Case Report: Severe Pulmonary Histoplasmosis and Blastomycosis

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OUTLINE

01 HISTORY, ROS, Physical Examination

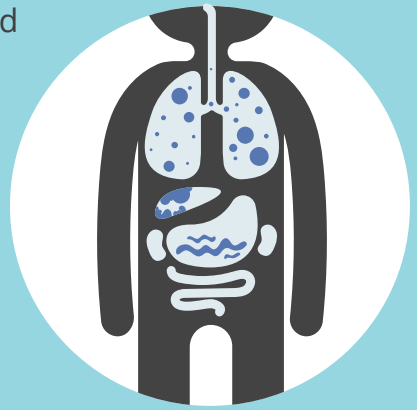
02 DDx, lab results, imaging

03 Initial impression/ plan, hospital course, and final Dx with Rx

04 Outpatient follow-up and Lessons Learned

HISTORY

- 20 y.o. male with no relevant past medical history
- Initially seen in our hospital ED on 02/06/2020 for shortness of breath and productive cough.
    - Diagnosed with right middle lobe pneumonia.
    - Sent home with amoxicillin-clavulanate which he completed.
- Presented to our hospital ED again on 05/11/2020: his symptoms had never improved and have continued to worsen.
- Cough: green sputum has transitioned to brown/red sputum, though he is unsure if it was blood.
- Shortness of breath on exertion and at rest.
- Social history: born in the USA, unemployed, lives with six family members in the same house, active vaping tobacco and THC use for 2 years



PATIENT MEDICAL HISTORY

Not immunocompromised, no known medical conditions or significant PSH.

Unremarkable family history.

SH: Vaping for ~2-3 years

REVIEW OF SYSTEMS

Denied chest pain

Denied recent domestic/international travel and COVID-19 exposures

Positive for weight loss

Denied night sweats

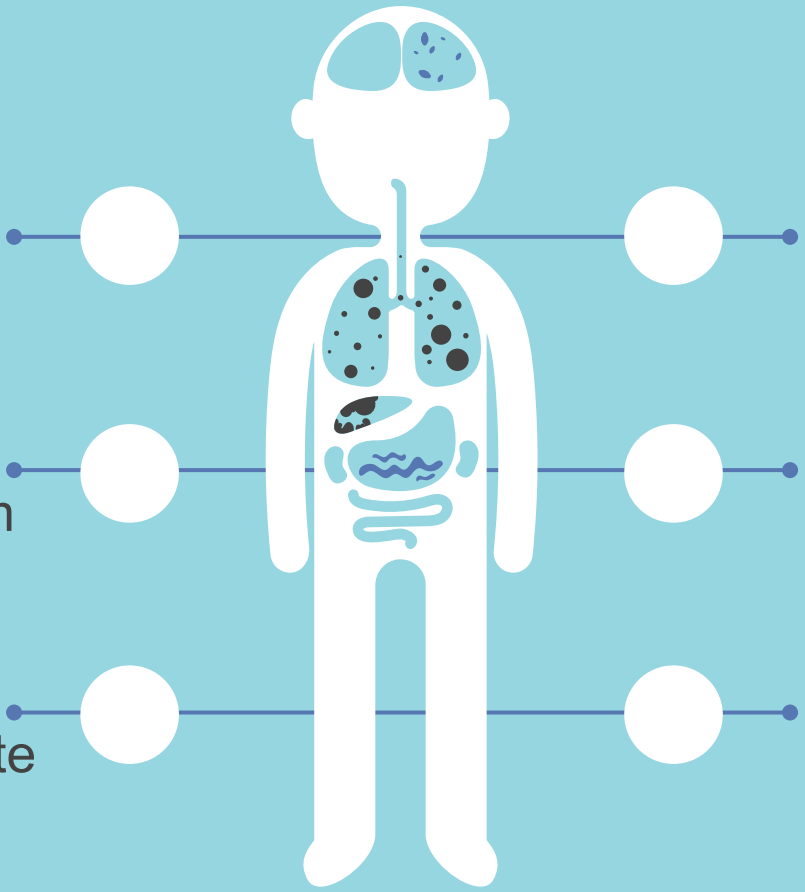
PHYSICAL EXAMINATION

VITALS

100.6 °F (38.1 °C)

