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## Lecture title: Anthrax

Anthrax is also called carbúncio or splenic fever.

**Lecturer Affiliation: Department of Internal and preventive medicine**

### Summary:

Anthrax is a rare infectious disease caused by the bacterium *Bacillus anthracis*. Anthrax occurs naturally around the world in wild and domestic hoofed animals, especially cattle, sheep, goats, camels .

### How is the disease transmitted and spread?

Anthrax does typically not spread from animal to animal nor from person to person. The bacteria produce spores on contact with oxygen.

These spores are extremely resistant and survive for years in soil, or on wool or hair of infected animals. Then, if ingested or inhaled by an animal, or on entering through cuts in the skin, they can germinate and cause disease. Because the blood of infected animals sometimes fails to clot and may leak from body orifices, insects can spread the bacteria to other animals.

Carnivores and humans can become infected by eating meat from an infected animal. But typically animals become infected by ingesting spores, which are in the soil or in feed.

### What are the clinical signs of the disease?

Ruminant animals are often found dead with no indication that they had been ill. In this acute form there may be high fever, muscle tremors and difficult breathing seen shortly before the animal collapses and dies. Unclotted blood may exude from body openings and the body may not stiffen after death.

In horses or sometimes in ruminants, there may be digestive upsets and colic, fever, depression and sometimes swelling. These symptoms may last for up to four days before death results.

In carnivores when the animal feeds on an infected source there may be an intestinal form of the disease with fever and cramps from which animals sometimes recover



### **How is the disease diagnosed:**

Anthrax is diagnosed by examining blood (or other tissues) for the presence of the bacteria. Samples must be collected carefully to avoid contamination of the environment and to prevent human exposure to the bacteria. Blood samples from relatively fresh carcasses will contain large numbers of *B. anthracis*, which can be seen under a microscope, cultured and isolated in a laboratory, or detected by rapid tests, e.g. polymerase chain reaction (PCR).

### **Transmission and symptoms in humans:**

It can also occur in humans when they are exposed to the bacterium, usually through handling animals or animal hides.

### **There are three forms affecting humans :**

Cutaneous (skin), inhalation (lungs) and gastrointestinal (stomach and intestine).

- 1- The cutaneous form or skin form is the commonest form and is transmitted via the skin by touch from the carcass, blood, wool, bones or skin of an animal that died of anthrax. It causes vesicles in the skin that are only slightly painful and black in colour. Without treatment, one out of five infected people die.
- 2- The respiratory form is caused by inhalation when working with leathers and wools in a closed atmosphere.
- 3 -The intestinal form can be contracted from eating the meat or drinking the blood of an animal affected by this disease. The symptoms of the disease are violent, expressed by vomiting and bloody diarrhea.

### **Prevention**

- \* Any animal that dies suddenly is suspicious of being infected with anthrax: **not** do an autopsy on an animal that has died suspiciously or has blood oozing out of its natural openings (it can be dangerous)!!
- \* Avoid letting wild dogs and animals open the carcass
- \* Destroy the carcass as rapidly as possible (by burning or to burying with caustic lime).
- \* Do not eat meat or blood from an animal that died of an unknown disease.
- \* Be aware of small skin injuries and take care of personal hygiene.
- \* Ventilate and use proper working clothes in places where products of animal origin are handled, especially leathers and wool.

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- \* Groups of people, who by their work are at serious risk, can be vaccinated.
  - \* Vaccinate cattle and goats annually in regions where anthrax is common.