Current State of Respiratory Viruses
"A Patient with Shortness of Breath"

Jay B. Varkey, MD
Associate Professor of Medicine
Emory University School of Medicine
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Case Presentation: History

- 78 yo F w/ a PMHx HFrEF (40%) and COPD who presented to a local metro ATL ED in November complaining of worsening shortness of breath.
- Symptoms began approximately 5 days ago:
  - Initially rhinorrhea and dry cough
  - Progressed to subjective fevers, increasing shortness of breath, increased sputum production, increased sputum purulence, and feeling “wheezy”
- On the 3rd day of symptoms:
  - Home rapid antigen test for SARS-CoV-2: NEGATIVE
  - Contacts physician’s office but unable to be seen
  - Virtual telehealth visit with urgent care clinic
  - Prescribed oseltamivir empirically for influenza
- After 48 hours of oseltamivir: No improvement; subjectively ↑ shortness of breath; presents to ED

Case Presentation: History

- Past Medical History: HFrEF (EF: 40%), CAD, HTN, COPD, up-to-date with COVID, influenza, and pneumococcal vaccinations

- Medications: Diuretic, Ace-inhibitor, Beta-blocker, Bronchodilator and Steroid inhalers, Day 3/5 of oseltamivir
- No known drug allergies

- SocHx: 40 pack-year hx of tobacco use. Enjoys gardening. +Well water. Pet Parakeet.
- FamHx: 5 days prior to onset of symptoms, she babysat her 5 year old grandson who had a “cold” earlier in the week. The patient reports that many children in her grandson’s kindergarten class have been out of school with illnesses.

Case Presentation: Exam

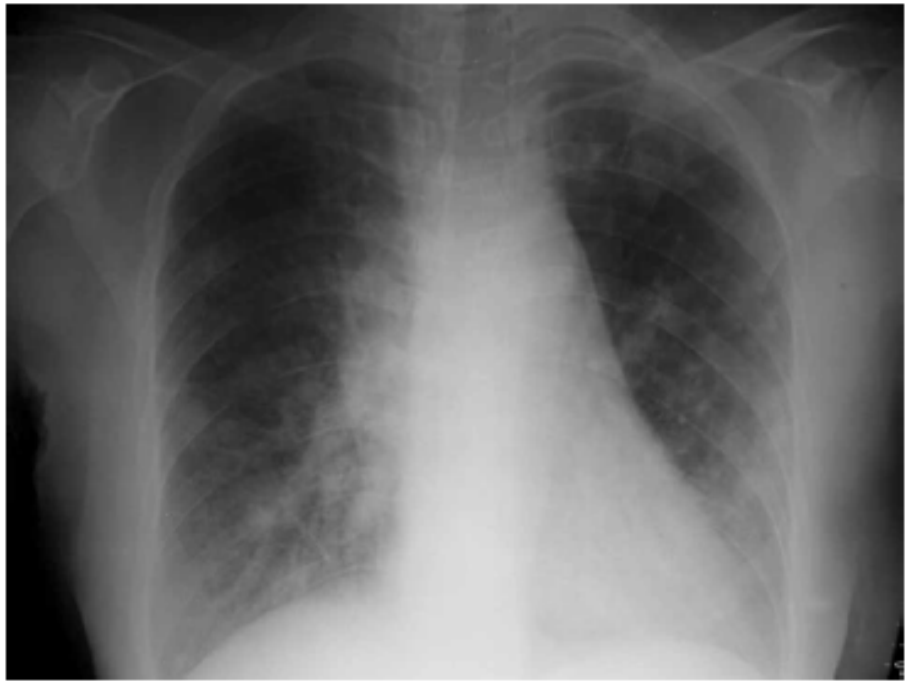
Exam

- T: 38.1, P: 82, BP: 140/91, RR: 24, O2 sats: 88% on room air
- Thin, ill appearing, tachypneic
- Soft inspiratory crackles and end-expiratory wheezes bilaterally

Laboratory

- WBC: 11.2
- NEGATIVE: Influenza/SARS-CoV-2 by PCR
- NEGATIVE: Urine legionella antigen

CXR: Interstitial pneumonia



Scand J Infect Dis 36: 155–157, 2004

Problem List and Differential Diagnosis

#Interstitial pneumonia

#COPD exacerbation

- SARS-CoV-2
- “Typical” and “Atypical” bacteria including *S. pneumoniae, H. influenzae*, *Moraxella* spp, *Legionella* spp, *M. pneumoniae, C. pneumoniae, and Chlamydia psittaci*
- Community-acquired respiratory viruses: Influenza, RSV, Adenovirus, Parainfluenza, Seasonal coronavirus, Rhinovirus, Human metapneumovirus
- Fungi: PJP, cryptococcus, coccidioidomycosis
- Non-infectious: Inflammatory, environmental exposure

Hospital Course

- Patient admitted to hospital medicine service and started empirically on azithromycin and ceftriaxone for community acquired pneumonia
- Hospital day 3: Transferred to ICU for respiratory distress → Intubated and placed on mechanical ventilation.
- Bronchoscopy is performed and BAL collected for multiplex PCR is POSITIVE for **respiratory syncytial virus (RSV)**

RSV: Key Points

1. RSV causes seasonal outbreaks of respiratory tract illness throughout the world, usually during the winter season
2. Most common cause of lower respiratory tract infection (LRTI) in children younger than one year. Almost all children are infected by two years of age, and reinfection is common.
3. RSV is also an important and often unrecognized cause of LRTI in older adults and immunocompromised patients.
4. RSV should also be suspected in patients hospitalized with acute lower respiratory tract disease (eg, pneumonia, bronchitis, exacerbation of asthma or chronic obstructive pulmonary disease) if they are immunocompromised OR ≥50 years of age.
5. Laboratory diagnosis may affect clinical management (e.g. decisions about antimicrobial therapy, hospital infection control, pharmacotherapy etc).
6. Therapy for respiratory syncytial virus (RSV) infection of the lower respiratory tract is primarily supportive.
7. Decisions regarding treatment of RSV infection in immunocompromised patients should be individualized. The optimal treatment is uncertain but potential options for select patients include ribavirin, intravenous immune globulin, palivizumab, and/or glucocorticoids.

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