HR: 86 bpm

RR: 16 breaths/minute



GENERAL

Well appearing in no acute distress, but *cachetic*

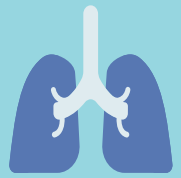
RESPIRATORY

Reduced lung sounds in all fields of the right lung

CVS

Unremarkable

DIFFERENTIAL DIAGNOSIS



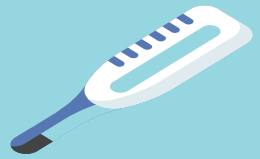
Community Acquired Pneumonia

Tuberculosis

Sepsis with pulmonary source

COVID-19 pneumonia

Vape related lung injury



Bronchitis

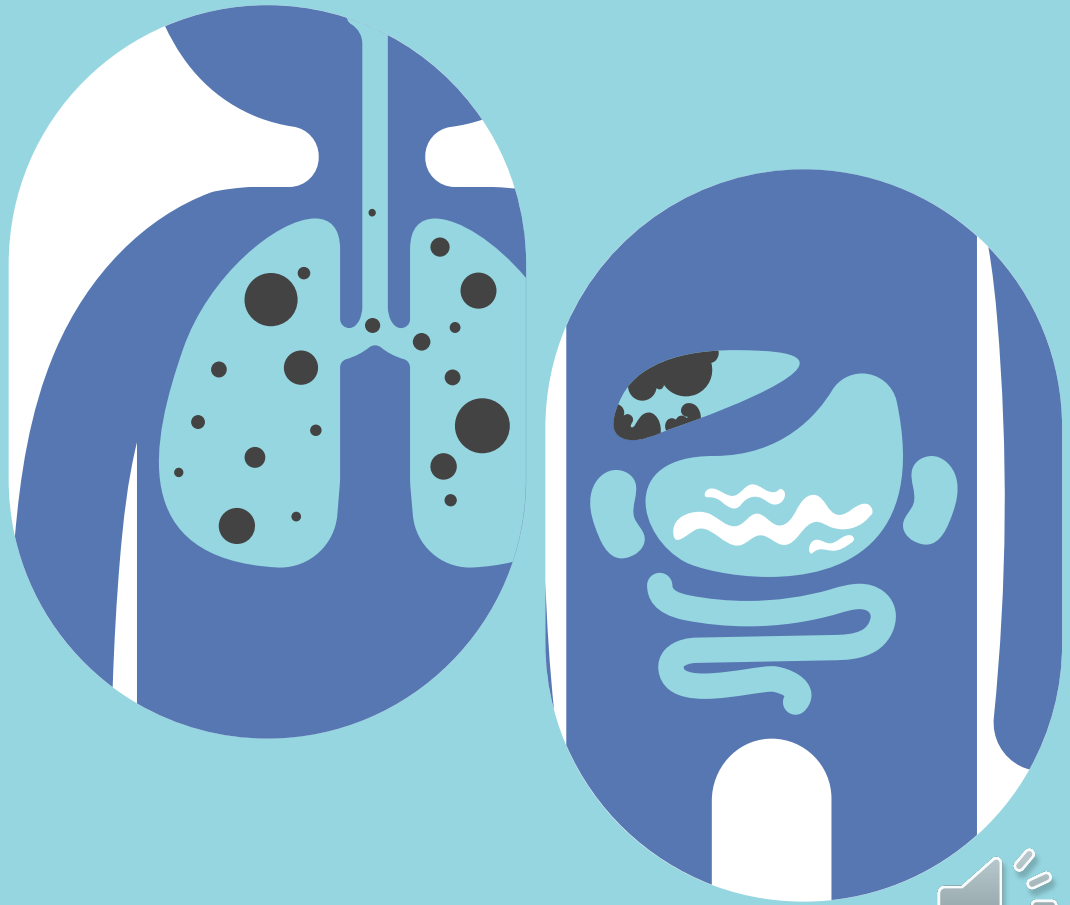
Others: Pulmonary embolism, malignancy, fungal pneumonia

