BRIGHAM AND WOMEN'S HOSPITAL

The Lung Center

BRC- Case
"Faint " disease

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

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HPI

- 59 y.o. male presented to the ED at SSH with c/c of balance problems with dizziness and lightheadedness, room spinning sensation, unsteadiness for about a week.
- Symptoms worse with movement and associated with few episodes of N/V
- Headache- for about a day - left occipital - 6/10.
- One fall incident 4 days prior to arrival - hitting the back of his head w/o LOC
- Non-productive cough for 1 -3 weeks and
- He saw his PCP who did some blood work and prescribed meclizine 3 TID- no avail
- ROS: negative other than chronic bilat leg swelling, unusual tiredness
- Patient has had unintentional weight loss in 2021, about 30 lbs over 6-8 months

HISTORY

PMH

- Essential Hypertension/ Diabetes mellitus, type 2
- Atrial fibrillation
- Idiopathic Leg edema
- OSA with CPAP
- Fatty/Cirrhosis features

PSH

- Bilat inguinal repair in early 2022

SH/FH

- Retired police officer (now works as salesman at dealership), Non-smoker, no illicit drugs, rarely uses ETOH- no alcohol for several months
- Stroke and diabetes in family

Meds

- Xarelto, Losartan, Lasix , Toprol, metformin and Januvia- 8-9 A1C

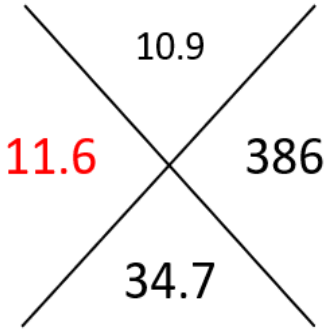
Physical findings

ED Triage Vitals [10/09/22 1434]

Temp	Pulse	Resp	BP	SpO2
98 °F (36.7 °C)	**65**	**18**	**120/70**	**99 %**

- General: Appears well-developed and nourished. NAD. Comfortable.
- HEENT: PERRL without icterus. Normocephalic, atraumatic, no LAD.
- CV: **Irreg irreg**; no murmurs or gallops. **+3 pitting LE edema bilaterally**.
- Respiratory**: Bilat decreased breath sounds basally** more on the right; no wheezing or rhonchi.
- GI: Soft, nontender; slightly distended. BS +. Umbilical hernia reducible.
- Musculoskeletal: No cyanosis. Extremities are warm and well-perfused.
- Neurologic: Alert and oriented x 4; no facial droop; fluent speech; strength 5/5 throughout; no tremor or rigidity; **gait - ataxic**; sensation intact to light touch in all four extremities. **Dysmetria and Bilateral lateral nystagmus** seems to be slightly worse looking to the left
- Hematologic: No bruising, purpura or petechiae are noted.
- Dermatologic: **Gynecomastia**, No rashes appreciated.
- Psychiatric: Affect appropriate. Pleasant and conversant.

