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WORLDWIDE IMPACT OF LUMPY SKIN DISEASE IN ANIMALS

[1]Ankita, [2]Shruti Thakur, [3]Jyoti Gupta
[1]Student of bachelor's, [2]Assistant Professor, [3]Associate Professor,
[1]IEC School of Pharmacy.
[1]IEC University, Baddi, Distt. Solan (H.P.), India.

Abstract: Lumpy skin disease (LSD) is a global issue affecting animals. It is a skin condition distinguished by irregular skin texture and density. Arthropods, as well as a combination of genetic and environmental factors, are to blame for this condition. A number of factors can contribute to lumpy skin, including fever and a decrease in milk production. It has two types of DNA. This article will discuss the causes, symptoms, etiology, isolation, and prevention of lumpy skin. The disease is causing the great damage on rural livelihoods, which are heavily dependent on cow, buffalo, bulls, cattle, resulting in significant income losses for affected farmers. Due to the increase in cases of lumpy skin disease in animal has triggered, the consequences are also devastating at the national level.

Index Terms: Lumpy skin disease virus, transmission, pathogenesis, pharmacological treatment.

Abbreviations:

1. LSD: Lumpy skin disease
2. LSDV: Lumpy skin disease virus
3. CaPV: Capripoxvirus
4. OIE: Office International des Epizooties
5. SPV: Sheepox virus
6. GPV: Goatpox virus
7. TCID: Tissue culture infective dose
8. MDBK: Madin-Darby bovine kidney
9. TEM: Transmission electron microscopic
10. IMP: Immunoperoxidase
11. PCR: Polymerase chain reaction
12. TAD: Transboundary Animal Disease

1. Introduction:

Lumpy skin disease (LSD) is an infectious disease, which cause from blood-sucking hard ticks, biting flies, and other arthropods. Recently, many cattle's and buffaloes suffered from lumpy skin, a common skin ailment. It is a contagious illness and a vector-borne form of the pox that spread from place to place that is why it is also called a communicable disease. Transmission can also occur by direct contact, ingestion of tainted food or drink, natural mating, or artificial insemination (1,2). Temporarily, LSD has been demonstrated during the hot, muggy months of the year (3). The lumpy skin disease virus (LSDV) belongs to the genus Capripoxvirus and family Poxviridae. A Capripox virus is viral species of all animal poxviruses and capripoxviruses are among the most dangerous. All CaPV illnesses must be reported to the OIE (Office International des Epizooties) (World Organization for Animal Health). (4). Sheep pox virus (SPV) and goat pox virus (GPV), two other capripoxviruses, are virulent pathogens. Natural hosts include sheep, goats, and cattle, within the genus, capripoxviruses interact with one another. In primary cells, LSDV is typically extracted and quantified (TCID50; tissue culture infective dose). Additionally, LSDV causes multifocal regions (having two or more parts that correct vision at different focal distances) of hyperplastic cells in Madin-Darby bovine kidney (MDBK) cells (5). It may also spread from semen, blood, saliva, ocular, and nasal discharge. This extremely contagious viral disease in domestic and wild carnivores causes a variety of lesions, including erythematous papules (redness of the skin caused by an accumulation of blood) and nodules in the skin and subcutis and the mortality rate is extremely high. The cutaneous lesions start as papules and progress to vesicles, pustules, and ulcers. (6). The economic stage of the country may be impacted by the immunizations. Since everyone cannot afford the medication on their own, it is essential that people should be aware of the symptoms and keep their animals away from infected individuals in order to limit and control the virus. Vaccines may have an impact on the economic state of the nation. There are several veterinary hospitals that offer vaccinations, and many new tools have been developed to detect both viruses and antibodies. Due to its serious economic effects on local livelihoods and industry, as well as the trade restrictions, lumpy skin condition is categorized

as a TAD. (1). Ether (20%), chloroform (1%), formalin (1%), and various detergents, such as sodium dodecyl sulphate, all are not useful and it may be unsafe to LSDV. It is additionally unprotected to phenol (2%/15 min), sodium hypochlorite (2%–3%), iodine compounds (diluted 1:33), Virkon (2%), and quarternary ammonium compounds (0.5%). The life expectancy of the LSDV at room temperature is remarkable, especially in dried scabs. It is quite challenging to neutralize LSDV. (7). Due to the exotic breeds and lower disease resistance, Bos Taurus is more susceptible towards LSD than Bos indicus. Coetzer (2004) noted that Bos Taurus or imported breeds with relatively thin skin suffered more losses in severe cases of the disease than did Bos indicus or indigenous breeds with thicker skin diameter. (8).

