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The Missed Diagnosis

Anna Kang, BS[1]
Dr. Dharshan Vummidi, MD[2]

[1] Wayne State University School of Medicine
[2] Henry Ford Health Department of Radiology

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Case Presentation

HPI: 51-year-old male presenting to the ED for 1 week of dizziness, chest pain, and productive cough. Dizziness is present at rest but worse when standing from a seated or supine position. Chest pain is pleuritic, predominantly located over the sternum without radiation, and occasionally associated with dyspnea. Sputum is dark yellow in color and without blood.

PMH: Asthma, COPD.
PSH: Tonsillectomy.
Med: Albuterol Inhaler.
ALL: Penicillin.
SHx: 20 pack-year smoking history. Marijuana use. Denies other recreational drug use or alcohol consumption. Recently unhoused.

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Case Presentation

Vitals: BP 121/88, HR 85, T 36.6 C, RR 18, SpO2 96% RA.

Physical Exam:
- Cardiovascular: Regular rate and rhythm without murmurs. 2+ radial and dorsalis pedis pulses. Capillary refill < 2 seconds. Chest wall non-tender to palpation.
- Pulmonary: Clear to auscultation bilaterally. Respirations non-labored and symmetrical without any wheezing, rhonchi, or rales.
- Abdominal: Soft. Non-distended. Non-tender. No rebound or guarding.

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Case Presentation

Pertinent Labs:
- BMP: Na 120, Ca 8.3, Mg 1.7
- CBC: WBC 10.3, Hb 12.3, Plt 553
- Lactate 0.8
- Troponin 13
- COVID: Negative
- Influenza A/B: Negative

EKG: Sinus rhythm with occasional PVCs. No ST or T wave changes.

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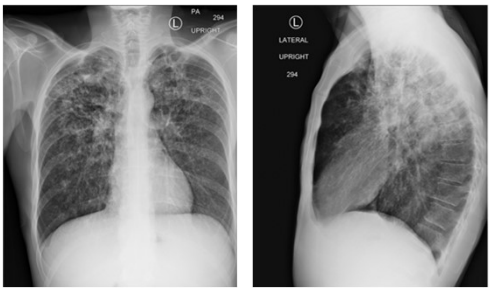
CXR



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Final CXR Report

"New airspace opacities in the bilateral mid to upper lungs are most concerning for **multifocal pneumonia**."

↓

Patient was started on Moxifloxacin due to penicillin allergy for treatment of multifocal pneumonia.

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Hospital Course

- Day 2: Moxifloxacin discontinued. Ceftriaxone & Azithromycin started.
  - Mycoplasma Ab, IgM: Negative
  - Urine Legionella Ag: Negative
- Day 5: Transferred to ICU for initiation of hypertonic saline due to continuing hyponatremia (2/2 hypovolemia vs. SIADH).
- Day 6: ICU reassessment of initial CXR → concern for upper lung lesions with lymphadenopathy. TB precautions put into place.
- Day 8: CT C/A/P obtained.

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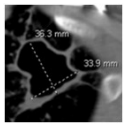
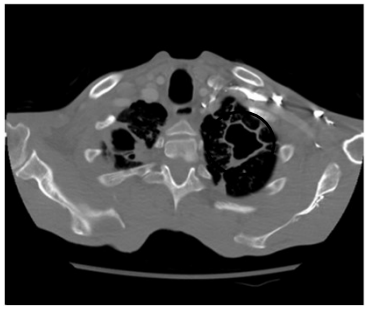
CT C/A/P





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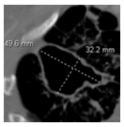
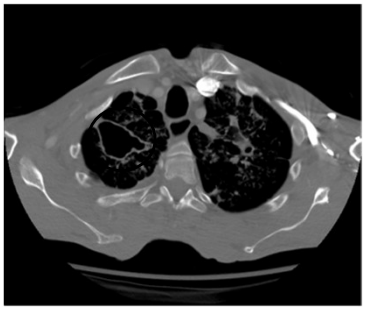
CT C/A/P





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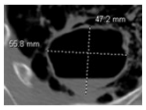
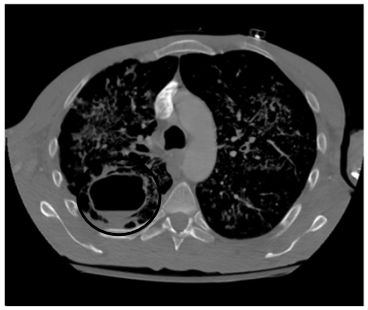
CT C/A/P

Final Report:
Cavitary lesions in the lungs with small and confluent nodules consistent with tuberculosis.





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Hospital Course

- **Primary** TB Workup – No TB Hx, TST (-) 1 year prior
  - AFB Smears: Many Acid Fast Bacilli seen. Positive for *Mycobacterium tuberculosis* complex.
  - AFB Cultures: Many Acid Fast Bacilli seen.
  - Quantiferon TB: Positive.
- Patient started on treatment for active TB: Isoniazid, Rifampin, Pyrazinamide, Ethambutol, Pyridoxine.
- Discharged 4.5 months following admission after 3 awaiting negative AFB smears.

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Diagnosing Active TB

- Classic associations
  - Primary TB: lower and middle lobe lesions and mediastinal lymph node enlargement (ex: Ghon complex)
  - Reactivation TB: upper lobe lesions and cavitation
- Studies show CXR findings are often similar between the two, differing from classic associations[1,2]
- Presence of active TB - both primary and reactivation - is statistically associated with **upper** lobe lesions[1-3]
  - Reticulonodular infiltrates, unilateral pleural effusions, adenopathy, and cavities were not statistically associated with active TB presence

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Diagnosing Active TB

- Outside of chest radiograph abnormalities, TB risk factors or chronic symptoms and positive PPD or TST results were statistically significant predictors of active TB[3]
- Known risk factors in this patient → high risk[3,4]
  - Respiratory symptoms (chest pain and productive cough)
  - Unhoused status
  - Lack of clinical improvement following treatment for community-acquired pneumonia

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Conclusion

- Active TB should be considered on the differential in the presence of clinical presentations and histories that place patients at high risk, even without classic radiological associations present
  - Upper lobe lesions, regardless of primary vs. reactivation TB, should raise alarm
- Missed diagnoses delay patient treatment and place healthcare employees and other patients at risk of transmission due to lack of proper infection control measures

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References

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4. Lewinsohn DM, Leonard MK, LoBue PA, et al. Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children. *Clin Infect Dis*. 2017;64(2):111-115. doi:10.1093/cid/ciw778

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