



Bacterial Disease of Cattle and Buffaloes : Care and Management

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ABSTRACT

The tropical and subtropical climates are ideal for the growth and propagation of a variety of diseases. The unstable economic conditions of developed countries, which are primarily distributed in this region of hemispheres, have a further impact on animal and human welfare. It is difficult to determine the costs of a wide variety of chronic and subclinical diseases that affect livestock. Indeed, pathogens are responsible for around a quarter of all manufacturing losses.

1. ANTHRAX (*Bacillus anthracis*)

Wool sorter disorder, splenic fever, splenic apoplexy Charbon is a phrase used to describe (a term applied to denote blackness), Contagious Carbuncle, Malignant Carbuncle etc.

Introduction

Bacillus anthracis causes severe infectious bacteremia that attacks mammals, mostly horses, dogs, and buffaloes, and is associated with high fever, mouth, thorax, and lumbar inflammation, and sudden death. *Bacillus anthracis* is a sporulating, aerobic, gram-positive, non-motile, rectangular rod with a distinct capsule that causes anthrax. The organism sporulates in the presence of oxygen, moisture, and a suitable temperature. Sporulation is the process by which an infected animal's organism exits the body. The spores are extremely hardy and can survive for years.

Mode of transmission: Inhalation, Ingestion, inoculation.

Incubation period: Natural transmission takes 1 to 5 days, but it can take from around 3 to 14 days for subcutaneous or intravenous inoculation, which takes 24 to 48 hours.

Symptoms:

Acute form:

1. Within 24 to 48 hours, a rapid increase in temperature (105°F to 108°F) is accompanied by depression, respiratory and cardiac depression, staggering, convulsions, and death.

Prostration, unconsciousness, and death accompany rapid heartbeat, coldness of the ear, feet, and horns, and bloodshot eyes.

2. Ceases Rumination, milk production decreased, cows had abortions, bloody discharge from the mouth and nostrils, bloodstained diarrhoea, and straining during defaecation were all observed.
3. Inflammation may occur in various parts of the body at times. Swellings across the neck and lower chest are diffuse, painless, doughy, and grow quickly.

Blood stained diarrhoea will soiled the wool around a sheep's tail.

Prophylaxis:

1. Anti-anthrax serum: It gives direct and temporary immunity to animals who have been infected with anthrax. Cattle dose: 20 to 30 cc S/C & 10-20 cc S/C for sheep and goat.
2. Anthrax bacteria: Produces a low-level active immunity that lasts longer. Cattle dose: 2-5 cc, S/c. 2 to 3 cc sheep and goat, S/c
3. Spores of anthrax Vaccine (live): a suspension of living spores of a recognised antigenic strain of *B. anthracis* that has been encapsulated. Cattle, 10 million spores in suspension, S/C. Suspension of sheep and goats producing 5 million spores, S/c.
4. Simultaneous treatment of anthrax spore vaccination and anti-anthrax serum is also an important way of immunisation.

Curative treatment:

- Antiserum against anthrax is curative. Cattle dose: 100 to 150 cc, S/c. Sheep and goat, S/c, 50 to 100 cc
- Penicillin is an antibiotic that is used to treat infections. Early stage: 20 to 30 lacs units l/m in animals, then 20 lacs units every four hours until symptoms disappear.

2. HEMORRHAGIC SEPTICEMIA (*Pasteurella bovisepitica*) (shipping fever, shipping pneumonia, Pasteurellosis in cattle, Galgotu)**Introduction:**

Pasteurella bovisepitica causes an acute or sub-acute febrile disease in cattle and buffaloes that is characterised by abrupt onset, high fever, oedematous swellings of subcutaneous tissue, especially the throat, and acute gastroenteritis.

Mode of transmission of disease: Drinking water, Soil and trough etc.

Contact between diseased and healthy animals. Insect vectors, such as flies, can spread the disease. The high prevalence of diseases in tropical and subtropical areas is mostly due to climatic conditions.

Period of incubation : 1 to 3 days.

Symptoms:

1. Body temperature increases to 104 to 106 °F. Dullness, loneliness, anorexia, being off feed, and immobilization. Swelling occurs in the head, throat, dewlap, and spine. It's a sore, thick, oily, nervous swelling.
2. The tongue is bloated and protrudes from the mouth; there is salivation; and swallowing is difficult. Because of pharyngeal oedema, breathing becomes difficult. Occasionally, blood can be seen coming from the nose.
3. Constipation is one of the symptoms, preceded by diarrhoea, straining, grunting, and other colic signs. Virulence: 50 per cent to 100 % mortality. It is more fatal for buffaloes.

Diagnosis:

The temperature is very high. The ears, throat, and dewlap swell. The bipolar gram-negative bacteria can be seen on a blood smear.

The rabbit dies within 24 hours of receiving blood inoculation. Post mortem examination reveals swelling and hemorrhagic spots in the lymph gland and serous membrane, as well as in the organs. The size of the spleen is common. The gastrointestinal tract is deeply inflamed, with blood mixing in with the contents. The pleura is oedematous and hemorrhagic, and the lungs are inflamed.

Treatment:

1. Passive immunity is achieved by the application of HS antiserum. 10 to 20 cc s/c for cattle.
2. HS vaccine (dead): Vaccination is recommended two months prior to the onset of the disease.
3. HS Oil adjuvant vaccine (Bain's vaccine) is a dead vaccine made from a finely refined oil adjuvant. Formalin kills an antigenic strain of P. Septica. Cattle dose: 2 to 3 cc I/M.

