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Lumpy skin disease in a cow: a case study

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Abstract

Lumpy skin disease (LSD) is a poxvirus origin disease which causes generalized lumps along the integument system. It is an economically important disease with high morbidity and low mortality which causes decrease milk production, permanent damage to skin, decreased weight gain and infertility. The present case was reported from Nooranad, a place of Alappuzha district, Kerala, in 28 June 2020 with clinical signs of Anorexia, decreased milk production, wide spread lumps along the skin, enlarged pre scapular lymph node, conjunctivitis, excessive salivation, 103.4°F body temperature and emaciation. Haemogram results shows slight leukopenia, slight polycythemia and thrombopenia. Slight hypoglobulinemia was observed in serum biochemical analysis. Case was responded well to Enrofloxacin, Chlorpheniramine maleate and Meloxicam. Proper biosecurity practices and vaccination protocols are necessary to control this disease.

Keywords: Lumpy skin disease, cattle, LSDV, leucopenia, cattle

Introduction

Lumpy skin disease (LSD) is a poxvirus origin disease which causes generalized lumps along the integument system. It is transmissible disease of cattle with severe economic implications (Alkhamis and Vaanderwaal, 2016) [2]. Lumpy skin disease virus (LSDV) as well as sheeppox and goatpox viruses belong to the genus Capripoxvirus within the subfamily Chordopoxvirinae of the family Poxviridae (Buller *et al.*, 2005) [5]. It has a DNA genome (Tulman *et al.*, 2001) [8]. LSD is an economically important disease with high morbidity and low mortality which causes decrease milk production, permanent damage to skin, decreased weight gain and infertility (Coetzer, 2004) [5]. Lumpy skin disease virus originated in sub-Saharan Africa from where it has spread north and south during the past 70 years (Woods, 1988) [9]. *Aedes aegypti* female mosquitoes are capable of the mechanical transmission of lumpy skin disease virus (LSDV) from infected to susceptible cattle (Chihota *et al.*, 2001) [4]. The current study deals with a cow which was presented with clinical signs similar to LSD Nooranad, a place of Alappuzha district, Kerala.

Materials and methods

The present case was reported from Nooranad, a place of Alappuzha district, Kerala, in 28 June 2020.

Clinical signs: Anorexia, decreased milk production, wide spread lumps along the skin, enlarged pre scapular lymph node, conjunctivitis, excessive salivation, 103.4°F body temperature and emaciation are the common clinical signs associated with LSD.

Sample collection: Two ml blood was collected and stored in Vactovein® K3 EDTA (Ethylenediaminetetraacetic acid) vial for complete blood count (CBC) analysis. Four ml blood was collected for serum biochemistry in Vactovein® Clot activator vial for serum biochemistry analysis.

Diagnosis: Diagnosis was done based on clinical sign, Haematology and biochemistry parameters.

Treatment protocol: was started with Enrofloxacin injection (7.5 mg per kg body weight once daily) as Intra Muscular(IM), Chlorpheniramine maleate (0.5 mg per kg body weight once daily) as IM, Meloxicam (0.5 mg per kg body weight once daily) as IM and Dextrose normal saline (one liter) as Intra Venous (IV) were administered. Boric acid power was

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applied all over the body. The same treatment was followed up to five days then changed to Enrofloxacin 1500mg bolus (10 mg per kg bodyweight twice daily), Meloxicam 100mg bolus (0.5mg per kg bodyweight twice daily) and Chlorpheniramine 4 mg tablets (0.3mg per kg bodyweight once daily) was given for one week.

Results and discussion: Results with discussion as follows;

Clinical signs: Anorexia, decreased milk production, wide spread lumps along the skin (Fig 1), enlarged pre scapular lymph node, conjunctivitis, excessive salivation, 103.4°F body temperature and emaciation were evident in this condition these results are in accordance with findings of Jalali *et al*, 2017.