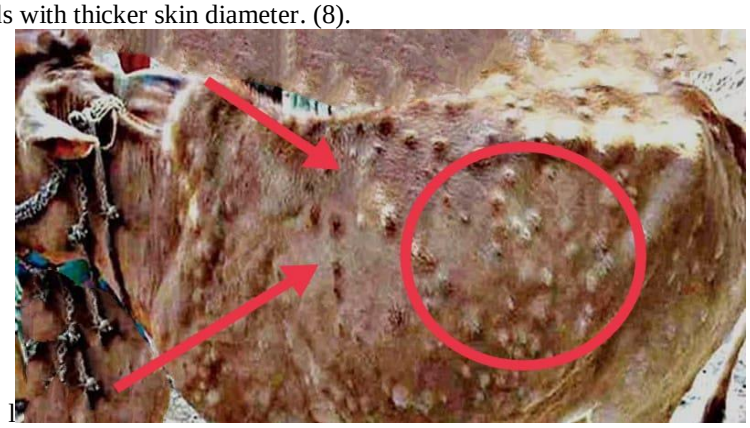

Figure 1: Lumpy skin disease in Cattle (1)

2. History:

LSD was first found in cattle during 1929 in Zambia. Initially, LSD symptoms were thought to be the result of poisoning or a hypersensitivity to insect bites which was becoming very dangerous throughout all over the world. Between 1943 and 1945, it was spreading in South Africa and Zimbabwe which was vicious for many animals. Moving further, LSD emerged as a panzootic in South Africa, where it was affecting eight million cattle. The disease lasted until 1949, causing massive economic losses. Furthermore, it was grown out in Sudan by 1972 and again affect thousand numbers of animals. Additionally, as it is a communicable disease, it was developing in many countries in which some countries were not aware about this and in those much and more losses had happened. Moreover, it was seen in many other countries are also including Nigeria in 1974, Mauritania in 1977, and Somalia in 1983. However, it was under control in 1984. Outside of the Sub-Saharan African continent, it was roll out again in Egypt (1988), Israel (1989), Kuwait (1991), Lebanon (1993), Yemen (1995), United Arab Emirates (2000), Bahrain (2003), Israel (2006-2007), and Oman (2010) reported outbreaks of lumpy skin disease (Tragedian et al., 2014). It spread in Israel again in 1989, and then in Turkey in 2013. Furthermore, it was implemented in South-East Europe in 2015-2016, resulting in a 20.9 million Euro economic loss. Last but not least, it appeared (reach) in Odisha, India, in November 2019, which gave a big economic loss also lakhs of animals was died and thousands of animals were affected and it became a significant threat due to which the number of animals was decreased and the farmers had faced many problems after it as an economic loss . (1,3,7,8).

2.1 Cases:

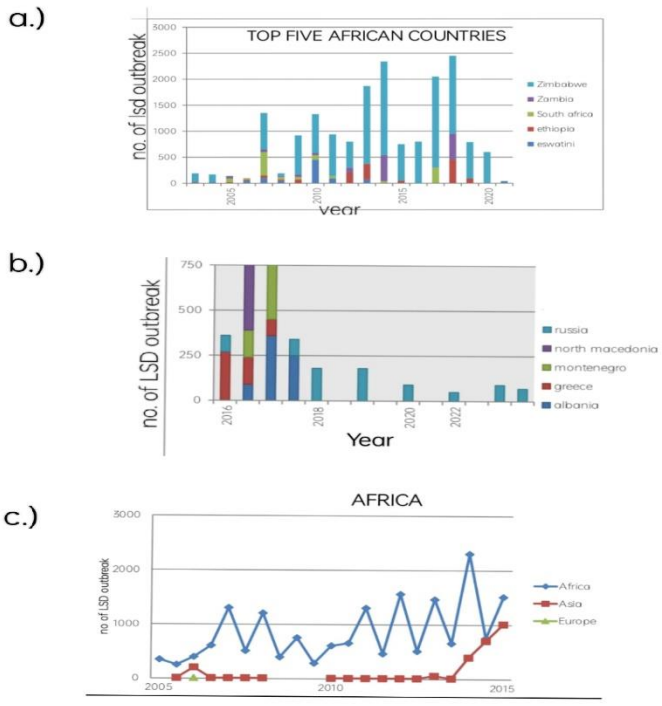

Figure 2: a.) Cases reported in top five African Countries
b.) Cases reported in Russia and Europe
c.) Cases reported in Africa