INITIAL WORK -UP

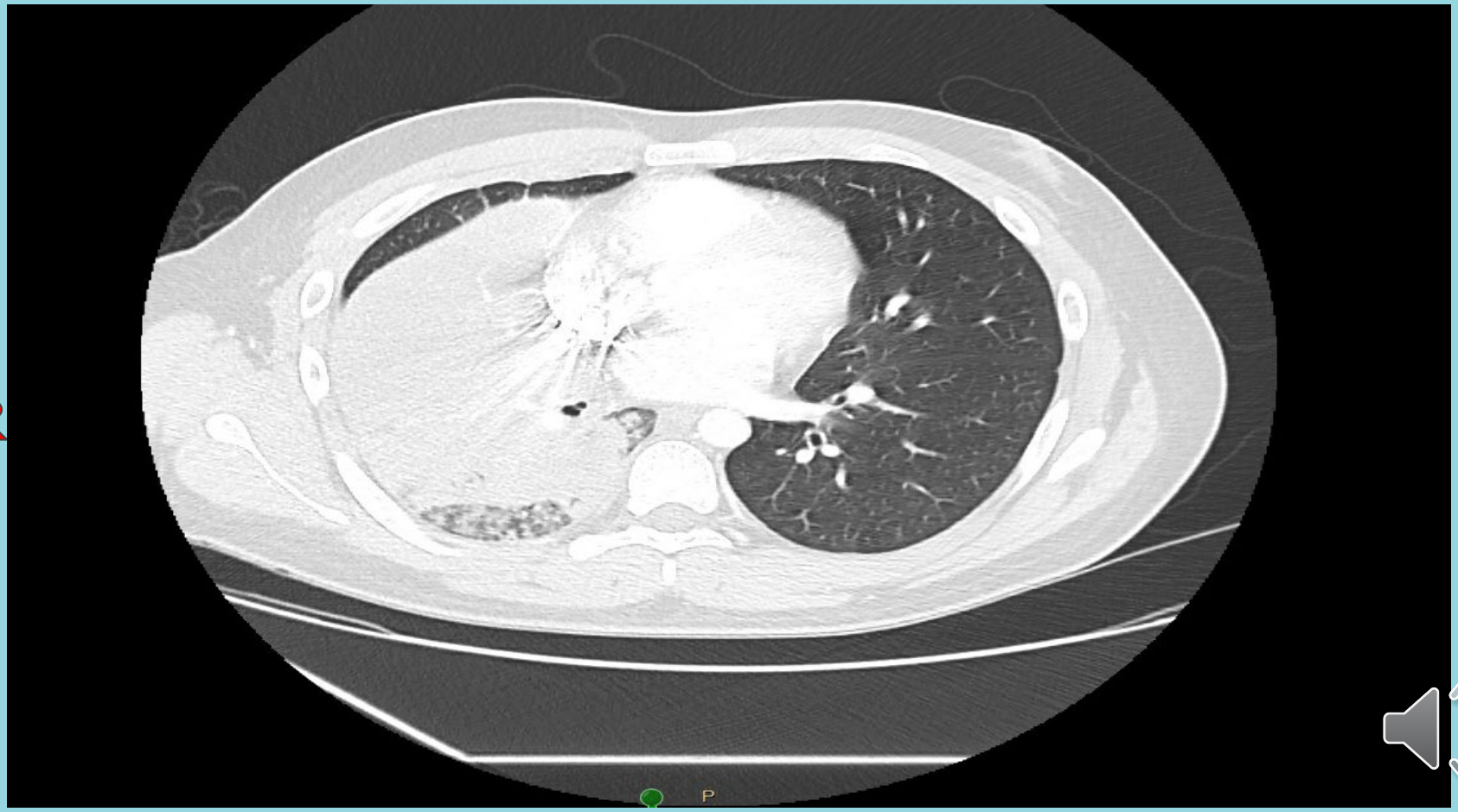
- WBC 20,900
- Mild anemia with hemoglobin of 12.9.
- Procalcitonin normal on admission at 0.08
- BMP without significant electrolyte derangement, normal kidney function.
- Hepatic profile was unremarkable with no liver dysfunction noted.
- Troponin is negative
- D-dimer is elevated at 1.01

INITIAL WORK -UP

- COVID-19 NEGATIVE
- Blood cultures pending
- AFB x3 pending
- HIV antigen/antibody screening Cascade pending
- Sputum analysis pending



Chest CT on admission (05/11/2020)



Initial Assessment/Plan: Vape associated lung injury with superimposed bacterial pneumonia; however pulmonary TB is a can't miss diagnosis.

