Mind Over Matter

The importance of utilizing clinical reasoning in the era of patient serology

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INTRODUCTION

Leptospirosis is an infectious disease caused by a free living spirochete. There are only 100-150 cases reported annually in the United States. Distribution is sporadic, however, Hawaii is most frequently associated with leptospirosis cases. Infections can occur as a result of contact with contaminated water via skin or mucosa. Symptoms begin 5-28 days after exposure.

BACKGROUND

Patients presenting with fever, chills, myalgia, nausea, vomiting, diarrhea, headache, conjunctival suffusion, and jaundice should be suspected to have leptospirosis.

CASE PRESENTATION

35M with PMH of angioedema presented with high fevers of 104 F, chills, generalized body aches, nausea, vomiting, and severe headaches for 3 days.

He reported travel to Costa Rica 1 month prior as well as work in subway maintenance.

Physical Exam:

Patient was tachycardic to 110's, BP 128/83, RR 16, with O2 saturation 100% on room air. Exam was notable for scleral icterus and generalized lymphadenopathy.

LABS/IMAGING

139	103	10
4	21	1.32

127

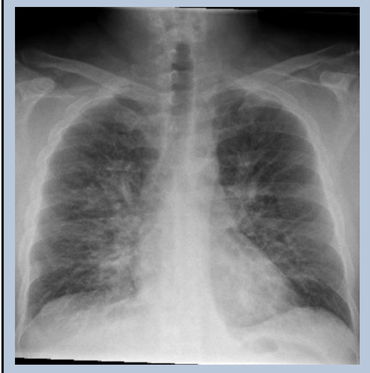
5.37	12.6	137
	36.2	

Mg++: 2.1
Phos: 3.2
Ca++: 8.8
Lactate: 1.2
AST: 122
ALT: 172

Alk Phos: 117
T.Bili: 3.1
D.Bili: 2.5
Alb: 3.2
Lipase: 41
INR: 1.25

PT: 14.3
PTT: 28.3
CK: 39
CRP: 245
ESR: 104
TIBC: 186

Ferritin: 2056



Rapid viral panel	Negative
HIV ½ Antibody	Negative
Blood cultures	Negative x 4
Urine culture	Negative
Gold Quant	Indeterminate
Malaria smear	Negative x 3
Q fever IgM/IgG	Negative
Babesia Antibody	Negative
Rocky mountain IgG/IgM	Negative
CMV IgG	Positive
CMV IgM	Negative
Hepatitis A Core IgM	Negative
Hepatitis E IgG	Negative
Hepatitis B surface antigen	Negative
Hepatitis B & C PCR	Negative
EBV IgM antibody	Negative
EBV Capsid Antigen IgG	Positive
Mono screen	Negative
West Nile IgG/IgM	Negative
Dengue fever IgG/IgM	Negative
Day 3 Leptospirosis Antibody	Negative
Day 7 Leptospirosis Antibody	Positive

DISCUSSION

Our patient presented with a classic features of leptospirosis given his transaminitis, acute kidney injury, severe headache and persistent fevers in the setting of recent travel to an endemic area. Despite history and physical exam findings, empiric treatment for leptospirosis was not initiated as serologic tests returned negative for leptospirosis antibody.

A covering physician later started treatment for leptospirosis (IV doxycycline/ ceftriaxone) based on high clinical suspicion and performed repeat testing. Following the patient's rapid improvement, the repeat serologic tests returned positive for leptospirosis antibody.

This case along with typhoid, Rocky Mountain spotted fever and similar rare infectious diseases may routinely be missed due to over reliance on laboratory testing instead of clinical diagnosis.

CONCLUSION

Leptospirosis IgM ELISA testing has a reported sensitivity ranging from 47% to 87% in studies completed in Sri Lanka and Thailand where there are high endemic rates of the disease.

Despite relatively good sensitivity (≈87%) in the high end of the spread, the variability in results is likely due to the delay in development of the antibodies against leptospirosis that are measured by the assays.

Due to this large variability in serologic sensitivity, particularly early in disease, clinical diagnosis based on patient risk factors and symptomology should be paramount in identifying and promptly treating patients.

REFERENCES

1. Centers for Disease Control and Prevention. Leptospirosis Fact Sheet for Clinicians,Https://www.cdc.gov/leptospirosis/pdf/fs-leptospirosis-clinicians-eng-508.pdf, Accessed June 8, 2019.
2. Desakorn V, Wuthiekanun V, Thanachartwet V, Sahassananda D, Chierakul W, et al. (2012) Accuracy of a Commercial IgM ELISA for the Diagnosis of Human Leptospirosis in Thailand. Am J Trop Med Hyg 86: 524–527. doi: 10.4269/ajtmh.2012.11-0423
3. Limmathurotsakul D, Turner EL, Wuthiekanun V, Thaipadungpanit J, Suputtamongkol Y, Chierakul W, et al. Fool's gold: Why imperfect reference tests are undermining the evaluation of novel diagnostics: a reevaluation of 5 diagnostic tests for leptospirosis. Clin Infect Dis [Internet]. 2012 Aug
4. Niloofa R, Fernando N, Lakshitha N, Karunanayake L, et al. Diagnosis of leptospirosis: Comparison between microscopic agglutination test, IgM-ELISA and IgM rapid immunochromatography test. PLoS One 2015;10:e0129236
5. Schmalzle SA, Tabatabai A, Mazzeffi M, et al. Recreational 'mud fever': *Leptospira interrogans* induced diffuse alveolar hemorrhage and severe acute respiratory distress syndrome in a U.S. Navy seaman following 'mud-run' in Hawaii. *IDCases*. 2019;15:e00529. Published 2019 Mar 23. doi:10.1016/j.idcr.2019.e00529