During the study period, **Africa** had 29,966 outbreak reports, Asia had 8837, and Europe had 2471. Africa had an undulating trend from 2005 to 2019, with outbreaks dropping sharply and remaining consistently low by the end of 2020, whereas Europe

had a peak in 2016, a sharp decline in 2017, and then became stable, and Asia had three peaks throughout the period. Zimbabwe, one of the **top five African** countries reporting the most LSD outbreaks, consistently recorded outbreaks from 2005 to 2019, with the exception of 2006. In comparison to other countries, Zimbabwe had the most outbreaks (18,072), with the highest number occurring in 2014. (1915). Ethiopia, which is ranked second, has reported outbreaks for several years. Russia had the most LSD outbreaks (524) in **Europe** in 2016. North Macedonia, Albania, Montenegro, Russia, and Greece were the top five European countries to report LSD outbreaks that year. Following the peak in 2016, the number of reports dropped precipitously. Every year between 2018 and 2022, Russia reported LSD outbreaks. (9).

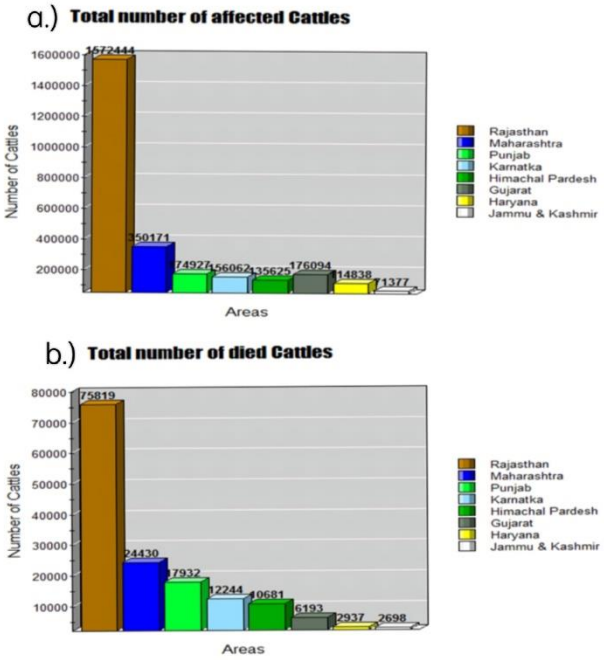

Figure 3: a.) Total Number of cattle affected in India
b.) Total Number of cattle died in India

NEW DELHI, INDIA: Infectious Lumpy Skin Disease (LSD) claimed the lives of over 1.55 lakh cattle in the country this year, with Rajasthan accounting for nearly half of all such deaths (75,819) among the 22 states/Union territories (UTs) affected by the disease. Other states with a high number of cattle casualties include Maharashtra (24,430), Punjab (17,932), Karnataka (12,244), and Himachal Pradesh (10,681). Despite being one of the most affected states, Gujarat has fewer casualties (6,193) than the top five. haring state-wise data on cattle casualties due to LSD in the Rajya Sabha the ministry of animal husbandry and dairying claimed that the disease is now under control, with vaccination underway, and that 6.26 crore animals have been vaccinated so far. The total number of cattle affected in India was 29, 45,863, but the majority of cattle's i.e. 1, 553, 66, died. (10).

