Diagnosis

Clinical manifestations: The disease causes sudden death.

1) Laboratory examinations - microscopic examination, culture to isolate *bacillus anthracis*, and PCR assay.

2) Post Mortem observations of incomplete rigor mortis and blood oozing from the natural body openings.

Figure 4. Carcass of cattle infected with anthrax – source – MSD Veterinary Manual

Treatment

Antimicrobial therapy with penicillin and oxytetracycline is effective if administered early in animals.

In humans, CDC recommends 60 days of treatment with either ciprofloxacin or doxycycline plus a three-dose series of anthrax vaccine adsorbed (AVA) soonest after exposure.

Control

The most effective control strategy for animals in endemic areas is vaccination with Blanthax vaccine

Figure 5. Blanthax vaccine - Source - Coopers

Proper disposal of carcasses, disinfection and decontamination of contaminated materials, and environmental decontamination.

Figure 6. A properly covered anthrax infected carcass – source – MSD Veterinary Manual

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ANTHRAX: A ZOONOTIC DISEASE OF ANIMALS AND HUMANS

What is Anthrax?

Zoonotic diseases spread from animals to humans and vice versa. Anthrax is a disease caused by bacteria called *Bacillus anthracis* and affects both humans, and domestic and wild herbivorous animals.

Bacterial Traits and How Anthrax Spreads

Anthrax is caused by *Bacillus anthracis*, a spore forming bacterium. Anthrax spores naturally occur in the soil following contamination by the decomposing animal carcasses. If humans consume contaminated food or water, breathe in spores, or have spores enter a cut or scrape on the skin, the spores become activated, multiply, spread throughout the body, produce toxins, and result in severe illness.
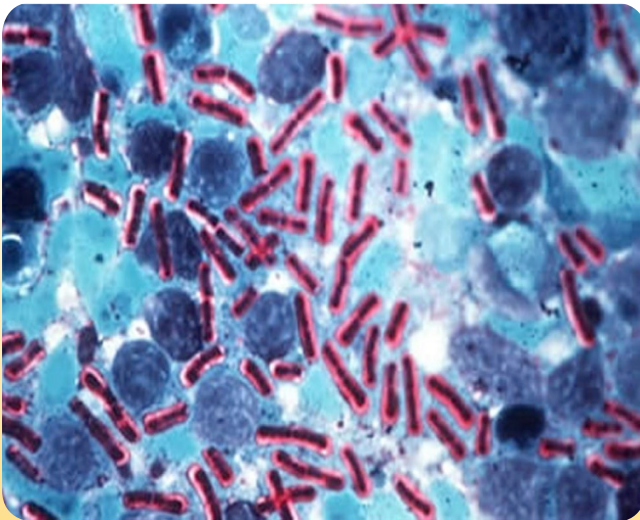

Figure 1. Bacillus anthracis rods - source – MSD Veterinary Manual

How do animals get anthrax?

Domestic and wild animals can become infected when they breathe in or ingest spores in contaminated soil, plants, or water.

How do people get anthrax?

1. Inhalation (breathing in) of *Bacillus anthracis* spores
2. Consumption of infected meat or water contaminated with spores

3. Through open skin by contacting sick animals or infected material or contaminated animal products

Clinical presentation of Anthrax

Anthrax assumes an acute form characterized by sudden death and bleeding from natural body openings of dead carcass. In cattle, sheep and goats, staggering, dyspnea, trembling, collapse and convulsive movements are observed before death.

Humans exhibit different types of anthrax:

i) Cutaneous (affecting the skin)

Figure 2. Cutaneous form of anthrax – source – Mayo foundation for medical education and research

ii) Gastrointestinal form with the symptoms – Nausea, Vomiting, Abdominal pain, Headache, Loss of appetite, Fever, Severe and bloody diarrhea in the later stages of the disease, Sore throat and difficulty swallowing, Swollen neck

iii) Inhalation (affecting the lungs) with Flu-like symptoms such as sore throat, mild fever, fatigue and muscle aches, Mild chest discomfort, Shortness of breath, Nausea, Coughing up blood, Painful swallowing, High fever, Trouble breathing, Shock, Meningitis.
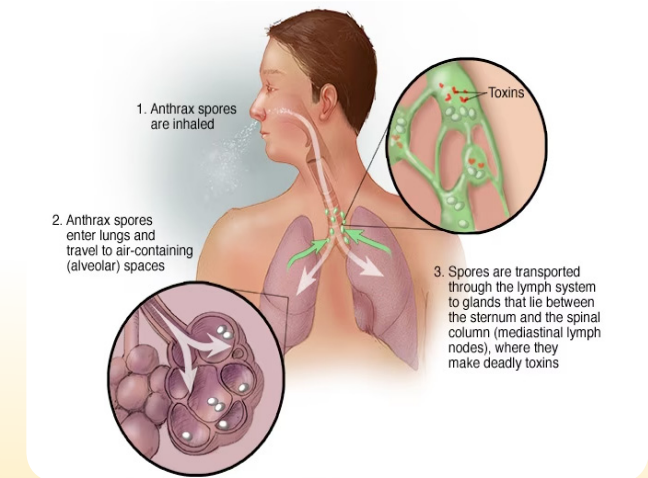

Figure 3. Inhalation anthrax illustrated - Source - Mayo foundation for medical education and research

iv) Injection anthrax (affecting the skin or other body parts) is a less common form.

The clinical course ranges from peracute to chronic. The peracute form (common in cattle and sheep) is characterized by sudden onset and a rapidly fatal course.