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Unmasking the Enigma: A Case Report on Weil Disease

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Abstract

This case report presents a 37-year-old male with Weil disease, a severe form of leptospirosis, who presented without typical ecological risk factors. Initially manifesting as weakness, muscle aches, and fever, the patient rapidly deteriorated, necessitating ICU admission due to septic shock and respiratory failure. Despite initial diagnostic challenges, including normal initial imaging and inconclusive laboratory findings, a presumptive diagnosis of leptospirosis was made using Modified Faine's criteria.

Empirical antibiotic treatment with doxycycline led to significant clinical improvement, highlighting the importance of early recognition and treatment in severe cases of leptospirosis.

This case underscores the need for heightened clinical suspicion and the use of diagnostic scoring systems, even in atypical presentations, to facilitate timely intervention and improve patient outcomes.

Categories: Internal Medicine, Infectious Disease, Pulmonology
Keywords: empiric therapy, diagnostic reasoning, clinical case report, severe respiratory failure, weil's disease, leptospirosis

Introduction

Leptospirosis is a zoonosis caused by the pathological genus Leptospira. It is thought to be the most widespread zoonosis in the world but a rare disease in the United States (100 to 150 cases are reported annually) [1]. Presentation of the disease can vary from a mild, influenza-like illness to multi-organ failure dysfunction. This case report aims to increase clinicians' awareness of this variation and to start empirical antibiotic treatment for suspected patients.

Case Presentation

A 37-year-old male with no known past medical history initially presented with weakness, muscle aches, and fever. Initial vital signs were stable except for sinus tachycardia. Physical examination was unremarkable except for scleral icterus. Pertinent positive lab results revealed leukocytosis, severe thrombocytopenia, elevated fibrinogen and d-dimer, acute kidney injury, and significantly elevated total and direct bilirubin. Pertinent negatives include relatively normal liver function tests, including International Normalized Ratio (INR). Urine analysis was unremarkable. Acetaminophen level was negative. Initial imaging tests, including chest x-ray and Transthoracic Echocardiogram (TTE), were normal. Computed Tomography (CT) of the chest/abdomen/pelvis without contrast and Right Upper Quadrant Ultrasound (RUQUS) both showed mild hepatomegaly. Infectious diseases and Gastroenterology were consulted, and a complete workup for common and rare infectious etiologies was sent, including Rickettsia and Leptospirosis; our differential also included hemolysis, Wilson’s disease, and Fanconi’s syndrome. On the third day of admission, the patient was transferred to the Intensive Care Unit (ICU) due to rapid deterioration, requiring high-flow oxygen and septic shock. Chest X-ray was remarkable for new bilateral airspace opacities.

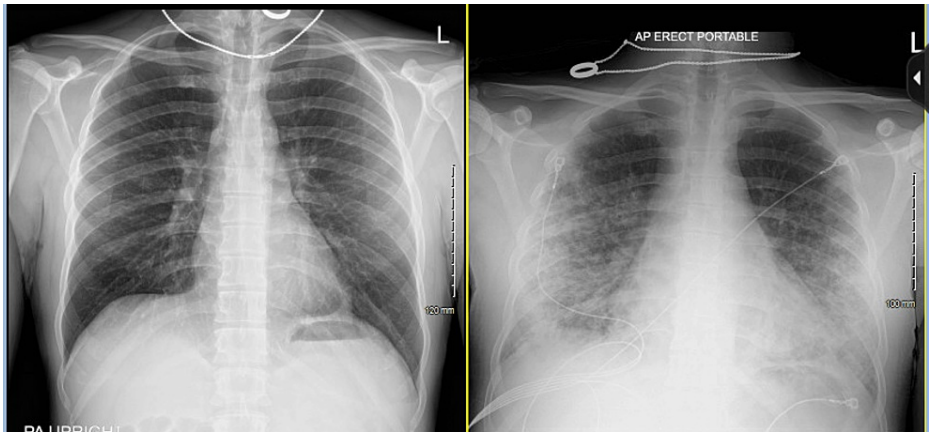

FIGURE 1: Chest Xrays comparing the day of admission to third day

First Xray on the left is unremarkable while on the right side the chest Xray showing bilateral airspace opacities.

Chest CT showed multifocal consolidative and ground-glass opacities with tree-in-bud nodularity.