Order	Unassigned
Family	Poxviridae
Subfamily	Chrodoxpoxvirinae
Genus	Capripoxvirus
Species	These are of three types: I. Sheeppox II. Goatpox III. LSD
Group I	dsDNA

Table 1: Classifications of LSD Virus (7)

3. Virus originators:

Nodules on the mucous membranes of the eyes, nose, mouth, rectum, udder, and genitalia also ulcerate and release enough viruses to serve as virus sources. The majority of experimentally infected animals will become viraemic and a source of the virus; approximately half of the infected animals will develop clinical signs. In experimentally infected cattle, LSD virus was found in saliva for 11 days, sperm for 22 days, and skin nodules for 33 days, but not in urine or faces (11). Because Capri poxviruses are very resistant to physical and chemical conditions, they can survive for long periods of time in lesions or scabs and have a high affinity for dermal tissues (12). The LSDV genome is about 151 kbp long. (4). According to its biology, it primarily happens when the mucosal pH of the digestive tract is kept between pH 6.6 and 8.6 in a neutral or resting position (constant). Earlier, it shows the symptoms of fever and it require only two days to appear its nodules on the skin. It spreads to 2-5 cm across and has a diameter of 1-2 cm on the skin or on the mucous membranes, with causing swelling in the limbs. It is an enveloping, linear, ovoid-shaped virion with dimensions of 140-266 nanometers by 220-450 nanometers. (13). Nodules appears as solidified and narrow from mild forms to numerous forms, skin nodules that occasionally infect the disease's indicating symptoms on the mucous membranes of the respiratory, urogenital, and other internal organs. In extreme situations, sadness, anorexia, and chronic high pyrexia (40–41.5°C) may cause. (3). It causes the financial loss by the loss of milk production, up to

20% mortality, infertility, animal body condition. Although it takes 4-5 weeks to fully develop, it first manifests itself on the site in 4–20 days. (7,1). In comparison to orthopoxvirions, mature capripoxvirions have bigger lateral bodies and a more oval appearance (14). Their typical dimensions are 320 x 260 nm (15).

4. Etiology/Transmission:

The first case of LSD is frequently linked to the legal or illegal movement of cattle between farms, regions, or even countries. In fact, cattle movements may allow the virus to jump long distances. Short-distance leaps, equivalent to how far insects can fly (usually 50 km), are caused by numerous local blood-feeding insect vectors feeding on cattle and changing hosts frequently between feeds. Although there is no evidence of virus multiplication in vectors, it cannot be ruled out. The primary vector is likely to differ across geographical regions and ecosystems. The ability to spread the LSDV has been demonstrated by the common stable fly (Stomoxys calcitrans), the Aedes aegypti mosquito, and some African tick species of the Rhipicephalus and Amblyomma spp. Viral transmission from infected carcasses to naive live animals via insects is a potential risk that has not been thoroughly investigated. Direct contact is thought to be ineffective as a source of infection, but it can happen. Infected animals may be viraemic for a few days, but in severe cases, they may be viraemic for up to two weeks. Infected animals with skin and mucous membrane lesions in the mouth and nasal cavities excrete infectious LSDV in saliva, as well as nasal and ocular discharges, which can contaminate shared feeding and drinking areas. Infectious LSDV has been found in saliva and nasal discharge up to 18 days after infection. The virus can persist in blood for up to 21 days after infection. At least 42 days after infection, sperm shedding may still occur. More research is needed to determine how long the infectious virus remains in the discharge. Infectious LSDV is well-protected inside crusts, especially when they fall off from skin lesions. Despite the lack of experimental data, it is likely that natural or farm environments will remain contaminated for a long time if not thoroughly cleaned and disinfected. When naive cattle are introduced to LSDV-infected holdings after being stamped out, they become infected within a week or two, indicating that the virus persists in vectors, the environment, or both. Because the virus survives in the sperm of infected bulls, natural or artificial insemination may be a source of infection for females. Pregnant infected cows have been known to give birth to calves with skin lesions. Suckling calves may be exposed to the virus through infected milk or skin lesions in the teats. (1-3,16) The short-term transmission can be affected due to the again use of injection which was used in the infected cattle. So, it can be prevented by the disposal of injection after one use. The long-term transmission can be done only when the transport of cattle's or other animals through one place to another without safety and the contamination of the foreign particles. (17) In a wide range of cell cultures, including lamb and calf kidneys, adrenal and thyroid glands, muscle, and testes, the LSD virus thrives and multiplies to an extreme degree. For that aim, primary cell cultures of bovine dermis and horse lungs as well as sheep embryonic kidneys and lungs, rabbit foetal kidneys and skin, chicken embryo brb adult verve monkey and baby hamster kidneys, are also used (18). During primary isolation, it may take up to 11 days for cytopathic effects to manifest (19). There is just one serotype of the LSD virus, which is serologically highly similar to the virus that causes sheep and goat pox (SGP), making it difficult to differentiate by standard virus neutralization assays (20). Restrictions endonuclease investigations on the capripox virus have revealed that LSD virus strains are nearly identical to one another and to an O 240/KS strain of the Kenyan sheep and goat pox virus (SGPV). Other SGPV strains from Kenya were distinct from the O 240/KSGP strain but related to one another and resemble SGPV strains from the Arabian Peninsula. Comparing the Kenyan group of SGPV strain to strains from India, Iraq, and Nigeria revealed differences (21). The majority of physical and chemical factors do not affect the LSD virus negatively. The virus can survive in narcotic skin for up to a month while continuing to function in lesions on air-dried hides for up to two weeks at room temperature (22,23).

