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## Sheep Pox: An Emerging Challenge to Sustainable Sheep Farming

\*R. Suresh

Assistant Professor, Veterinary Clinical Complex, College of Veterinary Science,  
PVNRTVU, Korutla, Telangana – 505326, India

\*Corresponding Author's email: [sureshrasamalla17@gmail.com](mailto:sureshrasamalla17@gmail.com)

Sheep farming contributes significantly to rural livelihoods by supplying meat, wool, manure and income to small and marginal farmers. Healthy flocks are essential for profitable production, but infectious diseases continue to threaten sheep rearing systems across many countries. Among these diseases, sheep pox remains one of the most economically damaging viral infections due to its rapid spread, severe clinical illness and impact on productivity. Frequent outbreaks in endemic regions highlight the need for greater awareness and preventive management among livestock owners (Bhanuprakash *et al.*, 2006).

### Understanding Sheep Pox

Sheep pox is a contagious viral disease affecting domestic sheep. The infection is caused by the sheep pox virus, belonging to the *Capripoxvirus* group under the family *Poxviridae*. The disease is characterized by fever, skin eruptions, respiratory complications, weakness and production losses. In severe outbreaks, particularly among lambs, mortality can be high (OIE, 2021). The disease has been reported in several Asian and African countries where sheep farming forms an important part of the agricultural economy. Poor biosecurity, unrestricted animal movement, and inadequate vaccination programs contribute to recurring outbreaks.

### Economic Importance

The impact of sheep pox extends beyond animal health and directly affects livestock economics. Major losses occur due to: Reduced body weight and growth, decline in wool production, damage to skin and hide quality, mortality among young lambs, increased treatment and management costs and restrictions on animal trade and movement. In endemic regions, outbreaks can severely affect the livelihood of small-scale sheep farmers (Radostits *et al.*, 2007).

### Cause of the Disease

The disease is caused by the sheep pox virus, which possesses remarkable environmental resistance. The virus can survive for extended periods in dried scabs, contaminated sheds and bedding materials. This persistence allows infection to spread even after infected animals are removed from the flock. The virus mainly affects: Skin, Respiratory tract and Lymphoid tissues.

### Susceptible Animals

Although all age groups can become infected, severe disease is commonly observed in lambs, weak or poorly nourished animals, exotic and fine wool breeds, unvaccinated sheep. Young animals are especially vulnerable because of their relatively weak immunity.

### Transmission of Infection

The disease spreads rapidly through direct and indirect contact.

Important modes of transmission include:

- Contact with infected sheep
- Nasal and ocular secretions

- Contaminated feed and water
- Shared housing and equipment
- Aerosol transmission during coughing and sneezing
- Movement of infected animals

Overcrowding and poor sanitation further accelerate transmission within flocks.

### Clinical Signs

The incubation period usually ranges between four and eight days.

### Early Symptoms

Affected sheep commonly exhibit high fever, loss of appetite, depression, nasal discharge, excessive tearing and enlarged lymph nodes. Lesions are commonly observed on the face, lips, ears, eyelids, groin region, tail region, udder and hairless areas of the body.

The lesions progress through distinct stages: 1. Red spots (macules) 2. Raised nodules (papules) 3. Vesicles 4. Pustules 5. Thick scab formation

In severe cases, generalized lesions may involve the entire body surface.

### Characteristic Skin Lesions

Skin lesions are the hallmark feature of sheep pox (Fig1).

### Respiratory Complications

Respiratory involvement is frequently observed in severe infections. Common signs include: Coughing, labored breathing, nasal obstruction, pneumonia and respiratory distress. Lamb mortality is often associated with severe pneumonia and secondary bacterial infections (Constable *et al.*, 2017).



Fig 1: skin lesions on different parts of body

### Postmortem Findings

Important lesions observed during necropsy include: 1. Nodules in skin and lungs, 2. Enlarged lymph nodes, 3. Pulmonary congestion, 4. Pneumonic lesions, 5. Thick crusts and scabs on skin, 6. Ulcerative lesions in respiratory passages.

Histopathology may reveal eosinophilic intracytoplasmic inclusion bodies characteristic of poxvirus infections.

### Diagnosis

Diagnosis is based on clinical examination, epidemiological history, and laboratory confirmation.

**Laboratory Techniques:** Polymerase chain reaction (PCR), ELISA, Virus isolation, Electron microscopy and Histopathological examination.

- Diseases that should be differentiated include: Contagious ecthyma (Orf), Goat pox, Bluetongue, Dermatophilosis and Insect bite dermatitis.
- PCR is considered one of the most sensitive and reliable diagnostic methods for confirmation of Capri pox infections (Tulman *et al.*, 2002).

### Treatment and Supportive Care

No specific antiviral treatment is available for sheep pox. Management mainly focuses on supportive therapy and prevention of complications.

**Supportive Care Includes:**

Broad-spectrum antibiotics to control secondary bacterial infections, Anti-inflammatory drugs, Fluid therapy, Nutritious feeding, Wound management and Isolation of infected animals. Good nursing care improves recovery and reduces mortality.

**Prevention and Control**

Preventive management remains the most effective strategy against sheep pox.

**Vaccination**

Routine vaccination using live attenuated sheep pox vaccines is strongly recommended in endemic regions. Proper vaccination programs significantly reduce disease incidence and mortality.

**Biosecurity Measures**

Important preventive measures include:

- Isolation of affected animals
- Quarantine of newly purchased sheep
- Proper carcass disposal
- Disinfection of sheds and equipment
- Restriction of animal movement during outbreaks
- Avoidance of overcrowding

Strict biosecurity practices are essential for preventing flock-to-flock transmission.

**Public Health Significance**

Sheep pox is not considered a zoonotic disease and does not normally infect humans. However, the disease remains important because of its major economic impact on livestock production systems.

**Conclusion**

Sheep pox continues to be a serious threat to sheep farming in many developing countries. The disease causes substantial economic losses through mortality, poor growth, reduced wool quality, and increased management costs. Early diagnosis, routine vaccination, strict biosecurity, and farmer awareness are essential for effective disease control. Strengthening veterinary healthcare services and educating livestock owners can greatly help in minimizing outbreaks and improving the sustainability of sheep production systems.

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