterinary and Animal Sciences
University**

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List of Abbreviations:

Abbreviation	Elaboration
LSD	Lumpy Skin Disease
LSDV	Lumpy Skin Disease Virus
CaPV	Capripox Virus
SPPV	Sheeppox virus
GTPV	Goatpox virus
AST	Aspartate Aminotransferase
ALT	Alanine Transaminase
IM	Intramuscular
UVH	Upazila Veterinary Hospital
CVASU	Chattogram Veterinary and Animal Sciences University

ABSTRACT

Lumpy skin disease (LSD) is an infectious, eruptive, occasionally fatal skin disease of cattle caused by a virus of the family Poxviridae, which is a recent problem affecting the livestock industry of Bangladesh. This report reveals the clinical management of a bull affected with Lumpy Skin Disease. A cross-breed bull with the complaint of nodular eruptions, fever and anorexia was admitted to Upazila Veterinary Hospital, Raozan, Chattogram on December 10, 2019. Physical examination revealed that the bull was febrile with high body temperature (39°C) and had many small to large circumscribed nodules on different parts of the body. Additionally, there were lameness and swelling of both pre-scapular and pre-femoral lymph nodes was found. On the basis of clinical history, outbreak pattern, signs and increased creatinine and lymphocyte level in blood confirmed this case as a Lumpy Skin Disease. The bull was treated to check secondary bacterial infection with combination of antimicrobial, anti-inflammatory and antiseptic solution. The body temperature was dropped to normal and the bull started feeding normally after one day of treatment. The bull was recovered completely after 21 days of treatment.

Keywords: Lumpy Skin Disease, viral infection, lymph nodes.

Introduction

Lumpy skin disease (LSD) is caused by the infection of cattle or water buffalo with the poxvirus, Lumpy skin disease virus (LSDV). The virus is one of three closely related species within the genus Capripox virus (CaPV), the other two species being Sheeppox virus (SPPV) and Goatpox virus (GTPV). These viruses are responsible for most economically significant diseases of domestic ruminants in Africa and Asia (Buller et al 2005). LSD occurred in north Sahara desert and outside the African continent was confirmed for the first time in Egypt and Israel between 1988 and 1989, and was reported again in 2006, 2011 and 2014 in Egypt (Brenen et al 2006). It is currently considered a rapidly emerging disease of high consequence. LSDV has a limited host range and does not complete its replication cycle in non-ruminant hosts (Salib et al 2011). Besides, LSD has not been reported in sheep and goats even when kept in a close contact with infected cattle although typical skin lesions, without systemic disease, have been produced experimentally in sheep, goats, giraffes and impalas (Abera et al 2015).

Lumpy skin disease (LSD) is an exhausted viral disease that is characterized by high economic losses due to chronic debility in affected animals with reduced milk production. Moreover, severe and permanent damage to hides can decrease their commercial value (Barnard et al. 1994). It is a great threat for cattle which is a member of Capripox virus genus in the Poxviridae family (Buller et al 2005). The disease is transmitted mechanically by arthropod vectors (OIE 2010). Temporally, the effect of LSD is greatly seen in warm and humid months of the year, which is probably associated with vector abundance (Gari et al 2010). The disease is characterized by fever, nodules (2 to 5 cm in diameter) on the skin and mucous membranes, lesions in the respiratory and gastrointestinal tracts, and enlarged superficial lymph nodes (Tageldin et al 2014). In severe cases presence of high fever, depression, anorexia, lethargic, loss of milk production, abortion, sterility, damage of skin and sometimes death due to secondary bacterial infections.(Constable et al 2017). The mortality rate may reach up to 5% whereas morbidity rate vary from 3% to 85% (Barnard et al 1994). The treatment of LSD is symptomatic and the aim of our treatment was to check secondary bacterial complications by using combinations of antimicrobial and anti-inflammatory therapy.