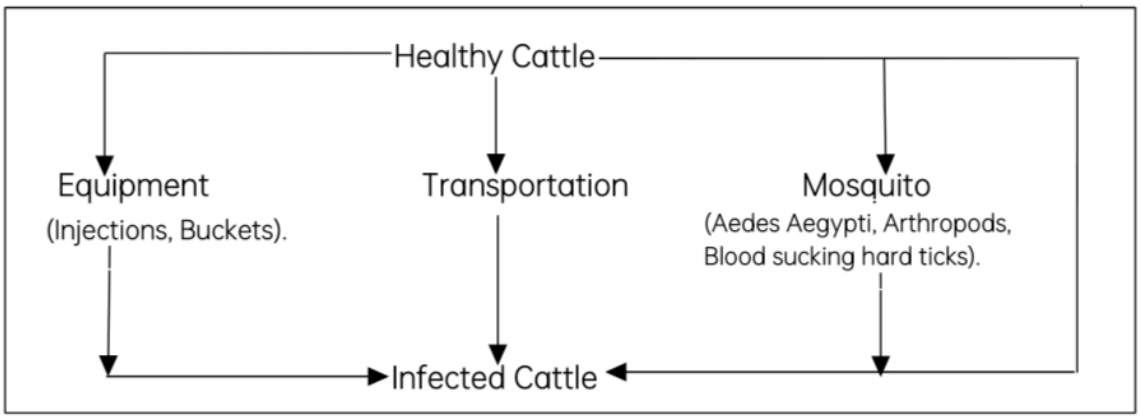

Figure 4: Transmission of Virus (24)

5. Pathogenesis:

The virus that causes lumpy skin disease enters the host's body through the skin or the mucosa of the gastrointestinal tract. The virus then infiltrates the lymph nodes, resulting in lymphadenitis. (25). The virus causes skin lesions due to its rapid replication in specific cells (lymphatic endothelial cells) and blood vessel walls, resulting in the formation of inflammatory nodules on the skin. Skin nodules with caseous necrotic cores may turn grey-pink. Sit-fasts are the limits of harmful necrotic that may cause ulcerate/ulcers. (2,26). Pathology of skin nodules in affected cattle, both gross and microscopic: there were many studies conducted which showing the data regarding it and that is followed by:

