

Leptospira Induced Fulminant Myocarditis Leading to Cardiogenic Shock and Left Heart Failure

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Commentary

A 16-yr-old Israeli student presented to the emergency with a 3 days history of fever 40° C, headache, rash, abdominal pain, and severe myalgia (Figure 1).



Figure 1: Exanthemata's rashes, was recorded in the first week in the abdomen, lasting few days. The rashes were urticarial; sometimes itchy.

Two weeks before admission, he swam in a small river in Tiberia area and stayed in sleeping tent. Blood work showed Leukocytosis 12000 count/ml with 88% Neutrophils, 4% Lymphocytes (Lymphopenia 500), CRP 241 mg/dL, Albumin 4.4 mg/dL, Bilirubin 2.2 mg/dL, direct 0.7 mg/dL. On the third day of illness, He developed hypotension 90/60 with tachycardia 130 and tachypnea 33/min with high anion gap metabolic acidosis 13.5 (pH: 7.3, pCO2 34, Bicarbonate 16, Na 135, Chloride 105, and Lactate 4 mmol/L). Chest X-ray showed pulmonary edema (Figure 2).

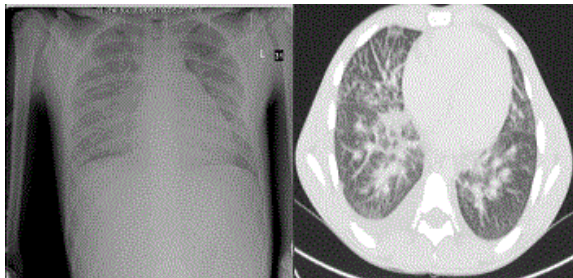


Figure 2: Signs of left heart failure (Cardiomegaly, Pulmonary Congestion, redistribution of blood vessels to the apex, interstitial edema), following fulminant myocarditis.

Electrocardiogram showed sinus tachycardia. 2D echocardiogram showed mild dilated cardiac chambers with moderate global hypokinesia and an ejection fraction of 42%, FS 23% and grade 3 diastolic dysfunction. Troponin was 1.1 micro/L; a diagnosis of myocarditis was made. On follow up, Cr 1.2 mg/dL, BUN 24 mg/dL, NA 132, K 3.2, CRP 370 mg/dL, AST 35 IU, ALT 10 IU. Virology for influenza, EBV, CMV, adenovirus, HIV, Coxsackie, Parvovirus and B-19 were negatives, ANA Negative. Leptospirosis was confirmed by positive Leptospira IgM and negative IgG.

The microscopic agglutination test (MAT 1/50 twice). Because of hemodynamic instability, he was transferred to Pediatric ICU and treated with inotropes (melrinone and dopamine), Furosemide, and supportive care (Oxygen). He was treated with doxyliline and ceftriaxone since his third days of hospitalization. The patient recovered completely after 3 weeks of illness with normal cardiac function and was discharged home (Figures 3 and 4). Leptospirosis should be added to differential diagnosis of fulminant myocarditis [1-2].

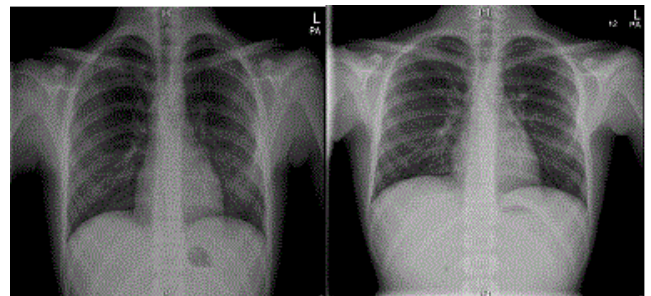


Figure 3: Chest X- ray at admission showing a) normal heart size and clear lung and at discharge b) after being treated with diuretics and vasopressors showing resolution of signs of congestion.

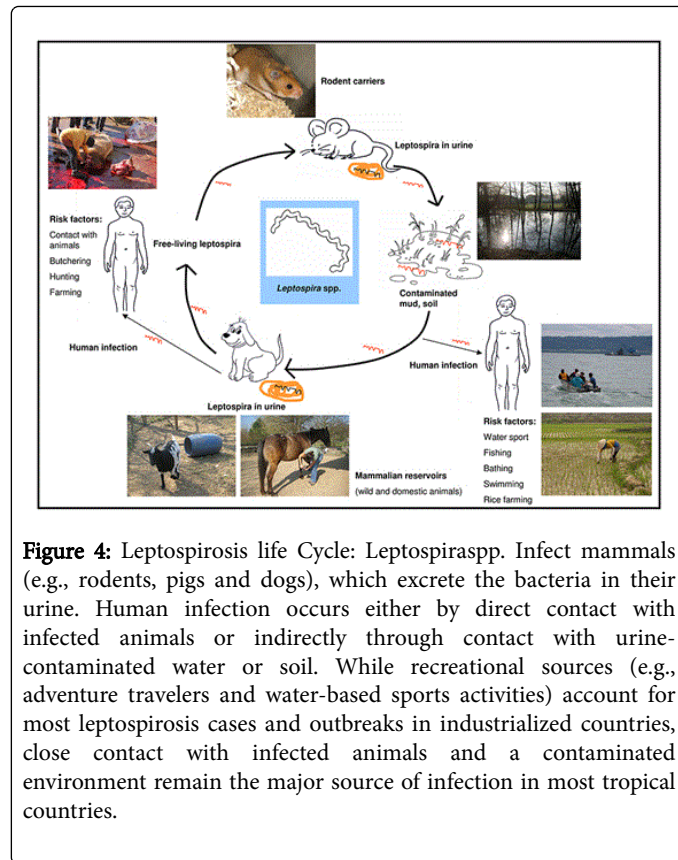


Figure 4: Leptospirosis life Cycle: *Leptospira* spp. Infect mammals (e.g., rodents, pigs and dogs), which excrete the bacteria in their urine. Human infection occurs either by direct contact with infected animals or indirectly through contact with urine-contaminated water or soil. While recreational sources (e.g., adventure travelers and water-based sports activities) account for most leptospirosis cases and outbreaks in industrialized countries, close contact with infected animals and a contaminated environment remain the major source of infection in most tropical countries.

References:

1. Navinan MR, Rajapakse S. (2012) Cardiac involvement in leptospirosis. *Trans R Soc Trop Med Hyg* 106: 515-520.
2. Kirchner GI, Krug N, Bleck JS, Fliser D, Manns MP (2001) Fulminant course of leptospirosis complicated by multiple organ failure. *Z Gastroenterol* 39: 587-92.