MEAT CLEAVER FEVER

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Learning Objectives

- Describe the epidemiology of Q fever
- Learn how to diagnose and empirically treat Q fever
- Understand the differential diagnosis of fever in a slaughterhouse worker

Case

HISTORY
61-year-old man with no significant medical history or home medications presented with 4 days of **fevers, fatigue** and **generalized weakness** leading to inability to walk**.** He had associated myalgias, and **bilateral retro-orbital headache**.

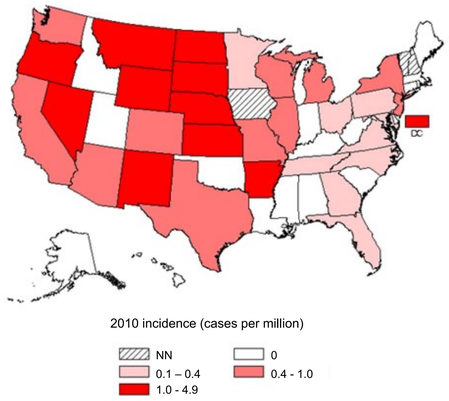
SOCIAL HISTORY
Migrated from Mexico to Colorado 20 years ago.
No travel outside of the country this past year.
Works in a slaughterhouse production line, performing sheep evisceration.

EXAM
Temp 38.1° C, HR94, BP108/75, RR16, SpO2 94% on RA
Remainder of physical exam normal.

LABS & IMAGING
- AST 58 U/L, ALT 93 U/L
- HIV Ab/Ag screen: negative
- CSF tube 4
  74mg/dL glucose, 54 mg/dL total protein,
  12x10^6/L nucleated cells (72% PMN)
- CSF culture: no organisms isolated
- CSF HSV, VZV, Enterovirus PCR: negative
- Brucella Ab and Leptospira Ab: negative
- ***Coxiella burnetii*** **titers:**
  Phase 1 IgG 1:32, Phase 2 IgG 1:128
- CXR and CT head non-contrast: unremarkable

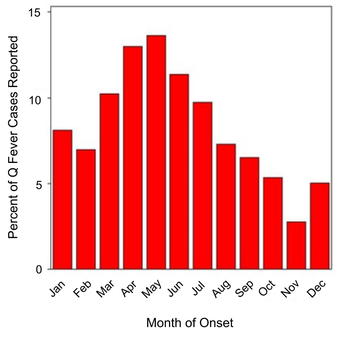
HOSPITAL COURSE
Doxycycline was prescribed once Q fever titers resulted after the patient was discharged.

Q fever Epidemiology



Colorado is one of seven states that accounts for more than half of all cases of human Q fever since it became a CDC reportable disease.

Most cases occur during Spring and Summer, likely coinciding with increased outdoor activity and with the birthing season for a number of domestic animal species.



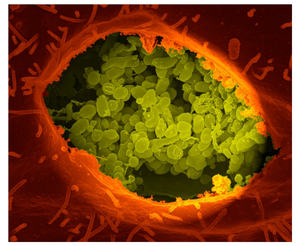
Slaughterhouse workers are particularly vulnerable.

Discussion

- Q fever is under recognized and challenging to diagnose.
- Q fever cases in the U.S. concentrate in states with large slaughterhouse industries, such as Colorado.
- Empiric treatment for Q fever should not be delayed while awaiting serologic confirmation.
- Q fever, leptospirosis, and brucellosis should be considered when working up fever in a slaughterhouse worker.

Q fever Clinical Features

Q fever is a zoonotic disease caused by *Coxiella burnetii*. It is highly virulent: a single organism can cause infection. Cattle, sheep, and goats are the primary reservoirs.



- Acute phase of Q fever is characterized by
  (1) **Non-specific febrile illness** (fever, myalgia, fatigue)
  (2) **Retro-orbital headache**
  (3) **Pneumonia**

- Most common lab abnormalities
  (1) **Increased AST/ALT,** present in 85% of cases
  (2) Thrombocytopenia, seen in 25% of patients
  (3) Leukocytosis, seen in 25% of patients

- Start empiric treatment based on clinical suspicion
- **Doxycycline** is the most effective treatment

- Confirming diagnosis
  ≥ fourfold rise in phase 2 IgG titer over 3-6 weeks

- Top differential of fever in a slaughterhouse worker:
  (1) Brucellosis
  (2) Leptospirosis
- Both present similarly in this at risk population

- Chronic Q fever most common manifestations:
  (1) Endocarditis
  (2) Infection of aneurysm or vascular prosthesis
- Less than 5% develop chronic Q fever complications

References

- Anderson A, et al. Diagnosis and management of Q fever. *MMWR Recomm Rep*. 2013;62(RR-03):1-30.
- CDC. Q Fever Statistics and Epidemiology. https://www.cdc.gov/qfever/stats/index.html. Accessed September, 2016
- McQuiston JH, et al. National Surveillance and the Epidemiology of Human Q Fever in the United States, 1978 – 2004. *Am J Trop Med and Hyg*. 2006; 75(1):36-40
- Parker NR, Barralet JH, Bell AM. Q fever. *Lancet*. 2006; 367(9511):679-88.
- Raoult D, et al. Q fever 1985-1998. Clinical and epidemiologic features of 1,383 infections. *Medicine (Baltimore)*. 2000; 79(2):109-23