

Review Article

Outbreak of Lumpy Skin Disease in Bangladesh

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Abstract: This study intends to report the lumpy skin disease (LSD) in Bangladesh, The first outbreak occurred in 2019 while disease displayed with high fever, skin nodules and edema. According to government report morbidity rate was 10-20% with 1-5% mortality rate. LSD causes permanent hide damage, reduced milk production, infertility and death. The outbreak in Bangladesh is having a significant impact on the livelihoods of small-scale farmers, which make up the majority of cattle owners in the country. They're suffer from financial crisis. Hopefully this paper will alert everyone, inspire the research community into research and tacking collaborative actions to prevent the serial outbreaks of LSD.

Key words: LSD (Lumpy Skin Disease), Outbreak, Diagnosis, Livestock

1. INTRODUCTION

Lumpy Skin Disease is an infectious disease of cattle that is caused by biting insects. The virus, which is closely associated with the pox viruses of sheep and goats, and causes nodular skin lesions on the animals body. LSDvirus is a disease of cattle, including zebus. Although, this virus may infect all breeds of cattle no matter of age and sex, but *Bos Taurusare* found more susceptible than *Bos indicus*. Additionally LSD also referred to as Neethling virus. A few cases have been recorded in Asian water buffalo [8]. It was first confirmed in Republic of Zambia in 1929 and now considered as enzootic throught of Africa and therefore the Middle East. In 2015 the first outbreak of LSD recorded in Europe through Greece and rapidly covered South-Eastern Europe. The outbreak of LSD occurs in summer and autumn season due to moist, heat conditions that is favorable for breeding of flies and usually ceased in the winter [2]. Lumpy skin disease is primarily unfold between animals by biting

insects (vector), such as mosquitoes and biting flies. Less ordinarily, the virus may be spread by direct contact to the skin lesions, saliva, milk, nasal discharge, or semen of infected animals. In 2019, the LSD outbreak reported for the first infected Bangladesh as well as in India and China and also re-emerged in Israel [2]. Bangladesh to reveal the disease risk factors, transmission, role of vectors. A growing concern is that national newspapers and tv channels reported a brand new outbreak of LSD spreading rapidly through the northern and north-eastern districts (Dinajpur, Nilphamari, Kurigram and Moulvibazar), the virus has infected around 20,000 cows and killed over 50 till date since March [4].

Last of all, it demands high prime concern for pragmatcal analysis and policies change the foremost economical management arrange of action to prevent the sequent outbreaks.

2. TRANSMISSION OF LSD

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The principal means of transmission is believed to be by arthropod vector such as biting flies (e.g. *Stomoxys calcitrans* and *Biomyia fasciata*) and mosquitoes (e.g. *Culex mirificens* and *Aedes natrionus*), could play a task within the role of transmission of the virus. Though no specific vector has been identified. Direct transmission mechanism between animals is believed to occur but the relative importance of this method of spread compared to vector transmission is unknown [7]. The importance of different arthropod vectors is likely to vary in different areas depending on feeding behaviour of the vector. Infected bulls can discharge the virus within the semen. Skin nodules, scabs and crusts contain relatively high amounts of LSD virus. Virus are often isolated from this material for up to 35 days or more. There has been one reported of placental transmission of LSD. Animals can be infected experimentally by vaccination with material from cutaneous nodules or blood. Direct contact is considered to play a minor, if any, role in the transmission of the virus. The disease can be also be spread through contaminated feed, water, and equipment. The virus is not transmissible to humans. Infected pregnant cows are known to deliver calves with skin lesions. The virus could also be transmitted to suckling calves through infected milk, or from skin lesions within the teats [5].

3. LSD IN BANGLADESH

In Bangladesh, the first outbreak was reported to the Department of Livestock Services (DLS) in July last year. More than half a million cattle in Bangladesh are thought to have been affected. The outbreak was known to start in Karnaphuli Upazila of Chattogram district on July 22, 2019. There are 1,655 cattle farms in Chattogram. The disease has spread among around 20 percent of the cows in these farms, consistent with the Govt. It's confirmed as Lumpy skin disease through tested positive for Capripoxvirus by real-time PCR on August 22, 2019. The initial attack rate was 18.33% with zero (0) mortality rate. With a short time the disease spread all over the country. According to the Situation Report: Lumpy Skin Disease in Bangladesh published by the DLS total cases reached to 553,528 among the 25,327,896 cattle population and recorded total death of 97 since December 3, 2019 [5]