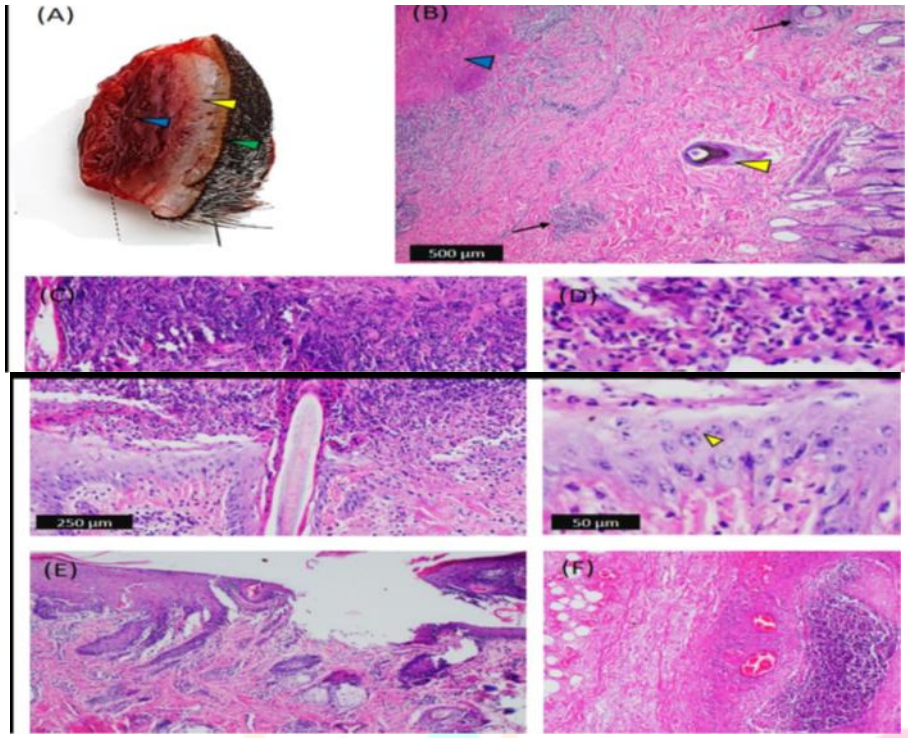

Figure 5: Pathogenesis Report (27,28)(A) Biopsy of a 2 cm diameter skin nodule that made a gritty sound when cut and revealed hemorrhagic subcutis (Blue arrowhead), pale dermis (Yellow arrowhead), and haired epidermis (Green Arrowhead),(B) Epidermis: cytoplasmic swelling of the epidermis and a mononuclear infiltrate,.• Dermis: diffuse proliferation of mononuclear cells in the perivascular (Black arrow) space and between the dense irregular connective tissue and reticular layers. Sweat and sebaceous glands were found to be dilated, and sebaceous gland cells had intracellular edema. Hair follicle matrix epithelia were discovered to be extremely hyperplastic (Yellow arrowhead), • Subcutis: an infarct is present (blue arrowhead) Epidermis and dermis: vacuolation, swelling, and adhesion of scabs with proliferative stratum basale, intraepidermal necrosis, and accumulation of scale crust leaving ulcer underneath; additionally, the dermis was hemorrhagic, edematous, and infiltrated with mononuclear cells. (D) Keratinocytes were occasionally found to have intracytoplasmic inclusion bodies (Yellow arrowhead). (E) Keratinocytes vacuolation and swelling, basal cell epidermal proliferation, infiltration of round histiocytic cells in the reticular layer of skin, swelling and vacuolation of glandular epithelium, and focal ulceration. (F) Subcutis: presence of focal mononuclear cell aggression, congestion, necrosis, and lysis of subcutaneous fat cells. (27), Bos indicus cattle differ primarily in their physiology from Bos taurus cattle in that they develop later in life, have higher levels of certain hormones in their bloodstream despite having smaller ovulatory follicles and corpora lutea, have a higher population of small follicles and a smaller dominant follicle at deviation, and are more sensitive to gonadotropins. (28)

The signs and the symptoms which were seen are as follows:

1. Lachrymator and nasal discharge are usually the first signs.
2. A high fever (>40.50 C) may last for about a week.
3. Significant decrease in milk yield.
4. The appearance of highly distinctive, nodular skin lesions ranging in size from 10 to 50 mm:

a. The skin of the head, neck, perineum, genitalia, udder, and limbs are preferred sites for nodules.
b. Deep nodules affect all layers of skin, subcutaneous tissue, and, in some cases, the underlying muscles.
c. Necrotic plaques in the oral and nasal mucous membranes cause purulent or mucopurulent, nasal discharge and excessive salivation containing high virus concentrations.
d. Typically, the lesion's center ulcerates and a scab forms on top. - Skin nodules may persist for several months.

5. In severe cases, painful ulcerative lesions develop in the corneas of one or both eyes, resulting in blindness.
6. Pneumonia caused by the virus or secondary bacterial infections, as well as mastitis, are common complications. (1-3,13)

Table 2: Clinical Signs and symptoms of LSD

6. Post-mortem signs of LSD:

Typical post-mortem findings include an extensive grayish pink color skin nodule with Caseous necrosis center (It is a type of cell death that causes tissues to become “cheese-like” in appearance). Along with it, many similar nodules have also been seen in the nasopharynx, trachea, bronchi, lungs, rumen, abomasums, renal cortex, testicles, and uterus which can cause genetical changes also. It was shown that lymph nodes are swollen and congested, with petechial hemorrhages. (11)

A.)  B.) 

