

Leptospirosis and Weil's Disease

Leptospirosis, and its more severe phenotype, Weil's disease, is a zoonotic disease that often occurs in tropical regions where water is contaminated with animal urine. The disease is caused by *Leptospira interrogans*, a spirochete with hooked shaped ends. Clinical features include flu-like symptoms, photophobia, and conjunctival suffusion. Weil's disease may present with liver and kidney dysfunction, jaundice, hemorrhage, and anemia.



PLAY PICMONIC

Epidemiology

Tropical Regions

[Tropical Hawaiian Surfer](#)

Human infection usually results from exposure to animal urine in contaminated water or soil. Leptospirosis is prevalent among people who spend a lot of time around water sources (e.g. surfers, sewer workers, and farmers) particularly in tropical areas (e.g. Hawaii).

Water Contaminated with Animal Urine

[Ocean with Toxic-Urine](#)

Portals of entry for *Leptospira* include cuts or abraded skin, mucous membranes, or conjunctivae. This is especially common in people who spend a lot of time around contaminated water sources.

Characteristics

Leptospira interrogans

[Leopard-spiral](#)

The genus *Leptospira* contains 22 species among which 10 are considered pathogenic. *L. interrogans* is the most common organism causing leptospirosis.

Spirochete

[Spiral-spirochete Staircase](#)

Leptospirosis is caused by pathogenic spirochetes of the genus *Leptospira*. Spirochetes are a group of spiral-shaped bacteria.

Hooked Shaped Ends

[Hooked-End-Tail](#)

Leptospira can be distinguished morphologically from other spirochetes by their unique "question mark" hook at the end of the bacterium.

Clinical Features

Flu-like Symptoms

Thermometer and Ice-bag

Leptospirosis presents with flu-like symptoms such as myalgias (classically of calves), fever, photophobia, headache, and gastrointestinal distress.

Conjunctival Suffusion

Convict-Red-Eyes

Conjunctival suffusion is conjunctival erythema without the classic exudates seen in conjunctivitis. In leptospirosis, conjunctival suffusion is commonly bilateral and diffuse.

Photophobia

Lamp-Monster

Photophobia is a common symptom in patients with leptospirosis. They may also complain of retro-orbital pain.

Weil's disease

Liver and Kidney Dysfunction

Dead Kidney and Liver

Weil's disease or icterohemorrhagic leptospirosis is a severe form of leptospirosis that can progress to acute liver and kidney failure. Clinical features are due to systemic spread and multiorgan involvement.

Jaundice

Jaundice-janitor

Involvement of the liver causes hepatitis which can result in jaundice. Although the exact pathomechanism is not well understood, it is thought that *Leptospira* invades intercellular junctions between hepatocytes causing bile to leak. Other features of acute liver failure may be evident.

Hemorrhage

Hemorrhage-hammer

Patients with Weil's disease are at increased risk of bleeding events. Several mechanisms have been implicated such as increased vascular permeability, complement activation, and immune-mediated damage to cells. Pulmonary hemorrhage can result in hemoptysis and is a major cause of death in these patients.

Anemia

Anemone

Anemia can be attributed to widespread hemorrhage. Consider blood transfusions for precipitous drops in hemoglobin.