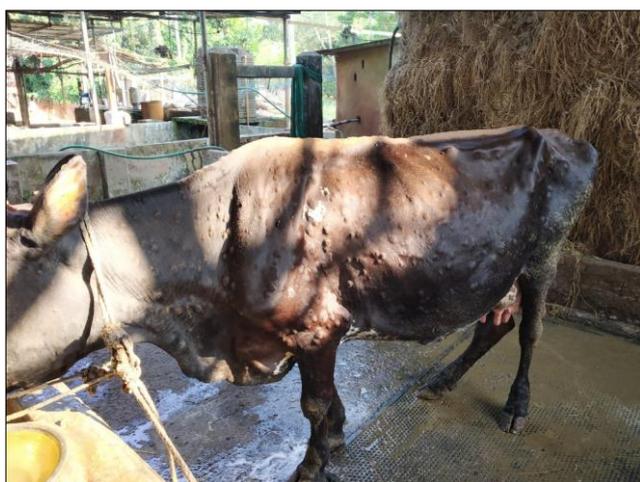


Fig 1: Lumps all over the body

Diagnosis: Results of haematology is recorded in Table 1.

Table 1: Results of Haemogram, *Normal reference ranges are as per Radostits *et al*, 2007 [7]

| Parameter | Result | Normal range* |
|---|--------|---------------|
| WBC ($\times 10^3/\mu\text{L}$) | 3.45 | 4.9–12.0 |
| Neutrophils ($\times 10^3/\mu\text{L}$) | 2.03 | 1.8–6.3 |
| Lymphocytes ($\times 10^3/\mu\text{L}$) | 1.28 | 1.6–5.6 |
| Monocytes ($\times 10^3/\mu\text{L}$) | 0.04 | 0–0.8 |
| Eosinophils ($\times 10^3/\mu\text{L}$) | 0.02 | 0–0.9 |
| RBC ($10^6/\mu\text{L}$) | 7.52 | 5.1–7.6 |
| Hb (g/dL) | 10.35 | 8–12 |
| HCT (%) | 35.48 | 22–33 |
| MCV (fL) | 47.52 | 38–50 |
| MCH (pg) | 17.53 | 14–18 |
| MCHC (g/dL) | 29.51 | 36–39 |
| RDW (%) | 19.21 | 15.5–19.7 |
| Platelets ($\times 10^3/\mu\text{L}$) | 75 | 200–650 |

Haemogram results shows slight leukopenia, slight polycythemia and thrombopenia. Leukopenia was maybe due to release of corticosteroid because of stress (Ismail and Yousseff, 2006) [6]. Thrombocytopenia was mainly due to the shortening of the platelet life span. This phenomenon is typically caused by excessive platelet consumption due to systemic vasculitides, which were widespread in our study due to the tropism of LSDV to endothelial cells (Radostits *et al*. 2007) [7]. Polycythemia was mainly because of dehydration.

Serum Biochemistry results are recorded in table 2.

Table 2: Results of Serum Biochemistry,

| Parameter | Result | Normal range* |
|---------------------|--------|---------------|
| Total protein gm/dl | 6.25 | 5.7–8.1 |
| Albumin gm/dl | 2.75 | 2.1–3.6 |
| Globulin gm/dl | 2.48 | 3.0–3.5 |
| T. Bilirubin mg/dl | 0.28 | 0.01–0.5 |
| AST U/L | 52.32 | 78–132 |
| ALP U/L | 65.34 | 0–200 |
| Glucose mg/dl | 68 | 45–75 |
| Creatinine mg/dl | 1.15 | 0.5–1.5 |

*Normal reference ranges are as per Radostits *et al*, 2007 [7]

Slight hypo-globulinemia was observed in serum biochemical analysis, this may be due to decreased synthesis and higher catabolic rate of serum globulins (Ahmed, 2015) [1].

Treatment protocol: Enrofloxacin provided antibiotic umbrella to control secondary infections, Chlorpheniramine maleate controlled allergies associated with LSD, Meloxicam controlled pyrexia and Dextrose normal saline rehydrated the animal. Boric acid power increased wound healing rate associated with lumps. Marked recovery was observed by fifth day, animal started feeding and body temperature came to normal range. Oral medicine supplementation along with boric acid were effective to reduce the size of lumps and lymph nodes.

Prevention: Prevention is better than cure”, regarding LSD, it is very difficult to get the animal back to normal production condition. Even after recovery, the production rate couldn’t achieve the pre-infection production rate. So periodic vaccination and proper bio security measures are recommended to save the livestock farm economy.

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