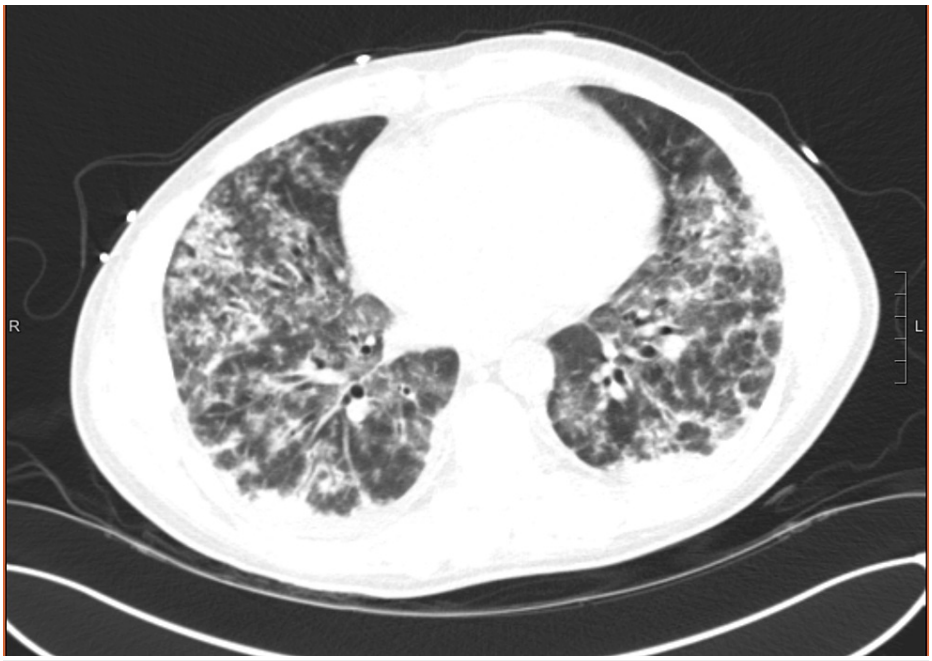

FIGURE 2: CT scan

Multifocal consolidative and ground glass opacities with tree-in-bud nodularity

Due to severe shock, acute respiratory distress, impending respiratory failure, and the need for additional investigations including liver biopsy as well as liver transplant evaluation if needed, the patient was transferred to a tertiary medical center ICU, where he was started on broad-spectrum antibiotics, vancomycin, and cefepime. A liver biopsy was obtained and showed signs of acute inflammation with lymphocytes and neutrophils. A presumptive diagnosis of Leptospirosis was made using Modified Faine's criteria, and he was started on doxycycline. On the ninth day of admission, Leptospira antibody Immunoglobulin M (IgM) returned positive, finally ending the mystery. The patient responded well to antibiotic treatment, improving all parameters including thrombocytopenia, liver function, respiratory failure, and kidney function.

Discussion

Most leptospirosis cases are mild with flu-like symptoms, but in about 10% of cases, also known as Weil's disease, mortality rates are higher. This is characterized by hepatic dysfunctions associated with renal failure

and hemorrhages [2]. What made this case incredibly complex was that the patient did not have any ecological risk factors. A scoring system using Modified Faine's Criteria, which includes clinical, epidemiological, and laboratory parameters, was found to be a helpful tool for diagnosing Leptospirosis in a resource-poor setting [3]. Although the scoring system exists to help guide the diagnosis, the rare state of this disease makes it a challenge to consider it the primary diagnosis. High suspicion is essential to consider Leptospirosis as a diagnostic hypothesis because in its severe form, as happened to our patient, it can progress with fast clinical deterioration. Empirical treatment with antibiotics should be started when there is a suspicion.

Conclusions

This case report sheds light on the complexities of diagnosing and managing Weil disease, a severe manifestation of leptospirosis. Despite its rarity in certain regions, the potential for rapid clinical deterioration underscores the importance of maintaining a high index of suspicion among clinicians. The utilization of tools such as Modified Faine's Criteria can aid in diagnosis, particularly in resource-poor settings where laboratory resources may be limited. However, given the elusive nature of this disease, empirical antibiotic treatment should be initiated promptly when clinical suspicion arises to prevent further morbidity and mortality. This report underscores the critical role of heightened awareness, early recognition, and prompt intervention in managing this enigmatic condition.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. N/A issued approval N/A. no identifying information (in the text or image) appears in article. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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