

# Legionella Induced Rhabdomyolysis And Oliguric Renal Failure Associated With Sepsis

## BACKGROUND

Legionellosis is a generic term that can be used to describe the pneumonic (Legionnaires' disease (LD)) and non-pneumonic (Pontiac fever) forms of infection with Legionella. Legionella pneumophila is an intracellular gram-negative aerobic bacteria pathogen, ubiquitous in the environment and considered opportunistic. The extrapulmonary and renal complications of LD are rare and often not discussed but can be life threatening.

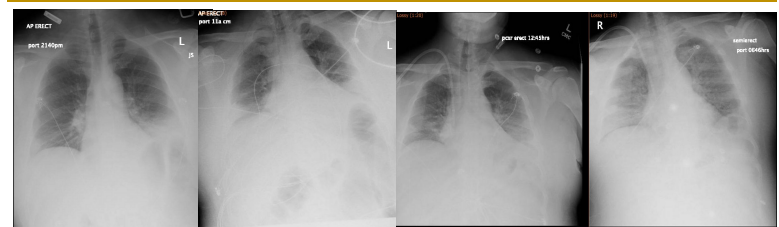
## OBJECTIVE

Improving recognition of Sepsis secondary to LD as a differential for patient's presenting with severe rhabdomyolysis of unclear etiology. Thus far there have been many studies that have tried to analyze the treatment of choice for Legionella pneumophila, though currently an algorithm does not exist.

## CLINICAL SCENARIO/CASE

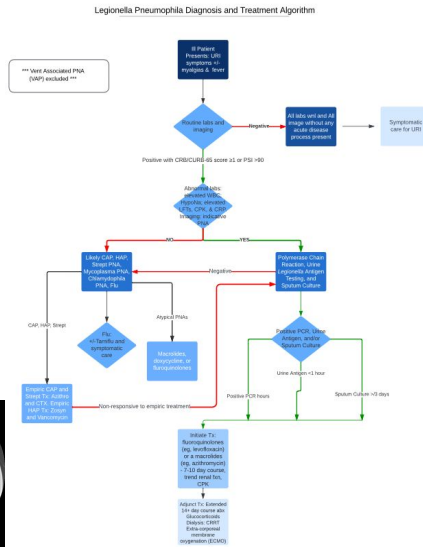
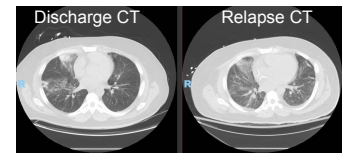
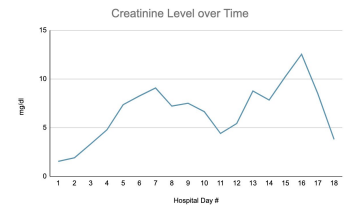
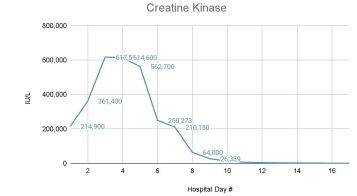
A male in his 30's presents with flu-like symptoms and is empirically treated for presumed community-acquired pneumonia (CAP). Despite appropriate CAP antibiotic treatment (S/p vanc/cefepime in ED, then narrowed to ceftriaxone and azithromycin), his liver and renal function declined (LFTs: chol 204, trig 231, HDL 28, Cr 12.53, eGFR 5.64, CrCl 13 mL/min). Mild troponin elevated related to ischemic demand. Later diagnosed as legionella. The patient developed severe rhabdomyolysis with CK of 617,500 IU/L leading to oliguric renal failure requiring temporary renal replacement therapy. Once switched to appropriate antibiotic treatment the patient initially improved, dialysis was discontinued and patient was to be discharged. Through prior to discharge the patient developed critical illness myopathy, acute respiratory failure requiring high flow supplemental oxygen and was found to have relapse of multifocal Legionella pneumonia. The patient required an additional 14-day course of Levaquin and again had rapid improvement.

## RESULTS



Initial Admission X-Ray      Peak CPK X-Ray

Peak Cr and TDC placement X-Ray      Post-CRRT and Relapse of multifocal Legionella PNA X-Ray



## DISCUSSION

- There is a 45% mortality rate for untreated Legionella pneumonia making it the most severe form of atypical pneumonia.
- One case should prompt suspicion for an outbreak.
- Legionella pneumonia should be suspected in all patients presenting with hyponatremia and positive chest x-ray.
- Extrapulmonary and renal manifestations are rare. Though some patients experience renal failure requiring CRRT, then intermittent hemodialysis once hemodynamically stable.
- Autoimmune hemolytic anemia (AIHA) should be suspected in these patients and tested for with a Coombs test followed by initiation of steroids (as done with this patient).
- One limitation in suspecting Legionella pneumonia early in this case was the patient's age. Risk of legionella increases in patients over age 50.
- A major limitation of testing sputum culture is that only about one-half of patients with Legionnaires' disease produce sputum.
- Another limitation is a lack of treatment protocol and complication awareness.

## RECOMMENDATIONS

- The following recommendations are suggested:
- Improved differential diagnosis screening despite age group.
  - Implementation of standardized algorithm for Legionella pneumophila.
  - Broadening empiric treatment of CAP to include antibiotics that target Legionella pneumophila.
  - Prompt interdisciplinary collaboration and specialist consultation.

## CONCLUSION

In conclusion, misrecognition of LD as the offending agent can lead to increased morbidity and mortality rates associated with sepsis secondary to pneumonia with acute oliguric renal failure. There is a need for faster differential and diagnosis recognition as well as increased distribution of knowledge regarding the complications associated with LD.

## DISCLOSURES & REFERENCES (QR CODE)

All authors are affiliated with Philadelphia College of Osteopathic Medicine - GA/PA. All Authors have nothing to disclose

**Author(s) Contact:**  
Sueann Q. Daly, DO. Email: [sueaenda@pcom.edu](mailto:sueaenda@pcom.edu)  
Nicole McManus, DO. Email: [nicolemc@pcom.edu](mailto:nicolemc@pcom.edu)

