



The Ranch Hand

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O'CONNOR HOSPITAL

SAN JOSE, CA

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HISTORY OF PRESENT ILLNESS:

- ▶ 21 year-old Caucasian male with no significant medical history presents to ED complaining of mild cough, nausea, vomiting, diarrhea, subjective fever chills and night sweats
- ▶ States that he has lost approximately 50 pounds in the last 8 months
- ▶ He has a dry nonproductive cough
- ▶ Patient works with livestock on a farm
- ▶ Denies any recent travel

HISTORY OF PRESENT ILLNESS

- ▶ Has had approximately 4-5 episodes of vomiting & diarrhea per day.
- ▶ Complained of fever, chills, & night sweats
- ▶ Denies any abdominal pain or back pain
- ▶ Denies any shortness of breath, chest pain, or difficulty breathing
- ▶ No headaches or rashes
- ▶ No recent sick contacts

HISTORY OF PRESENT ILLNESS

- ▶ Went to an Urgent Care Center
 - ▶ Patient was prescribed Ondansetron & Loperamide
- ▶ Decided to go the SLRH ED in because of his off and on cough

SOCIAL HISTORY

- ▶ Smokes 0.4 packs/day
- ▶ Chews tobacco
- ▶ Patient does vape since age 17
- ▶ Occasional marijuana recreational use
- ▶ Drinks alcohol socially monthly or less

SOCIAL HISTORY

- ▶ Works at a slaughterhouse where he is in direct contact with cows, goats, & sheep
- ▶ He also works as a ranch hand
- ▶ Prior to current presentation he enjoyed an excellent quality of health

PHYSICAL EXAM:

- ▶ Ht 1.753 m (5' 9") Wt 71.9 kg (158 lb 8.2 oz) BMI 23.41 kg/m²
- ▶ BP 131/71 Pulse 99 Temp 99.4 °F (Temporal)
- ▶ Resp (!) 41 | SpO2 94%
- ▶ No respiratory distress. Decreased breath sounds in the right lower field & the left lower field. Rales in the right lower field & the left lower field.
- ▶ Abdominal: Soft. Normal bowel sounds. No distension or mass. Patient has abdominal tenderness in the right upper quadrant, but no rebound or guarding

Chest X-ray



CT SCAN with CONTRAST



LABORATORY RESULTS

Admission Labs:

WBC 15.5

- ▶ 89.1% neutrophils
- ▶ 5.7% lymphocytes
- ▶ 2.5% monocytes
- ▶ 0.3% eosinophils

Hgb/Hct 8.5/24.9 Platelets 76,000

Lactate 1.0 Procalcitonin 3.61

C-reactive Protein 20.8

INITIAL MANAGEMENT

- ▶ Patient was admitted to ICU for negative pressure isolation
- ▶ Over the next 12-24 hours, his clinical status deteriorated
 - ▶ Developed shortness of breath, nonproductive cough, & chest pain
 - ▶ He complained of pleuritic chest discomfort
 - ▶ Placed on a high flow oxygen due to respiratory failure
- ▶ Afebrile
- ▶ Started on Ceftriaxone & Doxycycline

LABORATORY RESULTS

Day 2:

AST 175 ALT 106 ALKA Phos 109 LDH 1304

Total Bilirubin 2.5 Direct 1.6

Lactate 1.2

Serum Cr/BUN 6.57/81

Blood gas: pH 7.39

pCO₂ 39

pO₂ 50

HCO₃ 20.7

LABORATORY TESTS

Autoimmune & Infectious Disease tests ordered:

Rheumatoid Factor

Aspergillus fumigates

ANA

C. immitis Immunodiffusion

Influenza A & B

RSV

Adenovirus

Coronavirus

Metapneumovirus

Rhinovirus

Para influenza 1-4

Chlamydia pneumonia

Mycoplasma pneumoniae

HOSPITAL COURSE

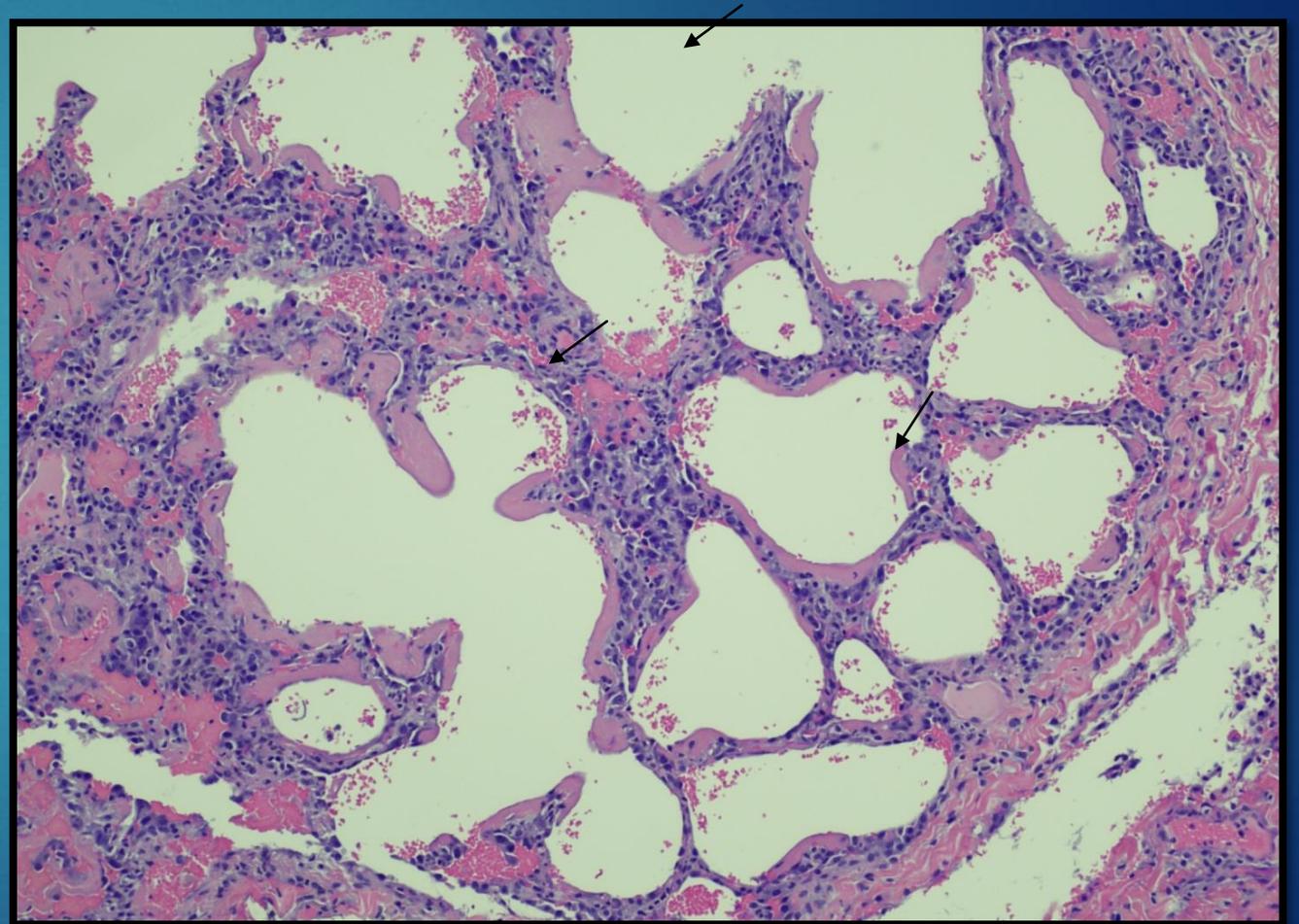
- ▶ Patient was transferred to O' Connor Hospital ICU
- ▶ Renal function improved with aggressive fluid resuscitation
- ▶ Infectious Disease was consulted (Hurray for the Calvary!)
 - ▶ Recommends starting patient on Voriconazole IV
- ▶ Transfused 3 Units of PRBC
- ▶ Patient underwent a thoracoscopy right lung biopsy
 - ▶ Bilateral chest tubes were inserted
- ▶ Respiratory failure worsened
 - ▶ Patient required intubation

ADDITIONAL LABORATORY TESTS ORDERED

- ▶ Stool for ova & parasites
- ▶ C. difficile Toxin
- ▶ Enteric pathogen panel
- ▶ Giardia
- ▶ Cryptosporidia
- ▶ AFB smear
- ▶ QTF
- ▶ Sputum Gram stain & culture
- ▶ Coccidiomycosis
- ▶ Brucella Ab
- ▶ Coxiella Ab
- ▶ Anti-ENA (SSA52, SSA60, SSB) Ab panel
- ▶ Scl-70 Ab
- ▶ Anti-DNA Ab
- ▶ Anti-CCP Ab
- ▶ ACE
- ▶ ANCA profile
- ▶ Total IgE
- ▶ Anti-GBM IgG
- ▶ ADAMS13 activity
- ▶ G6PD
- ▶ Haptoglobin

LUNG BIOPSY

- ▶ Showed changes of acute lung injury characterized by alveolar damage with hyaline membrane deposition
- ▶ Negative studies for mycobacterial or fungal organisms





▶ What was his diagnosis?

DIAGNOSIS

- ▶ Lung biopsy grew *Aspergillus niger*

AND

- ▶ Serology was positive for *Coxiella burnetii* IgG

HOSPITAL COURSE

- ▶ Patient received Voriconazole x 6 days
- ▶ *Aspergillus niger* grew in the lung cultures but no fungal elements were seen in the lung biopsy
- ▶ Serum *Aspergillus* assay was negative
- ▶ No characteristic black mold was noted in the lung specimens
- ▶ *Aspergillus* was thought to be a contaminant
- ▶ Final diagnosis: **Q Fever**

HOSPITAL COURSE

- ▶ Patient was extubated after 1 week
- ▶ Renal failure was thought to be caused by NSAID use prior to admission
- ▶ Anemia was thought to be due to SIRS
- ▶ Ceftriaxone was discontinued
- ▶ Discharged 12 days from initial hospital admission
- ▶ He was to complete a 14day course of Doxycycline

Q Fever

- Q fever is a disease caused by the bacteria *Coxiella burnetii*.
- It naturally infects goats, sheep, & cattle
- *C. burnetii* bacteria can be found in the birth products (placenta, amniotic fluid), urine, feces, & milk of infected animals
- People can get infected by breathing in dust contaminated by infected animal feces, urine, milk, & birth products



Q Fever

- ▶ *C. burnetii* has a worldwide geographical distribution
- ▶ Coxiella are small Gram-negative, pleomorphic, coccoid bacteria that replicates intracellularly
- ▶ It is very stable to the environment & can remain infectious for months
- ▶ It is extremely infectious to humans, only 1-10 viable organisms can cause an infection through inhalation

SIGNS & SYMPTOMS

- ▶ At least 50% of the human infections with *C. burnetii* are asymptomatic
- ▶ After an incubation period of 3-30 days, 5-20% of the patients will develop:
 - ▶ fever
 - ▶ sweating
 - ▶ nausea, vomiting, & diarrhea
 - ▶ extreme fatigue
- ▶ Headache may occur which does not improve after administration of analgesics

TREATMENT

- ▶ Doxycycline 200 mg loading dose followed by 100 mg orally twice daily for 10 days is the recommended treatment for acute Q fever
- ▶ A respiratory fluoroquinolone, such as levofloxacin or moxifloxacin, can be used in patients who cannot receive doxycycline therapy

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References

- ▶ Alicia Anderson, Henk Bijlmer, Pierre-Edouard Fournier, et al. Diagnosis and Management of Q Fever — United States, 2013. MMWR March 2013: 62(3):1-29