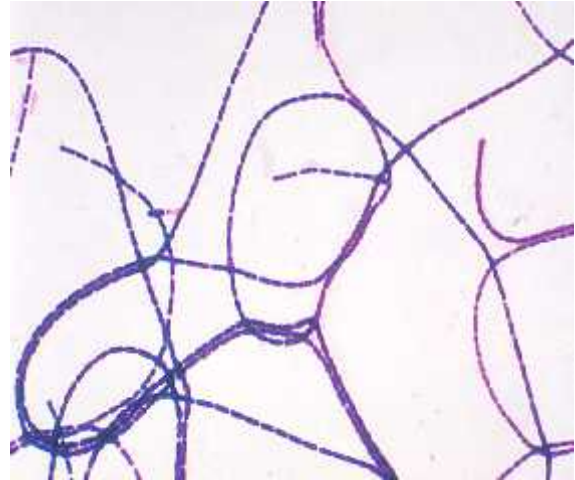
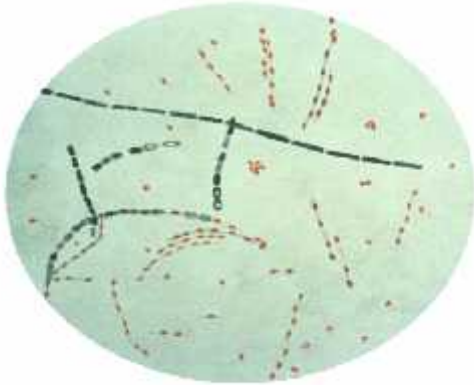


Lecture 11:***Bacillus anthracis***

Bacillus anthracis: is a rod-shaped, Gram-positive, aerobic, non-motile bacterium about 1 by 9 μm in size. Found singly, in pairs or in long chains. It was shown to cause disease by Robert Koch in 1876 when he took a blood sample from an infected cow. The bacterium normally rests in endospore form in the soil.



Capsule could be demonstrated during growth in infected animals. Spores are formed in culture, dead animal's tissue but not in the blood of infected animals. Spores are oval and centrally located

The infection by the inhalational route normally proceeds as follows: Once the spores are inhaled, they are transported through the air passages into the lungs

Historically, inhalational anthrax was called wool sorters' disease because it was an occupational hazard for people who sorted wool.

Cultural Characteristics:

Blood Agar and Nutrient Agar are commonly used to cultivate the bacilli. Plates are incubated aerobically at 37 C. On blood agar plates, colonies have irregular borders and are non-hemolytic.

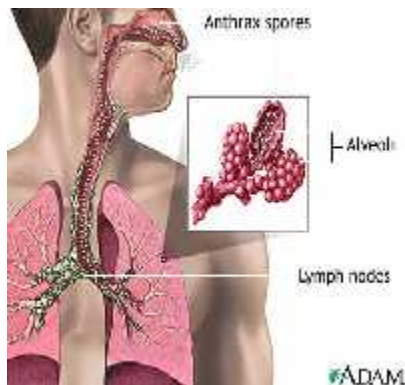
Anthrax is an infection caused by the bacterium *Bacillus anthracis*. It can occur in four forms: skin, lungs, intestinal, and injection. Symptoms begin between one day and two months after the infection is contracted. The inhalation form presents with fever, chest pain, and shortness of breath. The intestinal form presents with nausea, vomiting, diarrhea, or abdominal pain. The injection form presents with fever and an abscess at the site of drug injection.

Anthrax is spread by contact with the spores of the bacteria, which are often from infectious animal products. Contact is by breathing, eating, or through an area of skin.

PATHOLOGY;

There are different clinical forms of anthrax:

1. **Cutaneous anthrax:** 95-98% of anthrax cases are of this type. Infection occurs through wounds, burns, which may progress to septicemia.
2. **Enteric anthrax:** Caused by the ingestion of infected meat.
3. **Pulmonary anthrax:** Caused by the inhalation of large number of *B. anthracis* spores. This clinical form is commonly known as "wool sorter disease".

**Antigenic structure**

1. The Capsular Polypeptide
2. Polysaccharide Somatic Antigen
3. Complex Protein Toxin

Treatment:

Penicillin is the drug of choice. For penicillin-sensitive patients, tetracycline, erythromycin, chloramphenicol and streptomycin may be given as alternative drugs.