

ARTHROPODE BORNE DISEASES

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UOP

- Usually rare diseases caused by a bacterial pathogen carried by an arthropode
- Arthropode might act as
 - Definitive host
 - Intermediate host

INTRODUCTION

- Ehrlichiosis (pronounced also known as canine rickettsiosis, canine hemorrhagic fever, canine typhus, tracker dog disease, and tropical canine pancytopenia)
- Ehrlichiosis is a tick-borne disease of dogs usually caused by the organism *Ehrlichia canis*.
- *Ehrlichia canis* is pathogenic to animals.

- Humans can become infected by *E. canis* and other species after tick exposure.
- German Shepherd dogs are thought to be particularly affected by the disease, other breeds generally have milder clinical signs.
- Cats can also be infected.

EHRlichia

- Rickettsial bacteria belonging to the family Ehrlichiaeae.
- Although there are several species of ehrilichia, *E. canis* causes most severe clinical signs.
- This *E. canis* infects monocytes in the peripheral blood.
- The brown dog tick, or *Rhipicephalus sanguineous*, that passes the organism to the dog.



SIGNS AND SYMPTOMS

- fever
- lethargy
- loss of appetite
- weight loss
- abnormal bleeding (e.g., nosebleeds, bleeding under skin -- looks like little spots or patches of bruising)
- enlarged lymph nodes

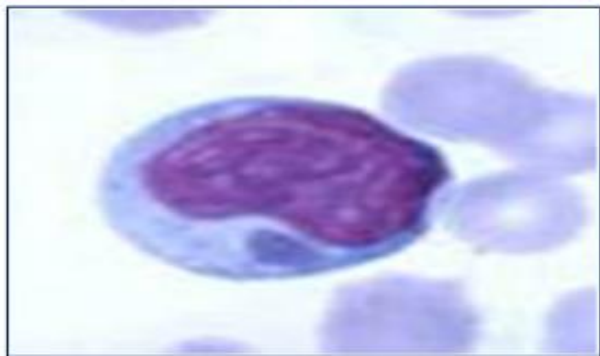
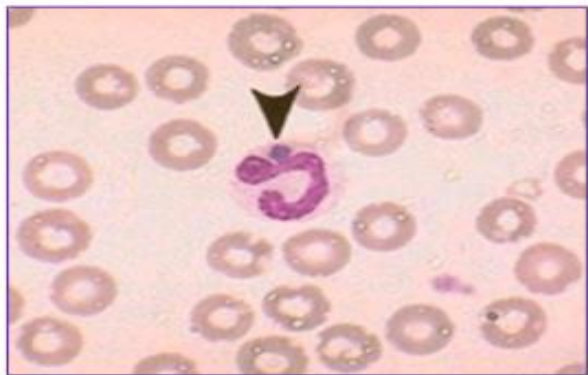
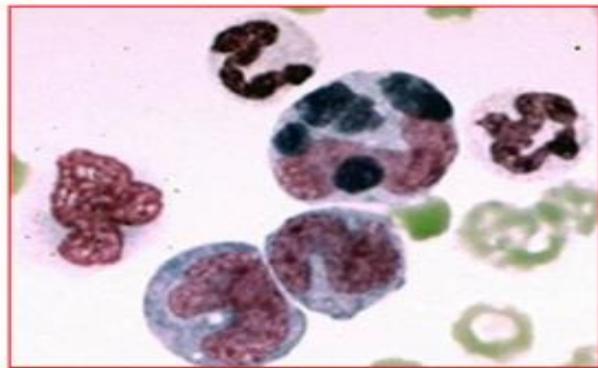
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- enlarged spleen
- pain and stiffness (due to arthritis and muscle pain)
- coughing
- Seizures
- vomiting and diarrhea
- inflammation of the eye
- neurological symptoms (e.g., incoordination, depression, paralysis, etc.)
- Signs of other organ involvement can appear in the chronic form, especially kidney disease.

Diagnosis

- Diagnosis is based on typical clinical signs & special blood test.
- Two blood tests that detect the dog's antibodies to *Ehrlichia* are available - indirect immunofluorescent antibody (IFA) test, ELISA test.
- The antibodies can last for one or more years after the infection

Buffy coat smear



Treatment

- Antibiotics
 - Tetracycline- 22 mg/kg body weight for 14 days
 - Doxycycline-5 mg/kg body weight for 14 days
 - Minocycline- 20 mg/kg body weight for 14 days
 - orally
- Dogs will need blood transfusions or intravenous fluids depending on the severity of the disease.

