Leptospirosis

1.0 Introduction

Leptospirosis is a bacterial disease that affects humans and animals. It is caused by bacteria of the genus *Leptospira*. In humans, it can cause a wide range of symptoms, some of which may be mistaken for other diseases. Some infected persons, however, may have no symptoms at all. Without treatment leptospirosis can lead to kidney damage, meningitis (inflammation of the membrane around the brain and spinal cord), liver failure, respiratory distress, and even death.

2.0 People at Risk

Leptospirosis occurs worldwide but is most common in temperate or tropical climates. It is an occupational hazard for many people who work outdoors or with animals, such as farmers, vetrinarians and animal caretakers, as well as industrial occupations such as sewage plant workers, miners, and military personnel. The disease has also been associated with swimming, wading and other water recreation activities in contaminated lakes and rivers, again noting higher prevalance in temperate and tropical climates. Pregnant women must not work with animals suspected of having leptospirosis.

3.0 Transmission

Leptospirosis can pass from animals to humans when an unhealed break in the skin comes in contact with water or soil where urine from an infected animal is present. It can also be transmitted through direct contact with animal urine by animal workers and care takers. The bacteria can enter the body through open wounds, the eyes, or mucous membranes. Both wild and domesticated mammalian species can transmit the infection to humans including, but not limited to, rats, skunks, opossums, foxes, raccoons, deer, cattle, pigs, horses, and dogs. Leptospirosis typically is not transmissible from one person to another.

4.0 Symptoms

Leptospirosis signs and symptoms usually appear suddenly, about 5-14 days after infection. However, the incubation period can range from 2-30 days. Mild leptospirosis symptoms include: fever and chills, coughing, diarrhea and/or vomiting, headache, muscle pain (particularly lower back and calves), a rash, red and irritated eyes and occasionally jaundice. Most people recover withing a week without treatment but around 10 percent go on to develop severe leptospirosis.

Severe leptospirosis signs and symptoms will appear a few days after mild leptospirosis symptoms have disappeared. These symptoms depend on which vital organs are involved. It can lead to kidney or liver failure, respiratory distress, and meningitis. These can be fatal. If leptospirosis affects the heart, liver, and kidneys, the person may experience fatigue, irregular, often fast heartbeat, muscle pains, nausea, nosebleeds, pain in the chest, increased respirations and shortness of breath, poor apetite, swelling of the hands, feet, or ankles, unexplained weight loss, and jaundice. Without treatment it can lead to life threatening kidney failure.

If leptospirosis affects the brain or spinal cord, meningitis and/or encephalitis may develop. These symptoms may include: confusion, drowsiness, seizures, high fever, nausea, light sensitivity, stiff neck, inability to speak, vomiting and aggressive or unusual behavior. Untreated, this too can prove life threatening.

If leptospirosis affects the lungs, it can cause high fever, panting, and coughing up blood.

5.0 Prevention, Diagnosis, and Treatment

Prevention

Leptospirosis spread can be minimized by wearing appropriate gloves, as well as lab coat, gown, or surgical scrub suit, masks, boots, and goggles/face shield when caring for an animal that is suspect of having leptospirosis. Please make sure to cover all non-intact skin prior to putting on gloves, and practice frequent and thorough handwashing after removing gloves.

Diagnosis

Diagnosis can be difficult with early-stage, mild leptospirosis, because the symptoms can resemble those of flu and other common infections.

Laboratory testing for leptospirosis can be done using blood and urine samples. The antibodies for leptospirosis develop between 3-10 days after symptom onset, thus any serologic test must be interpreted accordingly. Negative serologic test results from samples collected in the first week of illness do not rule out disease and serologic testing should be repeated on a convalescent sample collected 7-14 days after the first**.**

In the acute phase of illness, bacteria causing leptospirosis (leptospires) are present in the blood (septicemia) for approximately the first 4-6 days of illness. Leptospires may be shed intermittently in the urine after approximately the first week of illness onset. Due to the transience of leptospires in body fluids, a negative PCR test does not rule out leptospisosis.

Based on the recommendation of a physician, it is best to submit as many specimen types as possible for analysis.
Recommended specimens based on collection timing:
Acute illness (first week): whole blood and serum
Convalescent illness (after first week): serum +/- urine.

Treatment

For patients with mild symptoms, they may be treated with an antibiotic as prescribed by a physician. For patients with severe disease, a stronger dose of antibiotics will likely be utilized.

6.0 Resources

CDC leptospirosis link**:**

For further information related to possible zoonotic disease exposure, or further related resources, please contact UT Occupational Health Nurse Bryan Cranmore RN, COHN at bcranmore@utk.edu, or for urgent response the OHP nurse can be reached at 865-755-8924

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