

An overview of common microbial diseases in sheep and goats

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1. Bluetongue (Catarrhal fever of sheep)

❖ Causes

- It is caused by Arthropod-borne orbi virus in the family of *Reoviridae*.
- Biting insect of the genus of the *Culicoides* transmits the virus during the rainy season while blood sucking.
- Mosquitoes and other ectoparasites like sheep ked or *Melophagus ovinus* (blood-feeding parasites of sheep) may transmit the disease mechanically.
- The disease is more prevalent in late summer and early autumn which makes conducive environment for the multiplication of the vectors.
- Transmission through the semen and placental routes is possible.
- The virus is resistant to decomposition, desiccation and antiseptic agents.

❖ Clinical symptoms

- Fever
- Depressed attitude and off feed
- Reddening and swelling of the nose and oral mucosa
- Profuse nasal and oral discharge
- Inflammation and ulceration of lips, gums, buccal mucosa and tongue
- Cyanotic (bluish) appearance of tongue
- Tilting of the neck towards one side (wry neck)
- Reddening and swelling of coronary band of the limbs, and lameness
- Congestion of conjunctival mucous membranes and matting of eyelids
- Foul smelling diarrhoea
- Dyspnoea, snoring and pneumonia may be observed
- Death due to respiratory failure.

❖ Prevention and Control

- Isolate affected animals and provide adequate rest
- Affected animals should not be allowed for grazing and should be fed with porridge made of rice, ragi and kambu.
- Immediate consultation should be made from the nearest veterinary hospital regarding antibiotic administration or symptomatic treatment to be given to the affected animals.
- Ulcers in the mouth can be treated with saline water or dissolve 1g of Potassium permanganate in 1 liter of water and wash the mouth 2 to 3 times a day with this solution and apply glycerin on the ulcers.
- Vaccination of animals with regular intervals (first vaccination at 3 months of age and next vaccination once in a year).
- Grazing of the animals should be avoided in areas where there are lot of vectors
- Cattle may act as carriers. The viraemic stage remains in them for more than 5 weeks. So movements of cattle should be restricted.
- Importation of animals from the areas prevailing the disease should be avoided.
- Strict regulation is to be followed to prevent the entry of diseased animals from endemic zones.
- An attempt should be made to control the vectors (*Culicoides*) population with fly repellants and spraying of butox (1 ml in 3 liters of water) in the breeding places of the insects.
- Cloud of smoke with dried leaves/wood during 6-9 PM might help to keep off *Culicoides* from sheep sheds.

2. Peste-des-Petits Ruminants (PPR)

- Peste des petits Ruminants also known as 'Goat Plague' is a viral disease that affects goats and sheep which causes huge financial loss to the animal rearers/farmers and economic loss to the country.

❖ Causes

- The disease is caused by Morbillivirus of the *Paramyxoviridae* family.
- Natural transmission occurs primarily through direct contact with infected sheep and goat
- Transmission may take place through contaminated feed, water, bedding and other appliances.
- Secretions and excretions are a rich source of virus and the spread of the disease take place through their contamination. Faeces are the main spreading agent and through it the disease may occur in epidemic proportion.



- The disease may spread in a flock through the introduction of newly purchased sick animals from the market.
- There is no carrier state in animals; the spread of the disease is possible through animals with subclinical infection.
- Ingestion of infected material is the main way of transmission but it may also take place through inhalation and contact with ocular secretions
- The disease is not transmitted through insect vectors
- Wild ruminants have been suspected to play a role in the spreading of this disease

❖ **Clinical symptoms**

- High rise of temperature (104 - 105oF).
- The animal will show a dull coat, dry muzzle and inappetence.
- There will be profuse serous nasal discharges accompanied by sneezing and coughing.
- The discharges may be crust-like, hard and matt the nasal and ocular surroundings
- Oral necrotic lesions were noticed in lips, buccal mucosa, gums, dental palate and tongue, with malodour (halitosis).
- Congestion of conjunctival mucous membranes and matting of eyelids
- Signs of pneumonia and animal may die due to respiratory distress.
- Diarrhoeic faeces may contain mucus and blood.
- Pregnant goat may abort.
- Most of the animals recover and death may occur in a few of them.

❖ **Prevention and Control**

- Sick animals should be segregated and treated with proper intravenous salines and antibiotic injections.
- Affected animals should not be allowed for grazing and should be fed porridge made of rice, ragi and kambu
- Regular and proper vaccination of animals (First vaccination at 3 months of age and next vaccination once a year)
- Strict sanitation and hygienic measures are to be adopted in a flock. It is susceptible to most disinfectants, e.g. phenol, sodium hydroxide (2%).
- Restrictions should be made for the introduction of new animals in a flock, especially in areas where the disease is prevalent.
- Quarantine measures should be strictly followed in imported sheep and goats before introduction.