Typhus

- Cause: *Rickettsia prowazekii*
- Vector:
 - Human body louse
 - Human head louse
- Incubation period: 5-21 days
- Mortality rate is 20-30% in untreated cases
- Symptoms
 - Severe headache
 - Chills
 - Generalized myalgia
 - High fever
 - Vomiting
 - Macular rash after 4-7 days
 - Lacks consciousness

- Reservoir of infection;-
 - Man, case, organisms are found in blood throughout febrile stage
- Vector: louse “pediculus humanus”
- Mode of transmission:
 - 1. Contamination of skin with faeces of infected louse. The organisms find entry through skin abrasions by scratching.
 - 2. inhalation of dried faeces of infected louse
- There is no transovarial transmission from louse to its generations

Symptoms

- Incubation period: 12-14 days
- Abrupt onset of high fever, rigors, body aches. Face becomes flushed then cyanotic and patient soon becomes dull and confused.
- Skin rash appears on the 5th day on folds of axilla, anterior part of forearms then trunk and back.
- Complications: bronchopneumonia, thrombotic changes, gangrenes of fingers, toes and genitalia.
- Diagnosis: confirmation by agglutination test

Prevention

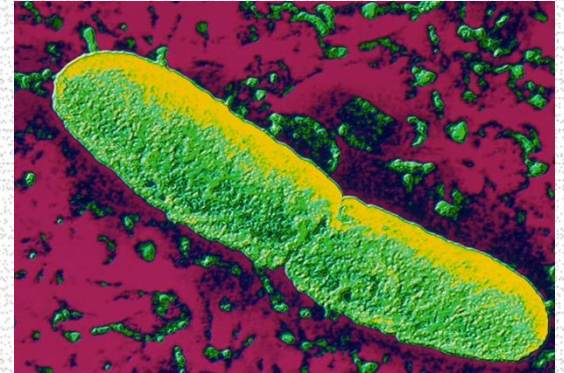
- 1. community development
- Health education “personal cleanliness”
- Measures against lousniness
- Providing washing facilities
- Delousing of population “washing facilities and dusting with a suitable insecticide”
- Specific prevention
- Typhus vaccine (live attenuated vaccine)
- Madrid E. typhus vaccine “single IM dose, immunity of 5years”

Control

- Notification to LHO
- Isolation in hospital after dusting
- Terminal disinfection by dusting (to kill any lice) and steam disinfection for cloths and bedding (to kill rickettsia)
- Treatment by tetracycline 500mg/6hs for seven days
- Release after clinical recovery of the case
- Contacts
- Delousing by bathing and dusting
- Surveillance for 2 weeks, for case-finding

Plague

- is a disease that affects humans and other mammals. It is caused by the bacterium, *Yersinia pestis*.
- a gram-negative,
- non-motile,
- rod-shaped, coccobacillus bacterium,
- non spores.
- facultative anaerobic organism
- infect humans via the Oriental rat flea (*Xenopsylla cheopis*)



Transmission

- The bacteria that cause plague, *Yersinia pestis*, maintain their existence in a cycle involving rod
- The plague bacteria can be transmitted to humans in the following ways:
 - **Flea bites.** During plague epizootics, many rodents die, causing hungry fleas to seek other sources of blood. People and animals that visit places where rodents have recently died from plague are at risk of being infected from flea bites. Dogs and cats may also bring plague-infected fleas into the home. Flea bite exposure may result in primary bubonic plague or septicemic plague.
 - **Contact with contaminated fluid or tissue.** Humans can become infected when handling tissue or body fluids of a plague-infected animal
 - **Infectious droplets.** When a person has plague pneumonia, they may cough droplets containing the plague bacteria into air. If these bacteria-containing droplets are breathed in by another person they can cause pneumonic plague. Typically this requires direct and close contact with the person with pneumonic plague.



Symptoms

- Plague symptoms depend on how the patient was exposed to the plague bacteria. Plague can take different clinical forms, but the most common are
- **bubonic** (wollen, tender and painful lymph nodes),
- **pneumonic** (shortness of breath, chest pain, cough, and sometimes bloody or watery mucous.)
- **septicemic** (bleeding into the skin and other organs. Skin and other tissues may turn black and die, especially on fingers, toes, and the nose.).

Prevention

- Reduce rodent habitat around your home, work place, and recreational areas.
- Wear gloves if you are handling or skinning potentially infected animals to prevent contact between your skin and the plague bacteria.
- Use repellent if you think you could be exposed to rodent fleas during activities such as camping, hiking, or working outdoors.
- Keep fleas off of your pets by applying flea control products. Animals that roam freely are more likely to come in contact with plague infected animals or fleas and could bring them into homes.
- Do not allow dogs or cats that roam free in endemic areas to sleep on your bed.