Figure 6: Post Marten Report (11) A.) Lung is marked generalized interlobular oedema with a smaller cluster of red nodules on the left side. B.) Nasal Turbinate, early pox lesions are slightly pale round foci rimmed by petechia.

7. Disposal of Biomedical Waste:

The things such as buckets, cloths, tubs, brush, soaps which are used to clean the infected cattle are sterilized and destroyed after the cattle died. The disinfectants which are used to sterilized the things by Chloroform 20%, Formalin 1% and some detergents for example, sodium dodecyl sulphate and the detergents containing lipid solvents. (29). Land burial is a widespread and traditional technique of disposing of both daily and catastrophic animal mortalities. However, this approach has also been utilised for corpse disposal in the aftermath of wars or natural disasters. During World Wars I and II, for example, mass corpse burial was widely used (30). Land burial is favoured because it requires less infrastructure, has lower disposal costs, and is more convenient for owners (31). Trench-type burial, landfill-type mass burial, or modest on-farm burial are all extensively used in various parts of the world (32). To ensure minimal environmental risk, correct site selection, trench design, and site maintenance should be in conformity with the criteria stipulated by competent authorities. Burial, for example, should not take place within 350 meters of surface water, private or public drinking water wells, or river floodplains (33). Carcasses should be placed in a compacted trench about 0.9-1.2 m deep, and the trench should be topped with mounded earth. Monitoring, as well as people and equipment safety procedures, should be required. According to study, carcass burial may have negative environmental consequences, including soil, water, and air pollution. (34,35). As a result, carcass land burial is prohibited in the European Union and in some regions of the United States. In regions where this approach is permitted, strong legislation has been implemented to keep restrictions in place (35,36). Nonetheless, for catastrophic mortality occurrences, burial is still permissible in the majority of situations.

8. Different Diagnosis: Among the differential diagnoses there are many different tests which are performed to identify it such as Transmission electron microscopy (TEM), Immunoperoxidase (IMP) staining, Antigen-trapping ELISA (7), Electron microscopy examination, Virus isolation (VI), Serological tests (serum neutralization test, agar gel immune diffusion, indirect enzyme-linked immunosorbent assay, and indirect fluorescent antibody technique [IFAT]), Real-time or conventional polymerase chain reaction (PCR) (37). These tests are important to perform to clarify the disease.

9. Treatment:

There is no specific treatment for lumpy skin disease, and it is only available for cattle. Treatment is administered to prevent secondary bacterial infections and to alleviate clinical symptoms. Local antiseptic dressing of skin lesions is advised to prevent flies and bacterial infection. This can include using wound care sprays to treat skin lesions and antibiotics to prevent secondary skin infections and pneumonia. Anti-inflammatory pain relievers can be used to keep affected animals' appetites going. Although intravenous fluid administration may be beneficial, it may not be feasible in the field. The lack of treatment options for the lumpy skin disease virus emphasizes the importance of disease prevention through effective vaccination. There are two types of treatments may be done which are given below:

a. **Pharmacological Treatment: Ivermectin** (It is an anti-parasitic drug. After its discovery in 1975, its first uses were in veterinary medicine to prevent and treat heartworm and acariasis), strongly inhibits in vitro replication stage of lumpy skin disease virus (99.82% inhibition) and sheep pox virus (99.87% inhibition) (17). It was beginning with Enrofloxacin (Inj. Fortivir TM) with dose 7.5 mg/kg for 48 hours interval for seven occasions, 0.5 mg/kg of Chlorpheniramine meleate (Inj. Anistamin TM) SID and NSAID (Inj. Melonex TM).(38) Moreover, many antibiotics such as penicillin's, cephalosporins, oxytetracycline, fluroquinolones, and others are used are prescribed for a period of 5-7 days, depending on the severity of the disease. Nonsteroidal anti-inflammatory drugs (NSAID), antihistaminic, antipyretics, and multivitamins can also be used to treat symptoms. Immunomodulators may be administered to affected animals in order to strengthen their immune systems and hasten their recovery from disease. (2, 27). In general, animals infected with the LSD virus recover. When secondary bacterial infections occur, complete recovery can take several months. The goal of treatment is to prevent or control secondary infection. Animals severely affected by the LSD virus may take up to 6 months to recover completely. Antibiotics are recommended to control secondary infection, as is good nursing care. (39).

b. **Homeopathic Treatment:** There has been very encouraging result seen in the affected cattle with the treatment of using cocktail of Herbal mixture composed of Haldi, Aloe Vera jelly, Baking soda, Neem leaves, Betal leaves, Garlic & Peppers. Its cocktail after grinding are fed to cattle BID for 14 days. Along with it, the area of the animal i.e. affected has been washed with water (which was boiled and contained Neem leaves, strained & after cooling use it to wash the whole body of animal by using cotton cloth twice a week.) (40).