3. Sheep pox

- It is an acute to chronic viral disease of sheep and goats characterized by generalized pox lesions throughout the skin and mucous membranes. All breeds of sheep and goats irrespective of age and sex are affected.
- It is possible to infect goats with sheep pox virus and sheep with goat pox virus.
- Sheeps are naturally susceptible to sheep pox. Younger sheeps are more susceptible than old ones. The disease occurrence period is April- June.

❖ Causes

- It is caused by a member of the genus Capri pox virus, the pox viridae family.
- Cutaneous lesions (crust, nodules) resulting in aerosols, saliva, faeces and nasal secretions from sick animals for 1-2 months and dried scabs at ambient temperature may be the source for the spread of the virus.
- The usual mode of transmission is from direct contact with the infected animal. Indirect transmission by contaminated litter, fodder, water and attendants may spread the virus through mechanical ways.
- The virus may gain entrance through wounds and abrasions.
- The virus may present in skin papules. While the affected animals rub their body on other animals, the virus is passed directly to susceptible animals
- The biting insects (mechanical vectors) may inoculate the virus intradermally or subcutaneously.
- Aerosol or droplet infection is quite possible.
- Dogs, cats, etc. may mechanically transport the virus to other places.
- The virus may pass from the infected mother to the foetus through the placenta.

❖ Clinical symptoms

- Skin papules appear in 2-5 days following temperature and first appear on the hairless parts of the skin.
- Soon after the development of papules rhinitis, conjunctivitis may be observed.
- Papules like pock lesions appear in all the parts of the body, e.g., lips, cheeks, snout, nostril, face, ear, feet, thigh, abdomen, eyelid, neck, teat and udder
- The eyelids are swollen and they may completely cover the eyeball
- Mucopurulent discharges from the eyes and nose
- Animals become weak, disoriented and eventually unable to stand.
- The mucous membrane of the eyes, nose, lips, vulva and prepuce becomes necrotic
- Animals die due to the development of labored breathing as a result of broncho-pneumonia



- Animals that survive develop scabs and shed over 3-6 weeks, leaving a raw granulating area.

❖ Prevention and Control

- Isolation of infected herds and sick animals for at least 45 days after recovery
- Proper antibiotic and NSAID injections
- Quarantine before introduction into herds.
- Animal traffic from the infected areas is to be prevented.
- Proper disposal of cadavers and products
- Regular Sheep pox vaccination of animals (first vaccination at 3 months of age and next vaccination once in a year (Feb-March, adult 5 ml, S/C, Kids 2.5 ml S/C)
- Strict sanitary measures are to be adopted. Use disinfectants like ether (20%), chloroform and formalin (1%) and phenol (2%) to prevent the transmission of disease.

4. Orf

❖ Causes

- Orf disease also known as contagious ecthyma or contagious pustular dermatitis or scabby mouth is a zoonotic disease caused by the *parapoxvirus, Orfviridae*.
- It is a highly infectious pox virus disease of sheep and goats manifested by the occurrence of pustular and scabby lesions on the lips, muzzle and udder.

❖ Clinical symptoms

- The appearance of nodular eruptions on the oral commissures, lips, mouth and nostrils, and the lesions are followed by papules, vesicles, pustules and ulcers in 3 to 4 days.
- Profuse salivation, lacrimation accompanied by nasal discharge.
- Extensive lesions on the feet lead to lameness.
- In young lambs, the initial lesion may develop on the gum below the incisor teeth.
- Ewes nursing infected lambs may develop lesions on the udder.
- Mastitis may result in ewes with lesions on the udder.

❖ Prevention and Control

- Affected animals should be segregated from the rest of the flock.
- Strict hygienic and sanitary measures are to be adopted.
- Proper antibiotic and anti-inflammatory injections.
- Lambs should be vaccinated when one month old. For better results, a second vaccination 2-3 months later is suggested. Vaccinated animals should be segregated from unprotected stock until the scabs have fallen off.



5. Tetanus

- It is a non-contagious, infectious disease of mammals characterized by spasmodic contraction of skeletal muscles.
- Sheep and goats are more susceptible than cattle.