Case History and Observations

A cross-breed bull was examined at Upazila Veterinary Hospital (UVH), Raozan, Chattogram on 10 December, 2019, with nodular eruptions (**Fig-1**) on the body, high temperature (39°C), increased heart (62 beats/minute) and respiratory rate (33 breaths/minute), swollen superficial lymph nodes with the history of anorexia. It was to notify that the outbreak of LSD in Bangladesh happened on 2019 that affected all over the country. Vaccine of this disease is on working process. So, the cross breed bull of our study was not vaccinated. There were several small to large size nodules (**Fig-2**) were present in different areas of the body. Additionally, there were lameness and swelling of both pre-scapular and pre-femoral lymph nodes. Due to outbreak of this viral disease, the sign and symptoms were very common to diagnose the disease. Therefore, the diagnosis of this case was established as LSD based on the present history and clinical findings as in other cases.



Figure1: Nodular eruptions on the neck region.



Figure2: Swelling of pre-femoral lymph node.

Laboratory Findings

For further laboratory examination, a blood sample was taken from the bull. The blood was collected from left jugular vein aseptically with antiseptic and gentle restraining. 15ml blood was collected with 30ml syringe and 19G needle. After separation of serum it was sent to the diagnostic lab of Department of Physiology, Biochemistry and Pharmacology, CVASU for hematological, biochemical test.

According to the laboratory diagnosis report, there are found some abnormalities in values.

Table 1: Serum Biochemical Analysis of the bull with LSD (*Radostits et.al, 2007*)

Serum Type	Units	Normal ranges	Results
Creatinine	mg/dl	0.5-2.2	0.62
AST	μ/L	60-125	98.81
ALT	μ/L	11-40	25.48

(AST= Aspartate Aminotransferase; ALT= Alanine Transaminase)

On the serum biochemical analysis of this LSD infected bull showed that the level of creatinine was higher than the normal which was due to the kidney dysfunction. On the other hand the level of liver enzyme AST and ALT were in normal range signifying liver function was normal.

Table 2: Complete Blood Cell count of the bull with LSD (*Radostits et.al, 2007*)

Type	Units	Normal ranges	Results
RBC	$10^6/\text{cu mm}$	5-10	7.4
Hb	mg/dl	8-15	9.5
WBC	$10^3/\text{cu mm}$	4-12	8.7
PCV	%	24-46	29.3
Lymphocyte	%	45-70	74
Monocyte	%	2-20	3
Neutrophil	%	15-45	15
Eosinophil	%	2-20	8

Here CBC result shows that all blood parameters were in normal level except Lymphocyte. This was due to the viral infection. It was confirmed that this bull was suffered from Lumpy Skin Disease caused by Lumpy Skin Disease Virus.

Case Management and Treatment Outcome

The treatment of LSD was only symptomatic and targeted at preventing secondary bacterial complications using antimicrobial therapy. This case was treated with 10% Oxytetracycline 10 mg/kg/day, Meloxicam 0.5 mg/kg/day for five successive days were managed IM. Feed intake has been recommended regularly and the body temperature also dropped to normal after 24 hours of post treatment. However, the nodules were present during the course of therapy and were washed with Potassium permanganate solutions. Three weeks later this cattle was recovered and nodules were also cured but with scars on the skin.

Discussion

On the basis of outbreak status of LSD, clinical history and signs, this case was confirmed as Lumpy Skin Disease (LSD) which was in accordance with review by Al-Salihi KA (2014). Lumpy skin disease is an important transboundary disease of cattle and has recently spread out throughout the Bangladesh. According to Tuppurainen et al (2012), the disease causes considerable devastating economic losses mainly due to permanent hide damage, milk production, abortion and infertility, and emaciation and disruption in the trade of cattle and their products. The infected animals may show fever commonly rises to 40-41.5°C, lacrimation, increased nasal and pharyngeal secretions, anorexia, general depression and a disinclination to move. The usual manifestations of LSD are multiple firm circumscribed nodules developed in the skin of the animals in which head, neck, the perineum, the genitalia and the limbs are principally involved. According to Constable PD et al (2017), the regional lymph nodes are easily palpable and enlarged 3-5 times their normal size. Most cases may complicate or extend to other underlying tissues or internal organs and may sequel in economically significant disorders. Though LSD have not great mortality rate only 1-3%, the economic losses is higher. According to Abutarbush SM et al (2013) systemic antibiotic and anti-inflammatory drugs are obligatory for skin infections, cellulitis or pneumonia and considerably to avoid further complications and economic losses.