Antibiotics

IV Piperacillin/Tazobactam

IV Vancomycin

Consults

Infectious Disease

Pulmonology

Supportive

Contact precautions, supplemental oxygen, incentive spirometry, PT/OT, vape cessation education

CASE TIMELINE

Sputum Gram stain with 4+ PMN and 2 + gram positive cocci

First AFB negative

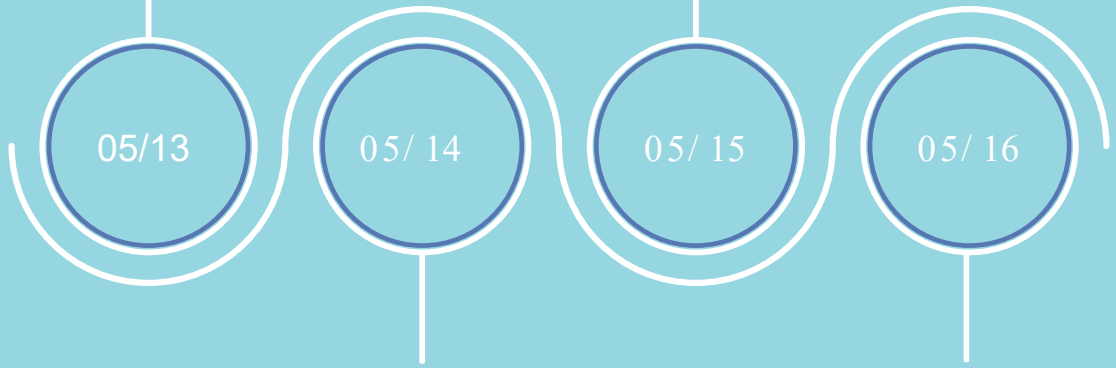
WBC 14,900 (improving

HIV antigen/AB negative

Bronchoscopy done

Nephrology consult

Histoplasma galactomannan antigen detected



Vancomycin d/c 2/2 to Acute kidney injury

Meropenem initiated

Concern for fungal pneumonia: labs and solution Itraconazole 200 mg started

Patient had persistent fevers and leukocytosis

BAL KOH with yeast

Linezolid initiated

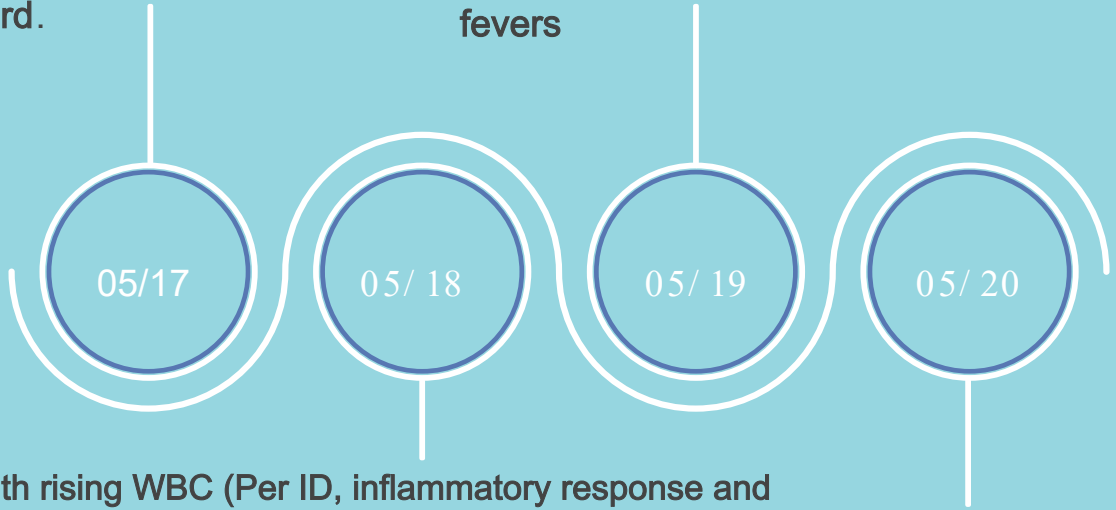
CASE TIMELINE

AKI with creatinine at 3.24 on 05/15/20 improved. Contrast-induced nephropathy was suspected. Creatinine gradually improved.