Curative treatment:

- Sulfa medications such as sulfamerazine, sulfamethazine, sulfanilamide, and sulphathiazole, among others, have been extensively used as bacteriostatic agents.
- Antibiotics: Dehydro-streptomycin, terramycin, Aureomycin, chloromycetin, and bacitracin I/M or I/V are examples of broad range antibiotics. Penicillin is another choice.

3. TETANUS (Lock-Jaw) (*Clostridium tetani*)

Introduction:

The toxins of *Clostridium tetani* induce an involuntary chronic, severe, and painful contraction of more or less large groups of voluntary muscles, resulting in an acute infectious disease of man and animals. Contamination of wounds with spores, umbilical wound in a young calves, and parturition lesion in a cow are also possible routes of transmission. Contamination can also be spread by infected tools. Under normal conditions, the incubation time ranges from 7 to 4 months.

Symptoms

1. Tetanus affects all species in the same way. Involuntary, chronic, severe, and painful contractions of more or less extensive groups of voluntary muscles characterise them.
2. Mastication and deglutition are complicated due to facial muscle spasm. "Lock jaw" is caused by tetanus of the jaw muscles. Only with extreme effort will the mouth be opened. The body stiffens, the limbs are left apart, and the tail is elevated and upright. Saliva forms around the lips as a result of trouble swallowing. Ruminant species are prone to tympany. When animals crash to the ground, they have a U-shaped spinal column.

Treatment and Control:

1. There should be no disturbance to the livestock. The animal could be placed in the sling at a later date. Soft foods such as bran, linseed, gruel, milk, and eggs should be included in the diet.
2. Dextrose saline injections are provided intravenously to maintain the animals' vitality. Prophylaxis is the prevention of disease. Tetanus antitoxin: This provides two weeks of passive immunity. Dose ranges from 1500 to 3000 units via s/c.

Curative treatment

1. Infection-causing wounds should be handled aseptically. Antispasmodics: A S/C injection of 40 cc of a 25% magnesium sulphide solution is effective in managing spasm. Some medications, such as chloral hydrate and cannabis indica, may be beneficial.
2. Antiseptic: a 5% phenol solution, I drachm, S/C can be used.
3. Antibiotics: Large doses of penicillin are safe. Dose: 10,000 to 20,000 units per pound of body weight. Antitoxin against tetanus: 100,000 to 200,000 units I/V.

4. BOTULISM (*Clostridium botulism*)

Introduction:

It is food poisoning in humans and animals caused by an exo-toxin released by *Clostridium botulism*, which is most frequently found in soils. Since the causal organism lacks the capacity to produce toxin in the alimentary tract, toxin must be present in the food until ingestion.

Transmission:

Humans get it by consuming unsterilized and frozen fruits, as well as animal foods like sausages, pork, meat, and fish. Consuming contaminated bone meal causes 'Lamsiekte' or 'Lame sickness' in cattle suffering from phosphorus deficiency. Hay and silage can contain bacteria and produce toxins that cause disease.

Symptoms:

Toxins impact on the nervous system, inducing paralysis, mobility difficulties, and vision impairment. When the tongue is paralysed, chewing becomes impossible. Respiratory failure is the cause of death.

Treatments:

1. It is possible to prevent botulism by avoiding canned vegetables and animal products. Animals and poultry should not be fed suspected food.
2. Purgatives are used as a curative medicine to help the body rid itself of toxins. Antitoxin for botulism is given to neutralise the toxin.

5. BLACK QUARTER (*Clostridium chauvoei*)

(Black-leg, emphysematous gangrene; symptomatic anthrax; Quarter ill)

Introduction:

Clostridium chauvoei causes an acute febrile disease in cattle and sheep that is characterised by emphysematous serohemorrhagic swelling in the heavy muscles, especially in the hind limbs.

Natural transmission:

Either ingesting tainted food or drinking tainted water. Contaminated pasture and a wetland that hasn't been properly drained. Infected carcasses contaminate the soil. The incubation time is between 1 and 5 days.

Symptoms:

1. This condition normally does not affect calves younger than 6 months and older than 3 years.

2. Acute lameness is followed by a sticky, tense, and painful swelling of varying size in the hindquarters or forelimbs, as well as a high temperature. Swelling in the muscles of the stomach, back and neck may occur.
3. Crepitating sounds are produced by swelling and palpation. The burning, hot swelling eventually fades away, leaving the skin necrotic and parchment-like.
4. A black frothy fluid emerges as the swelling is incised, and the fluid has a sour odour similar to rancid butter. There is a 95% death rate. Immune for the rest of your life.

Treatment and Control:

- Any animals infected with the disease should be quarantined. Dead animals should be buried in lime or planted as soon as possible.
- Do not remove the skin of carcasses.

Prophylaxis:

1. Black quarter anti-serum - a form of short-term passive immunity. The contaminated muscle is powdered and rendered less virulent by appropriate heat treatment, according to Arloing's process. There are two vaccines used, each with a different level of attenuation.
2. Penicillin can be used as a medicine. The lesion should be incised and treated with a heavy antiseptic such as mercuric chloride 1: 500 or tincture iodine 10 cc. Antibiotics with a broad range of action can be used.

CONCLUSION

The polluted premises must be kept under strict quarantine. Dead animals should be disposed off as soon as possible, either by complete incineration or deep burial under a layer of quick lime. Burn the straw, bedding, and other materials. Regulation of mosquito vectors and other carnivores, mice, and crows that prey on the carcasses should be performed, as well as disinfection of infected byres and stables. Providing sufficient food and shelter for animals during the all season is highly desirable. It is essential to do isolation and disinfection off diseased animals.

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