10. Prevention and Control:

The first step in preventing lumpy skin disease is to control arthropod vectors. In endemic areas, the practice of isolating healthy and diseased animals' aids in disease control. Before being introduced to the healthy herd, newly purchased animals must be quarantined for the disease. Every year, the disease is controlled by mass vaccination of animals (over the age of 6 months). Because sheep pox, goat pox, and lumpy skin disease viruses have antigenic homology and cross protection, any of these viruses can be used as a vaccine strain to protect animals against lumpy skin disease. (2). Quarantines, depopulation of infected and exposed animals, proper disposal of carcasses, cleaning and disinfection of the premises, and insect control can all help to eliminate outbreaks. The introduction of infected animals is the most likely way for LSD to enter a new area. Biting insects that have fed on infected cattle can fly or be blown long distances. LSD is thought to have spread to Israel via contaminated insects blown across the Sinai Desert. Another potential mode of transmission is the movement of contaminated hides. 12 LSD treatments are only symptomatic, with antimicrobial therapy used to prevent bacterial infections in the future. (41). Because movement restrictions and removal of infected animals are typically ineffective, vaccination is the only practical and economically viable strategy for controlling disease spread and improving cattle productivity in endemic areas. (42-44). Vaccinating animals once a year may help keep LSD under control. (45). Because inactivated vaccines are less effective, several live attenuated vaccines have been developed and are used around the world. These vaccines are inexpensive and provide adequate protection if sufficient herd immunity (above 80%) is maintained through yearly immunizations. (46). our live attenuated CaPV strains have been used as vaccines for LSD control in endemic areas, assisting in the reduction of lumpy skin disease losses. (47,48). These are: a Kenyan sheep and goat pox virus strain; a Yugoslavian RM 65 sheep pox strain; a Romanian sheep pox strain; and a South African lumpy skin disease virus strain. (49). Animals that have recovered from Capri poxvirus infection, whether bovine, ovine, or caprine, share a major neutralizing site and are resistant to infection with any other strain. Poxvirus immunity is both humoral and cell-mediated. (50). Capri poxvirus strains from sheep or goats, such as the Romanian sheep pox strain used in Egypt, can protect cattle against LSD. 14 Strict quarantines and the avoidance of introducing infected animals into healthy herds, isolation and prohibition of animal movements, slaughtering of all sick and infected animals (depopulation of infected and exposed animals), proper carcass disposal (incineration), cleaning and disinfection of the premises, and insect control can all help to control an outbreak. (51,52).

Indian Government as well as WHO Schemes to prevent and control:(53)

a) Control of animal movement
b) Restriction with affected animals and persons dealing with such animals
c) Vaccination
d) Vector control
e) Disinfection and cleaning measures
f) Awareness Programmes

Conclusion:

This review summarizes eight virgin hotspots for Lumpy Skin Disease (LSD) in South-East Asian cattle. The disease has become a major threat to small-scale farmers. Until the nineteenth century, the disease was endemic in Africa, then spread to the Middle East, Eastern Europe, the Russian Federation, and, more recently, Asia. LSD's recurrent assault in vulnerable areas has piqued the scientific community's interest. As a result, it goes without saying that now is the time to plan for emergency preparedness in order to limit the spread of this trans-boundary disease. To avoid incursion and spread of disease, focus on vector control, movement restriction, harsh quarantine, improved vaccination programmes, proper veterinary care, and overall farm sanitary management. One of the most economically significant Transboundary viral diseases of domestic cattle is lumpy skin disease. It has a significant economic impact in animals due to chronic debility, decreased milk production and weight, damaged skins, abortion, and mortality. Lumpy skin disease (LSD) is a financially devastating viral disease that causes distinctive nodular lesions on the skin, reducing hide quality. A combination of antimicrobials and anti-inflammatory drugs was used to successfully treat LSD complications and save lives.

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