

TUBERCULOSIS

Etiology

Bacteria belonging to the genus *Mycobacterium* are responsible for TB. The three most important species are *M. bovis* (reservoirs are cattle, dogs, and pigs), *M. avium* (reservoirs are birds, pigs, and sheep), and *M. tuberculosis* (human reservoir). *Mycobacterium* organisms are slow growing, gram-positive, acid fast, aerobic bacilli.

Transmission

1. The *Mycobacterium* species that cause TB are spread by aerosol droplets. Aerosol droplets can be dispersed through talking, singing, laughing, coughing, or sneezing.
2. Contact with infected animals, contact with contaminated surfaces, and ingestion.
3. *M. bovis* can be transmitted to people through unpasteurized milk and products made with unpasteurized milk.

Tuberculosis in animals

The early stages of TB are usually asymptomatic, but the later stages are characterized by

1. Fever, decreased milk production, progressive emaciation, weakness, and anorexia. With respiratory involvement there will be a moist cough that is worse in the morning, during exercise, or during cold weather.
2. Dyspnea and tachypnea.
3. Lymph nodes may become swollen, and in some cases, rupture.
4. Enlarged lymph nodes can obstruct blood vessels, the digestive tract, or airways, leading to further complications.

Tuberculosis in humans

1. Pulmonary: Productive cough, fever, weight loss, fatigue, night sweats, chest pain, hemoptysis.
2. Extrapulmonary: cervical lymphadenitis, meningitis, osteomyelitis, pericarditis; also associated with infection of most other organs. Typically, encapsulated inflammatory nodules (tubercles) with epithelioid and giant cells surrounding caseous or liquefied center.

Diagnosis

Diagnosis in cattle and people is based on the TB skin test. This is usually performed by injecting a small amount of tuberculin (a sterile liquid containing a nonpathogenic derivative of the *Mycobacterium* bacterium used in the diagnosis of tuberculosis) under the superficial layers of the skin. After 48 to 72 hours, the site is examined. A positive skin test results in a raised bump at the point of injection. A positive

reaction indicates the person has been infected with TB. A positive skin test must be followed up with further tests (e.g., chest radiographs, sputum tests) in people.

Prevention

There is a human vaccine available to protect people against TB, but it does not provide 100% protection in adults.

Control measures include:

1. Educating the public about transmission methods and prevention.
2. Not drinking unpasteurized milk or eating products made from unpasteurized milk.
3. Wearing protective clothing when handling suspect animals or carcasses.
4. Working in a controlled environment when working with *Mycobacterium* organisms in a laboratory setting.
5. Isolation and quarantine of suspect animals.
6. Providing adequate ventilation in areas where TB is known to exist.

STAPHYLOCOCCOSIS

Etiology:

S.aureus is a gram-positive bacterium that is found on the skin, in the nose, and in the throat in a wide variety of mammals and birds. It can also be found on surfaces, such as food preparation, cooking utensils, and milking machines. *S.aureus* can live in high salt and sugar concentrations where other bacteria would not survive.

Transmission

1. Humans are the primary source of *S. aureus* in food poisoning that arises from contamination by *S. aureus* toxins.
2. The most common mode of transmission occurs when food is prepared by someone with a skin infection or when food is stored at room temperature.
3. Transmission can also occur when unpasteurized milk or cheeses made from unpasteurized milk are ingested.
4. Sneezing on food can also cause *S. aureus* contamination.

Staphylococcal in animals

S. aureus infections are commonly associated with

1. Skin diseases.
2. Mastitis.
3. Septicemia.

4. Abscess.

Staphylococcal food poisoning in humans

Staphylococcal food poisoning in people has an extremely short incubation period; although some will get ill within 30 minutes, the usual range is from 1 to 6 hours. Clinical signs include

1. Nausea, vomiting, abdominal cramping, and diarrhea, with a mild fever, or no fever. The vomiting can last up to 24 hours.
2. Suppuration in any tissue, but usually skin (impetigo, boils).
3. Pneumonia, mastitis .

Diagnosis

Diagnosis of staphylococcal food poisoning is based on history and clinical signs. Fecal samples can be cultured for *S. aureus*, if necessary.

Prevention

This is best accomplished by observing the basic rules of food safety, as follows:

1. Wash hands thoroughly with warm water and soap before and after handling food and after using the bathroom or changing diapers.
2. When buying refrigerated foods, get them home and properly store them as soon as possible.
3. Food should be cooked, refrigerated, or frozen within 2 hours.
4. Wrap meats in plastic bags to keep meat juices from dripping onto other foods.
5. Buy only pasteurized milk and dairy products.
6. Cook foods to recommended temperatures.

Colibacillosis

Disease caused by bacteria *Escherchia coli* , colibacillosis also know as hemorrhagic colitis, colibacteriosis , colitoxemia and enteropathogenic diarrhea.

Etiology: *E. COLI* , Its gram negative bacteria, rode in shap, motile.

Host: cattle, sheep , goat, deer swine , and rarely doges and horse

Source of infection: contamination food by stool or urine from infected animals and eggs and milk

Transmission : in human and animals by

- 1- fecal –oral route put anything in their mouths that has been in contact with infected feces
- 2- Eating undercooked meat (infect or contamination)
- 3- Contamination Water
- 4- Contamination milk

Colibacillosis in animal :

1. Diarrhea.
2. Mastitis
3. Abortion
4. Enteritis
5. Edema

Colibacillosis in human :

- 1- Diarrhea
- 2- Abdominal pain
- 3- Some time vomit and rarely fever
- 4- Hemolytic uremic syndrome: is characterized by distraction of R.B.C. and kidney failure, decrease platelet formation
- 5- Thrombocytopenic purpura

Prevention

- 1- Cook all beef to temperature of at least 160F
- 2- Drink only pasteurized milk
- 3- Wash all food that will be eaten
- 4- Drinking only safe water
- 5- People with diarrhea should avoid public swimming

6- If children are allowed to touch animals , make sure wash hand



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