

Tuberculosis(TB)

Mycobacterium bovis is the specific cause of tuberculosis in cattle.

Epidemiology ...

- 1-All species, including humans, are susceptible to M. bovis
- 2-Infected cattle are the main source of infection for other cattle and other animals .
- 3-Infection can transmitted through inhalation or ingestion .
- 4- Organisms are excreted by aerosols , in sputum, feces, milk, urine, vaginal and uterine discharges, and discharges from open peripheral lymph nodes.
- 5-The disease is of an economic importance
- 6-M. bovis can be responsible for 5 to 10% of human tuberculosis

Pathogenesis...

TB can spread in the body by two stages

1-Primary complex stage...

- A-It consists of the lesion at the point of entry and in the local lymph node. A lesion at the point of entry is common when infection is by inhalation. Whereas When infection occurs via the alimentary tract, a lesion at the site of entry is unusual, although tonsillar and intestinal ulcers may occur. More commonly the only observed lesion is in the pharyngeal or mesenteric lymph nodes.
- B-primary focus lesion develops within 8 days of entry and calcified within 2 weeks then surrounded by granulation tissue, monocytes, and plasma cells and the pathognomonic 'tubercle' is established.
- C-Bacteria pass from this primary focus, (which is in the respiratory tract in 90-95% of cases In cattle) to a regional lymph node and cause the development of a similar lesion there.
- D-In calves fed tuberculous milk the primary focus is likely to be in the pharyngeal or mesenteric lymph nodes, with hepatic lesions

2-Post-primary dissemination stage...

From the primary complex lesions will spread in the form of acute miliary tuberculosis, with development of discrete nodular lesions in various organs accompanied by constant underlying toxemia which causes weakness, debility, and death of the affected animal.

Clinical findings...

In cattle...

1-generally...

- a-Animal are sluggish with progressive emaciation
- b-A capricious appetite and fluctuating temperature
- c-The hair coat may be rough or sleek املس

2-pulmonary sings

- a- Pulmonary involvement is characterized by a chronic cough due to bronchopneumonia. The cough is never loud or paroxysmal, moist, occurring only once or twice at a time, It is easily stimulated by squeezing the pharynx or by exercise and is most common in the morning or in cold weather.
- b- In the advanced stages when much lung has been destroyed, dyspnea with increased rate and depth of respiration becomes more clear .
- c-on percussion of the lung dull sound are revealed whereas in auscultation low crackle sound are audible.

d- Tuberculous pleurisy may occur but is usually symptomless because there is no enough effusion.

e- Enlargement of bronchial lymph nodes may cause dyspnea because of constriction of air passages, and enlargement of the mediastinal lymph node is commonly associated with recurrent and then persistent ruminal tympany.

3- digestive signs ...

a- Enlargement of Retropharyngeal lymph node causes dysphagia and noisy breathing due to pharyngeal obstruction. Pharyngeal palpation, or endoscopy, reveals a large, firm, rounded swelling in the dorsum of the pharynx.

b- Rarely tuberculous ulcers of the small intestine cause diarrhea

4- lymph nodes ...

Chronic, painless swelling of the submaxillary, prescapular, prefemoral ,and supra mammary lymph nodes is seen in rare cases .

5- Reproductive signs ...

a- Uterine tuberculosis with chronic purulent discharge might occur some times which lead to infertility and abortion and when spread might cause peritonitis ,bursitis and salpingitis .

b- Rare cases of TB cause orchitis with large painless testicles

6- Mastitis ...

a- Tuberculous mastitis is of major importance because of the danger to public health, and of spread of the disease to calves, and the difficulty of differentiating it from other forms of mastitis.

b- TB mastitis characterized by induration **تصلب** and hypertrophy which usually develops first in the upper part of the udder, particularly in the back quarters.

c- The milk is seen normal but might have amber **عنبري او كهرمانى** color at the end of milking and in rare cases milk mixed with pus might be seen .

In Horses

1- The common syndrome in horses is involvement of the cervical vertebrae in which a painful osteomyelitis causes stiffness of the neck and inability to reach the ground for eating .

2- Less common signs include polyuria, coughing due to pulmonary lesions, lymph node enlargement, nasal discharge, and a fluctuating temperature.

In sheep and goats ...

1- Bronchopneumonia is the commonest form manifested by cough and terminal dyspnea.

2- In some goats intestinal ulceration, with diarrhea, and enlargement of the lymph nodes of the alimentary tract occur

Clinical pathology...

1- Isolation and cultivation of sputum and discharge

2- tuberculin test

3- Serological tests such as Elisa, CFT

PM....

Cattle, sheep, and goats...

1- These show similar lesions in which Tuberculous granulomas may be found in any of the lymph nodes, but particularly in bronchial, retropharyngeal, and mediastinal nodes

2- In the lung, miliary abscesses may extend to cause a suppurative bronchopneumonia. The pus has a characteristic cream to orange color and varies in consistency from thick cream to crumbly cheese. Tuberculous nodules may appear on the pleura and peritoneum.

3- All localized lesions of tuberculosis tend to stimulate an enveloping fibrous capsule

Horses...

The characteristic distribution of TB in horses includes the intestinal wall, mesenteric lymph nodes, and spleen. The cut surface of these firm nodules has a fleshy appearance similar to that of neoplastic tissue. There is also a tendency for lesions to develop in the skeleton, particularly the cervical vertebrae.

Treatment....

It done by administration of isoniazid, combinations of streptomycin and para-aminosalicylic(inhuman rifampicin is common use)

Control ...

1- Teat and slaughter using tuberculin test When the overall incidence of tuberculosis is 5% or less, is the only satisfactory method of eradication

2- Hygienic measures to prevent the spread of infection

3- Vaccination .. BCG vaccination is the only method available for field use. Vaccination must be repeated annually and the vaccinated animal remains positive to the tuberculin test. Calves must be vaccinated as soon after birth as possible