Linezolid (Day #2), itraconazole (Day #3) were still on board.

BAL from 05/15: 94% PMNs, cytology acute inflammation, no organisms.

WBC trending down; Pt feeling better; first day without fevers



Persistently febrile with rising WBC (Per ID, inflammatory response and expected; no need to escalate antiinfectives). TB (AFB x3 neg) and malignancy ruled out. Negative blood cultures. No response to IV antibiotics and linezolid → discontinued.

Overall picture consistent with severe pulmonary histoplasmosis/Blastomycosis (BAL growing yeast; histo urine Ag +)

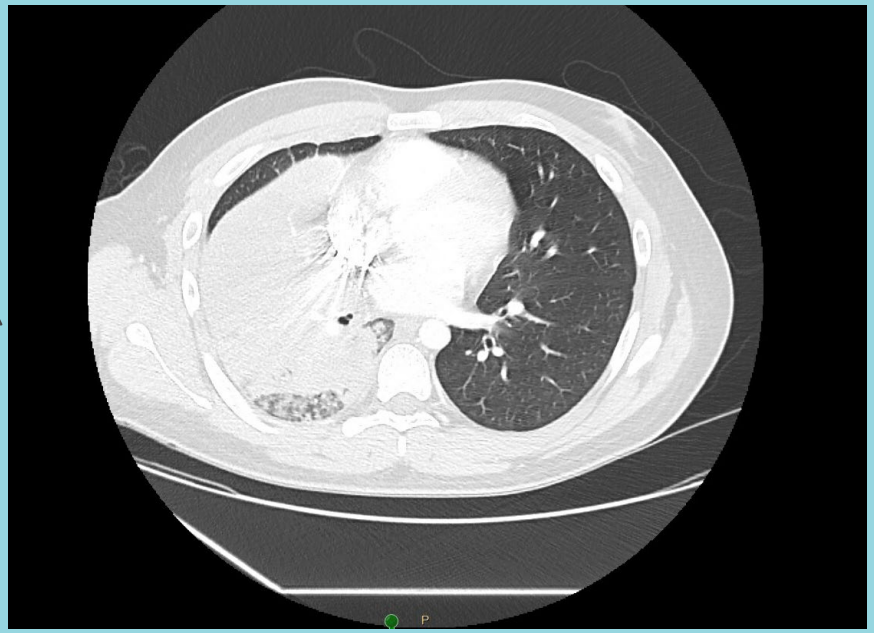
Patient discharged on solution itraconazole

Follow-up with PCP, ID, and Pulmonology as an outpatient

Outpatient Follow -up

- Monthly visits with ID and pulmonology from June to August 2020
- Clinic follow-up #1 with me on 07/03/2020
  - Gained weight; reviewed follow-up Chest CT