❖ Causes

- The disease is caused by bacteria known as *Clostridium tetani* which is remain in the intestine of herbivorous animals as normal habitat.
- *Cl. tetani* organism is sensitive to heat and cannot survive in the presence of oxygen, and this organism produces spores, these spores are extremely resistant to heat and the usual antiseptics and can persist in the soil even for years.
- *Cl. Tetani* spores require anaerobic conditions at the wound site for germination and liberate potent toxins.
- Spores may continue to persist in a dormant manner in tissues for many months until favorable conditions develop for their germination.
- The organisms are very much resistant and therefore remain in the environment especially in the street dust, garden soil and animal-manured soil in large numbers for a considerable period.
- Organisms may continue to live in the faeces for a long period and thus remain a potential source of infection to man and animals.
- The organisms gain entry through deep punctured wounds contaminated with bacterial spores. Trauma and damage of the tissues caused by dog bites, injection, vaccination, or chemical agents such as calcium salt, lactic acid, or by infection with other bacteria may help in the initiation of the disease process.
- Organisms may gain access during parturition and manual handling of the genitalia with contaminants, retention of placenta and prolapse, castration by open method, shearing, docking and vaccination may augment the transmission if, not attended properly.
- Neonatal animals may get the infection through contaminated umbilicus.
- Deep wounds in the feet during grazing, ploughing or transport, wound of the oral mucosa, dental caries, wound due to surgical interference, wounds by a penetrating object e.g. nails, etc., and contamination by dirt may influence the disease transmission.

❖ Clinical symptoms

- Apathy to feed, restricted movement, muscular stiffness, difficulty in walking, lack of coordination and unusual walking are the initial signs of the disease.
- Stiffness of muscles of the limbs with extended back and neck arched, reporting sudden death.



- Stiff gait spasm of mouth muscles results in the mouth becoming held tight, difficult to separate the jaws, "lock-jaw" condition.
- Prolapse of the third eyelid, head drawn on one side or backward, pump handle position of the tail, erection of the ears, immobility of the ears and characteristic "saw horse stance" are the features.
- The rigidity of the facial muscles gives an anxious expression.
- There is a restriction of mastication and dribbling of saliva from the mouth.
- Suppression of rumination and bloat are the important attributes
- Animal remains hypersensitive and overreaction to sudden noise or physical contact and reflex irritability is noted from the start of the symptom.
- Death usually occurs in 3-4 days.

❖ **Prevention and Control**

- Proper vaccination at day old should be used. Giving two doses of vaccine at least four weeks apart. An annual booster dose is recommended
- Tetanus toxoid vaccine at the time of exposure of body tissues to the environment prevents the disease occurrence.
- Providing passive immunity to the lambs by giving ewes a booster vaccination, a few weeks before lambing commences
- Care of any local wound and make sure the wound is not contaminated by dirt.
- Cleanliness and proper hygienic measures are to be adopted at the time of parturition and following parturition.
- The animal should not be allowed to graze near barbed wire fencing.
- Open method of castration should be discouraged at the village level.
- Proper care should be taken to handle the retention of placenta and prolapsed cases.
- Sterile surgical instruments are to be used at the time of operation.
- The wound should be drained with deep incision. The animal should be kept away from metallic and sharp objects.
- Hygiene is essential while undertaking any husbandry or surgical procedure.
- All out precautions should be taken during castration.
- Waterers and feed troughs should be kept clean and free of contaminants from faeces.
- Good grazing management to control pasture or grassland-borne helminthic infections.
- The use of clean or safe pastures (not grazed for 6 to 12 months) will help to control helminth problems.
- Rotational grazing of livestock species should be followed to minimize or limit the infection from pasture.



- All new arrivals to the farm should be isolated for at least 30 days and dewormed.
- Young animals should be housed separately from adult animals to prevent disease spread.
- Infected animals should be removed from the flock or herd and housed separately.
- Treatment should be followed by chemoprophylaxis to prevent reinfection.

6. Anthrax

❖ Causes

- Anthrax is an infectious bacterial disease of animals, caused by the spore-forming bacteria *Bacillus anthracis*. It can affect humans and a wide range of animals.

❖ Symptoms

- Sudden death within 48 hrs of illness of animal.
- Following death, there is an oozing of blood from the natural orifices.
- Bloat may develop.
- Oedema may predominantly notice under the neck, brisket region, thorax, abdomen and flank.

❖ Prevention and Control

- The dead animal's body should not be opened.
- Care should be taken to destroy the dead body by deep burial with quick lime.
- Periodical and regular vaccination should be done.
- Strict quarantine measures in anthrax-prone areas.
- Preventing the introduction of infected animals into disease-free areas.
- Persons handling the anthrax-infected animals should adopt adequate sanitary measures.
- The adjacent areas of the dead and infected animals should be thoroughly disinfected with 3% peracetic acid or 10% caustic soda or 10% formalin.
- The fodder from infected pastures should be destroyed and not to be given to the other animals.