4. DIAGNOSIS OF LSD

LSD signs range from inapparent to severe disease. There is no current evidence of variation in malignity regarding the various LSD virus strains. Skin nodules with 5-50 mm size (with shape, raising above the skin) usually appear 2 days after the

beginning of fever, on the skin of the head, neck, udder, genitalia, perineum, limbs. The nodules can cover the whole body or only few can appear [9]. Fever that may exceed 41°C. Marked reduction in milk yield in lactating cattle. Rhinitis, conjunctivitis and excessive salivation. Enlarged surface lymph nodes. Large nodules may become necrotic and eventually fibrotic and persist for several months, the scars may remain indefinitely. Small nodules may resolve of one's own accord without consequences. Bulls become permanently or temporarily infertile [10]. Insect bites, urticaria, and photosensitisation: cutaneous lesions may appear as if those caused by LSDV, but are more outermost and the course of the disease is shorter and fewer severe [5].

5. TREATMENT OF LSD IN BANGLADESH

Unfortunately there are no proven specific antiviral drugs available in Bangladesh for the treatment of LSD virus. The only treatment available is supportive care & management of animals or symptomatic medications such as paracetamol and antihistamine for pain, fever and swelling seem effective. This can include treatment of skin lesions using wound care sprays [4]. Recently, the Ministry of Fisheries and Livestock has issued instructions in this regard and sent to the Department of Livestock Services. Every union in the affected area has been directed to form a Veterinary Medical Team consisting of an Upazila Livestock Officer or a Veterinary Surgeon or a Livestock Extension Officer and a Deputy Assistant Livestock Officer or a Veterinary Field Assistant or Field Assistant (AI). The medical team has been instructed to ensure on-the-spot inspection of every cattle affected by LSD. Moreover, the departmental and district livestock officers have been given the responsibility to monitor the medical work. If necessary, livestock officers and employees from the surrounding districts or upazilas of the affected districts have also been instructed to be assigned to the medical team [3].

6. CONTROL AND PREVENTION OF LSD

It is tough to prevent cattle being attacked by infected vectors (flies, etc.) once infection is within an area. Control and prevention of lumpy skin disease relies on four techniques - movement management (quarantine), vaccination, slaughter campaigns and management strategies. The best protection comes from prophylactic vaccination of the complete cattle population, carried out well in advance in at-risk areas (Table 1). So, mass vaccination used as an effective tool to control the contamination. Attenuated LSDV strains (Neethling LSD strain) and sheep or goat pox virus,

Table 1. Cumulative case of LSD report to department of livestock services as of December 3, 2019

Division	Cattle Population	LSD Cases	Death
Dhaka	39,06,043	17,300	7
Rajshahi	42,76,463	13,854	3
Khulna	36,10,506	2,35,633	64
Chittagong	31,45,717	2,59,765	22
Mymensingh	24,37,636	306	0
Sylhet	15,72,944	182	0
Barishal	17,70,563	22,232	1
Rangpur	46,08,034	4,256	0
Total	2,53,27,896	5,53,528	97

these two types of viruses have been successfully used as LSD vaccines in Europe and Africa respectively [1]. As LSD is a contagious disease, cattle movement inside the country and across borders should be controlled in affected areas. Movements of vaccinated animals can be allowed within a restricted zone within a country after it has been established that full immunity has been provided by a vaccine with proven effectiveness (28 days after vaccination) [6].

7. CONCLUSION

In this study, LSD has been reported for the first time in Bangladesh, which before 2019 was free from this disease. The precise source of the LSD virus liable for the outbreak in Bangladesh is unknown. The disease is considered as extremely contagious transboundary animal disease and has become endemic in some neighboring countries of Bangladesh. It happens that the disease was introduced into the country by the uncontrolled movement of infected animals. It happens in an acute or chronic type and causes serious economic losses. Lumpy skin disease is a serious infectious disease of cattle. It's largely transmitted by mosquitoes, by alternative hematophagous insects, and flies. The disease has dramatic effects on rural livelihoods, which are often strongly captivated with cattle, because it slashes milk production and may lead to sterility in bulls and fertility issues in females. It damages hides, and causes death due to secondary bacterial infections. Effects at national level also are devastating as the presence of the disease triggers strict trade restrictions. Without the mandatory support from society and private sectors, would be an unlikely challenge for the govt. to combat the menace. Indeed, government, non-government, independent, private, are all supposed to work along within the fight against the fearful Lumpy Skin Disease.

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