Chest CT on admission 05/11/2020 CT



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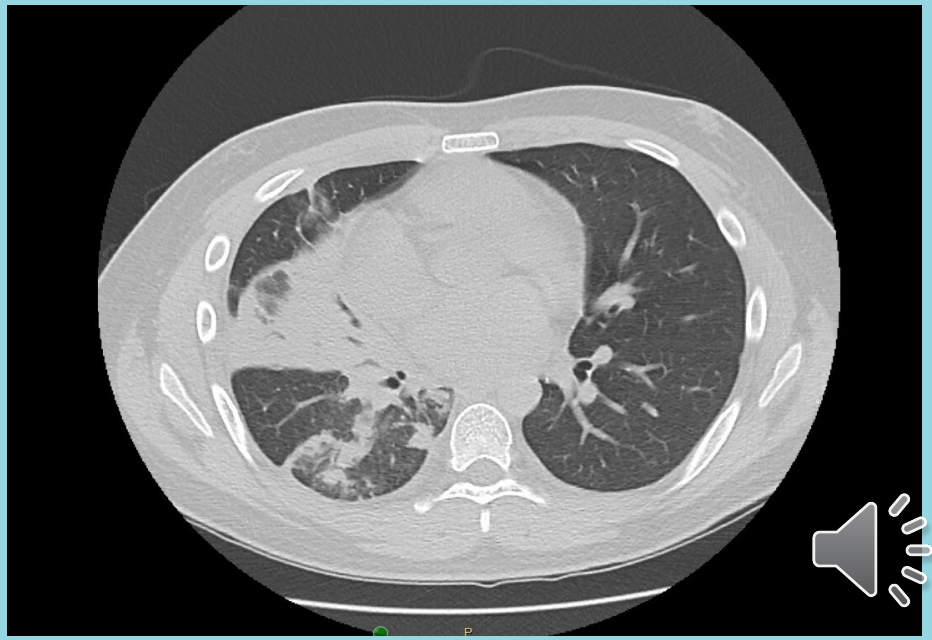
Follow -up Chest CT on 06/22/2020: mild improvement

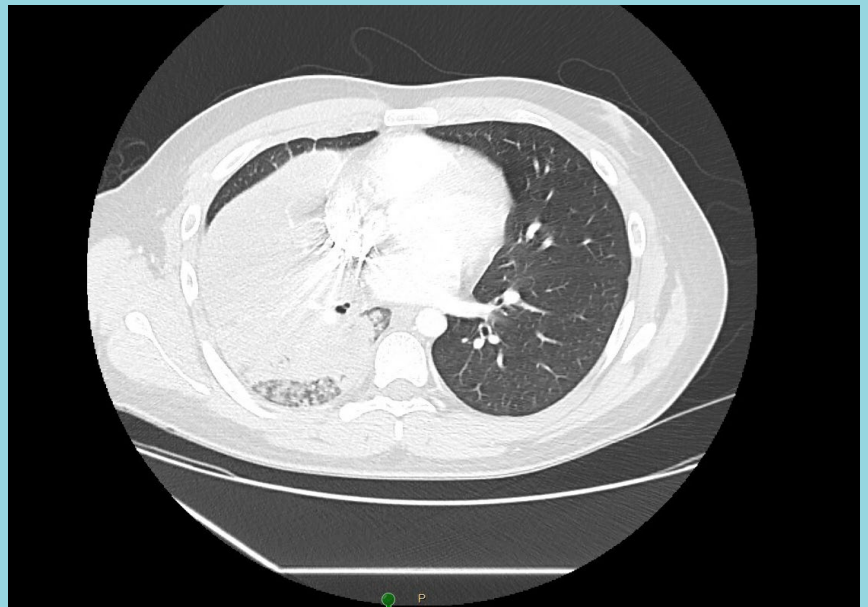


Outpatient Follow -up

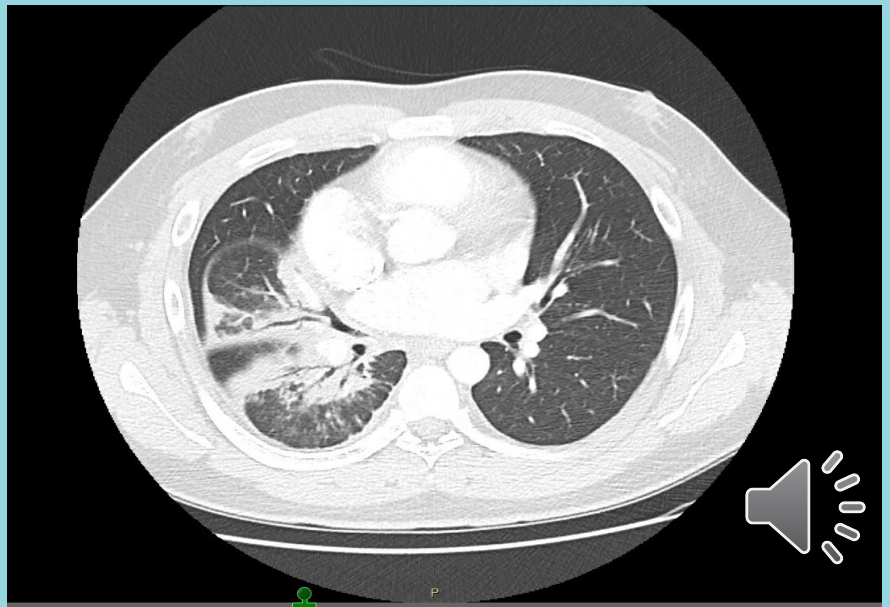
Clinic follow-up #2 with me on 08/03/2020 - CPE - Restarted Vaping.

