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

Assy N*, Abo shkara S, Saad E, Budman D, Lisitsin S, and Barhoum M

Internal medicine department, Galilee medical center, Israel

*Corresponding author: Assy N, Internal medicine department, Galilee medical center, Israel, Tel: 04-9107748; E-mail: NimerA@gmc.gov.il

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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).

Two weeks before admission, he swam in a small river in Tiberia area and stayed in a 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).

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 (melnirine and dopamine), Furosemide, and supportive care (Oxygen). He was treated with doxycycline 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 4: Leptospirosis life Cycle: Leptospiraspp. 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: