A Double Whammy: Pneumonia

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CC: Dyspnea x3 days

HPI:
• 88-year-old Latina woman with dyspnea at rest and exertion x3 days.
• Associated symptoms: Fatigue, generalized myalgias, subjective fevers, cough productive white sputum, palpitations.
• No improvement in dyspnea with Albuterol
Past History

**MEDICAL HISTORY**
- Hypertension
- Osteopenia
- Major Depressive Disorder
- Reactive airway disease (No PFTs)

**SURGICAL HISTORY**
- Cholecystectomy (1978)

**FAMILY HISTORY**
- Multiple family members SARS-CoV-2 +

**ALLERGIES**
- NKDA

**MEDICATIONS**
- Amlodipine 5 mg daily
- Alendronate 70 mg weekly
- Paroxetine 10 mg daily
- Albuterol HFA 90 mcg/inh PRN
Social History

SICK CONTACTS
• Multiple family members with COVID-19

RESIDENCE
• Bakersfield, CA

TRAVEL
• Recent travel to Mexico

DENIES
• Tobacco
• Alcohol
• Drugs
• Injection drug use
• Sexual history
• Unpasteurized dairy products
• Animal exposure
• Recent hospitalizations
Physical Exam

Temp: 36.9C, BP: 84/50, HR: 109, RR: 25, SpO2: 97% RA → 80% ambulating

GENERAL: NAD. NC AT, HEENT: PERRLA, EOMI.
NECK: Supple with normal ROM and no meningeal signs.
CARDIAC: Regular tachycardia. No MGR.
RESPIRATORY: Bronchial breath sounds on the right. Tachypnea to mid 20s but no use of accessory muscles.
ABD: BS+, ND, soft, no TTP.
SKIN: Warm and dry. No rashes. EXT: No pitting edema.
**Labs**

**CBC**
- 6.2 / 13.0 / 38.5 / 201
- Bands 50%, ANC 5.1
- Lymphs 16%, ALC 1.0

**BMP**
- 135 / 3.9 / 104 / 26 / 24 / 0.90 / 110

**LFT**
- AST 10 / ALT 16 / ALP 80
- T bili 0.5 / T protein 6.9 / Alb 3.4

**Lactic Acid:** 2.5 -> 1.0
**Procalcitonin:** 3.62
**CRP:** 4.99
**LDH:** 156
**Ferritin:** 51
**Troponin:** <0.05
**Vitamin D:** 19
**HbA1c:** 6.2%
Differentials?
Work-up

- Maximum isolation precautions (Airborne, droplet, contact)
- Azithromycin and ceftriaxone
- SARS-CoV-2 PCR
- Cocci serology
- QuantiFERON TB Gold
- Sputum AFB x3
Results

SARS-CoV-2 RNA: Reactive
Influenza A Antigen -
Influenza B Antigen -

Cocci Serology
IgM immunodiffusion NR
IgG immunodiffusion NR
CF titer <1:2

QuantiFERON TB Gold
Negative

Sputum AFB Culture and Smear
Negative x2
Blood Micro

- Blood culture: Gram negative diplococci
- Neisseria meningitidis
Blood Micro

- Gram stain 60X
Hospital Course

# Neisseria meningitidis pneumonia with bacteremia
  • LP not performed given no clinical suspicion for meningitis
  • Sputum culture ordered but never collected given concurrent SARS-CoV-2
  • Ceftriaxone 2 g IV Q24H x5 days
  • DC with Amox/Clav to complete a total of 14 days

# Hypoxia, due to RUL pneumonia and/or SARS-CoV-2
  • Complete 10-day course of prednisone 40 mg daily
  • DC with supplemental home oxygen 2 L NC
### Sensitivities reported 4 weeks later

<table>
<thead>
<tr>
<th>Drug</th>
<th>MIC</th>
<th>Sensitivity</th>
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<tbody>
<tr>
<td>Ampicillin</td>
<td>&gt; 4</td>
<td>R</td>
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<tr>
<td>Ceftriaxone</td>
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<tr>
<td>Chloramphenicol</td>
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<td>Levofloxacin</td>
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<td>Meropenem</td>
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<td>S</td>
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<tr>
<td>Penicillin</td>
<td>&gt; 1</td>
<td>R</td>
</tr>
<tr>
<td>Trimethoprim/Sulfa methoxazole</td>
<td>2</td>
<td>R</td>
</tr>
</tbody>
</table>
Update... 3 month follow-up

- No longer hypoxic
- No longer requiring supplemental oxygen
- CXR: Near complete resolution of previously noted RUL consolidation
N. meningitidis pneumonia without meningitis

- First described 1907 during influenza pandemic
- 5 - 15% of meningococcal infection
- 344 cases reported worldwide: (1906 - 2015)
- Only 3 cases reported in the US: (1998 - 2018)
- Occurs mainly with serogroups Y, W-135, and B.
- Risk factors: Older age and preceding viral infection, maybe due to the damage to nasopharyngeal mucosa during viral illness in an already colonized host
N. meningitidis pneumonia without meningitis

- Airway Pathway: Micro-aspiration of colonized upper airway secretions or inhalation of airborne droplets.
- Blood Pathway: Seeding of the lung after primary bacteremia.
- Third generation cephalosporin is the drug of choice
- Mortality <10% if treated appropriately
- Same chemoprophylaxis is needed for close contacts.
References