- Follow-up Chest CT on 08/02/2020: significant improvement compared to the 05/2020 imaging, but persistent consolidation on imaging
- Scheduled follow-up visit on 09/12/2020 to discuss quit date → no show

Chest CT on admission 05/11/2020 CT

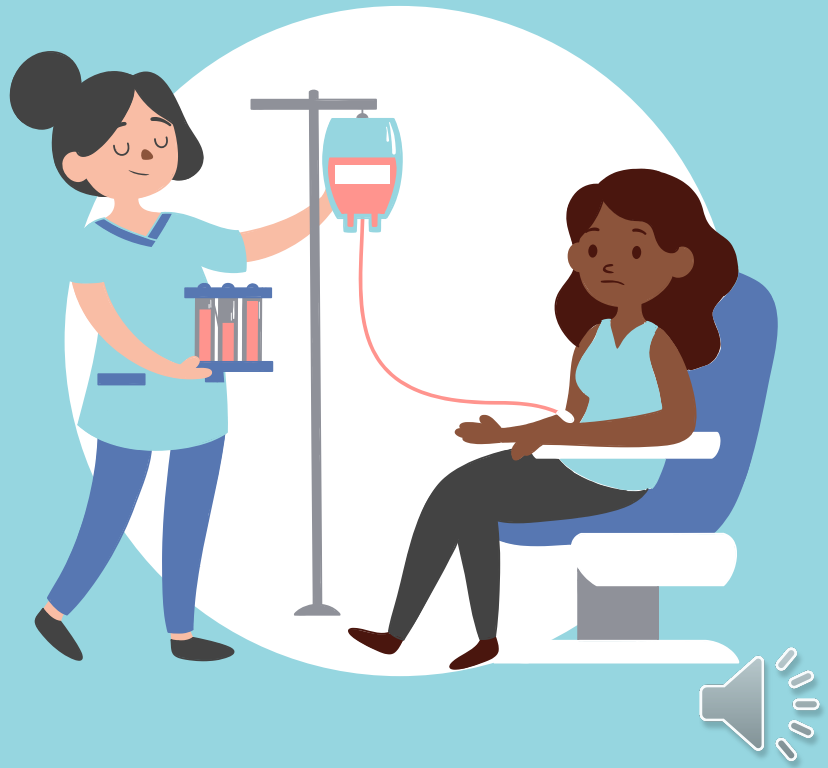


Follow -up Chest CT on 08/02/2020



Outpatient Follow -up

- Seen by ID on 08/11/2020: stop date of itraconazole initially scheduled for 08/15/2020,however with persistent consolidation, Rx extended for 6 months duration (11/2020)
- Patient not seen by ID, Pulmonology, or me (PCP) since 08/2020.
- Reached out to patient via phone; hopefully he will return to our clinic.



LESSONS LEARNED

1. What went well?
2. What should have been done?
3. What could have been done better?
4. Next steps.

CONCLUSIONS

- One of the most common endemic mycotic infections in the USA is Histoplasmosis.
- Our case demonstrates that vapor injury to the lung can make a patient more susceptible to severe infection
- Have a high index of suspicion for endemic mycoses infection when clinically not improving with appropriate antibiotics.

REFERENCES

- Chu JH, Feudtner C, Heydon K, Walsh TJ, Zaoutis TE. Hospitalizations for endemic mycoses: a population-based national study. *Clin Infect Dis*. 2006;42(6):822-825. doi:10.1086/500405
- UpToDate

THANKS

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