In this case, 10% oxytetracycline, meloxicam, potassium permanganate were prescribed, consequently fever, anorexia, nodular lesions and other deviations were remarkably improved but the skin healed with scar. According to Salib et al (2011), a treatment trial is conducted by doctors with the aim of preventing LSD complications and saving the life has been successful using a combination of antimicrobials, anti-inflammatory and antiseptic solutions.

Conclusions

Lumpy Skin Disease (LSD) results in overwhelming economic losses due to reduce hide quality, chronic debility, weight loss, infertility and death. A treatment aimed at preventing LSD complications and saving the life has been successful using a combination of antimicrobials and anti-inflammatory drugs.

References

- Abutarbush S.M, Ababneh M.M, Al Zoubil I.G, Al Sheyab O.M, Al Zoubi M.G, 2013, Lumpy Skin Disease in Jordan: Disease Emergence, Clinical Signs, Complications and Preliminary-associated Economic Losses. *Transbound Emerg Dis* 62: 549-554.
- Abera Z, Degafu H, Gari G, Kidane M, 2015, Sero-prevalance of Lumpy skin disease in selected districts of West Wollega Zone, Ethiopia. *BMC Vet Res* 11:135.
- Al-Salihi KA (2014) Lumpy Skin disease: Review of literature. *Mirror Res Vet e* 3: 6-23.
- Barnard BJ, Munz E, Dumbell K, Prozesky L, 1994, “Lumpy skin disease,” *Infectious Diseases of Livestock with Special Reference to Southern Africa*, Oxford University Press, Oxford, UK. vol. 1, pp. 604–612.
- Brenner J, Haimovitz M, Oron E, Stram Y, Fridgut O, 2006, Lumpy skin disease in a large herd in Israel: *Israel Journal of Veterinary Medicine* 61: 103.
- Bowden T.R, Babiuk S.L, Parkyn GR, Copps J.S., and Boyle D.B., 2008, Capripoxvirus tissue tropism and shedding: a quantitative study in experimentally infected sheep and goats. *Virology*. Elsevier, UK. vol. 371(2), pp. 380–393.
- Buller R.M., Arif B.M., Black D.N, 2005, *Virus Taxonomy: Classification and Nomenclature of Viruses*. Eighth Report of the International Committee on Taxonomy of Viruses, Elsevier Academic Press, San Diego, California, USA, pp. 117–133.
- Constable PD, Hinchcliff KW, Done SH, Gruenberg W, 2017, Lumpy Skin Disease. *Veterinary Medicine: A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs, and Goats*. Elsevier, UK, p: 1591.

European Food Safety Authority, 2015, Scientific Opinion on Lumpy Skin Disease. EFSA Panel on Animal Health and Welfare (AHAW). EFSA 13: 3986.

Gari G, Waret-Szkuta A, Grosbois V, Jacquet P, Roger F, 2010, Risk factors associated with observed clinical lumpy skin disease. *Epidemiol Infect* 138: 1657-1666.

OIE. 2010, Lumpy Skin Disease, Chapter 2.4.14 OIE Terrestrial Manual, Office International des Epizooties, Paris, France, p: 319.

Radostits O.M, Gay C.C, Hinchcliff K.W & Constable P.D, 2007, Lumpy skin disease *Veterinary Medicine: A textbook of the disease of cattle, horse, sheep, pigs and goat*. 10th ed. Saunders, London, p. 813-819.

Salib FA, Osman AH, 2011, Incidence of lumpy skin disease among Egyptian cattle in Giza Governorate, Egypt. *Vet World* 4: 162-167.

Tageldin MH, Wallace DB, Gerdes GH, Putterill JF, Greyling RR, 2014, Lumpy skin disease of cattle: an emerging problem in the Sultanate of Oman. *Trop Anim Health Prod* 46: 241-246.

Tuppurainen E.S.M, Oura C.A.L, 2012, Review: lumpy skin disease: an emerging threat to Europe, the Middle East and Asia. *Transboundary and Emerging Diseases*, vol. 59, no. 1, pp. 40–48.

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