Labs

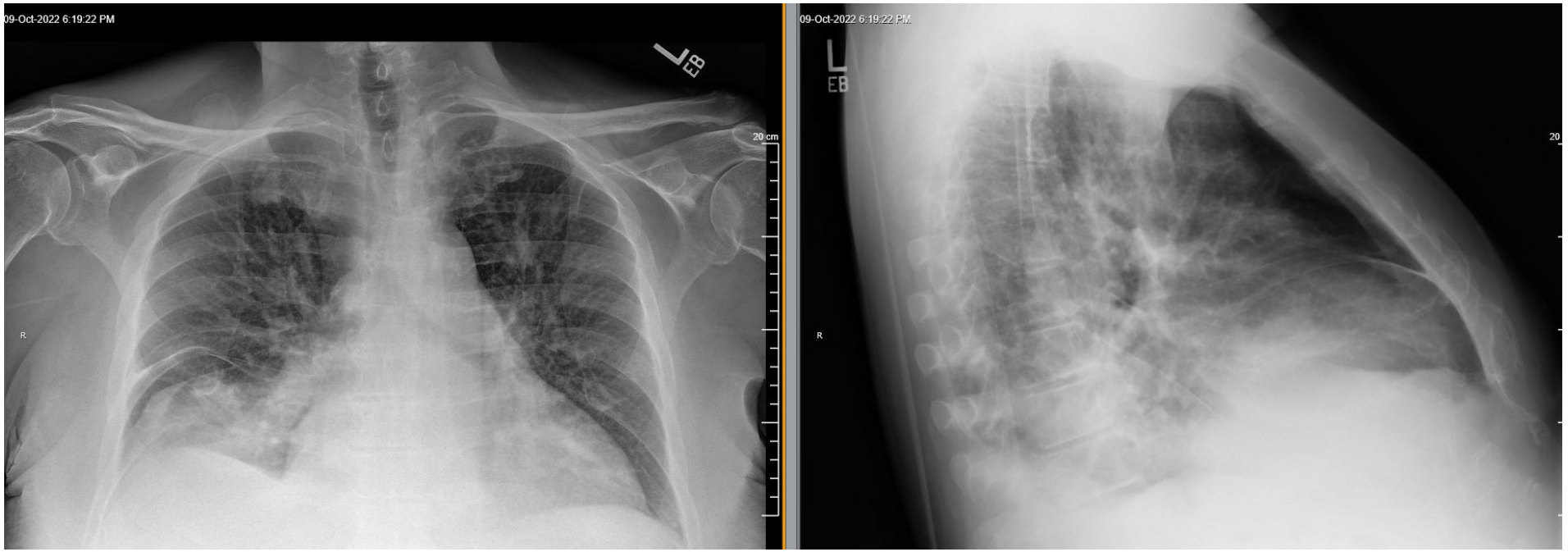


140	108	10	78
3.9	25	0.9	

Total Bilirubin	0.2
Alkaline Phosphatase	87
ALT (SGPT)	18
AST	20
Total Protein	4.3 ↓
Albumin	1.5 ↓
Corrected Calcium	9.6

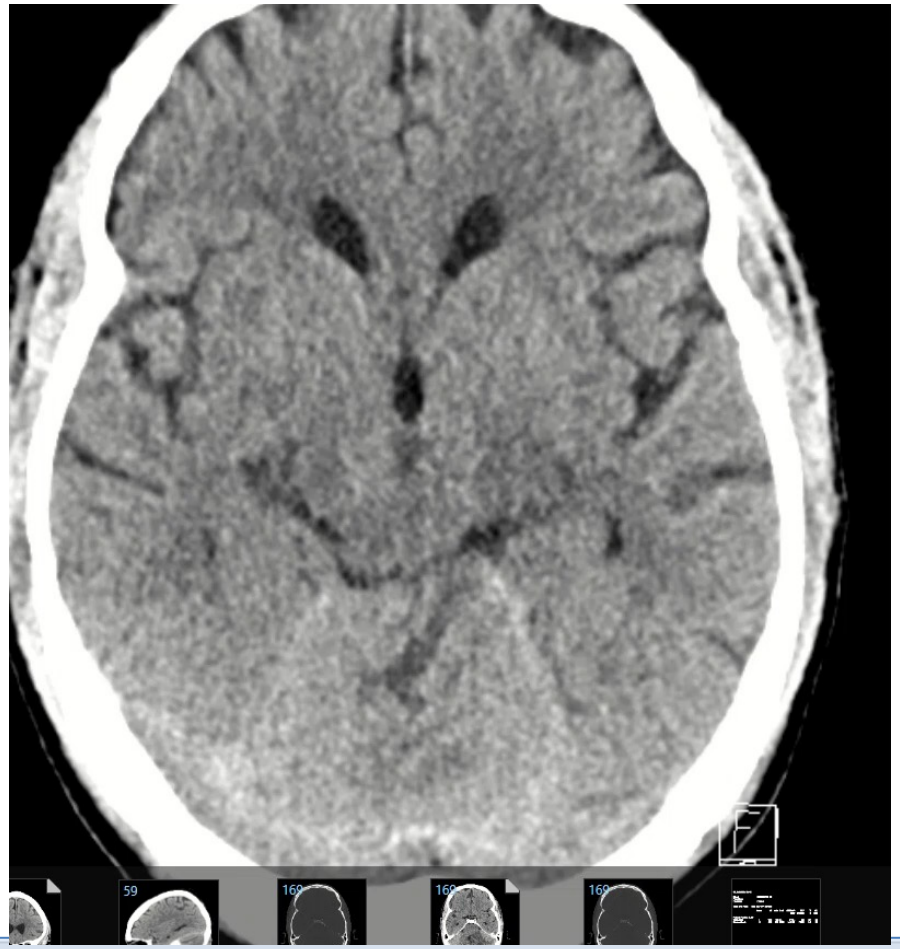
85.2% neutrophils
3.1 % Lymphs
10.7 % Monos
0.4 % Eosin

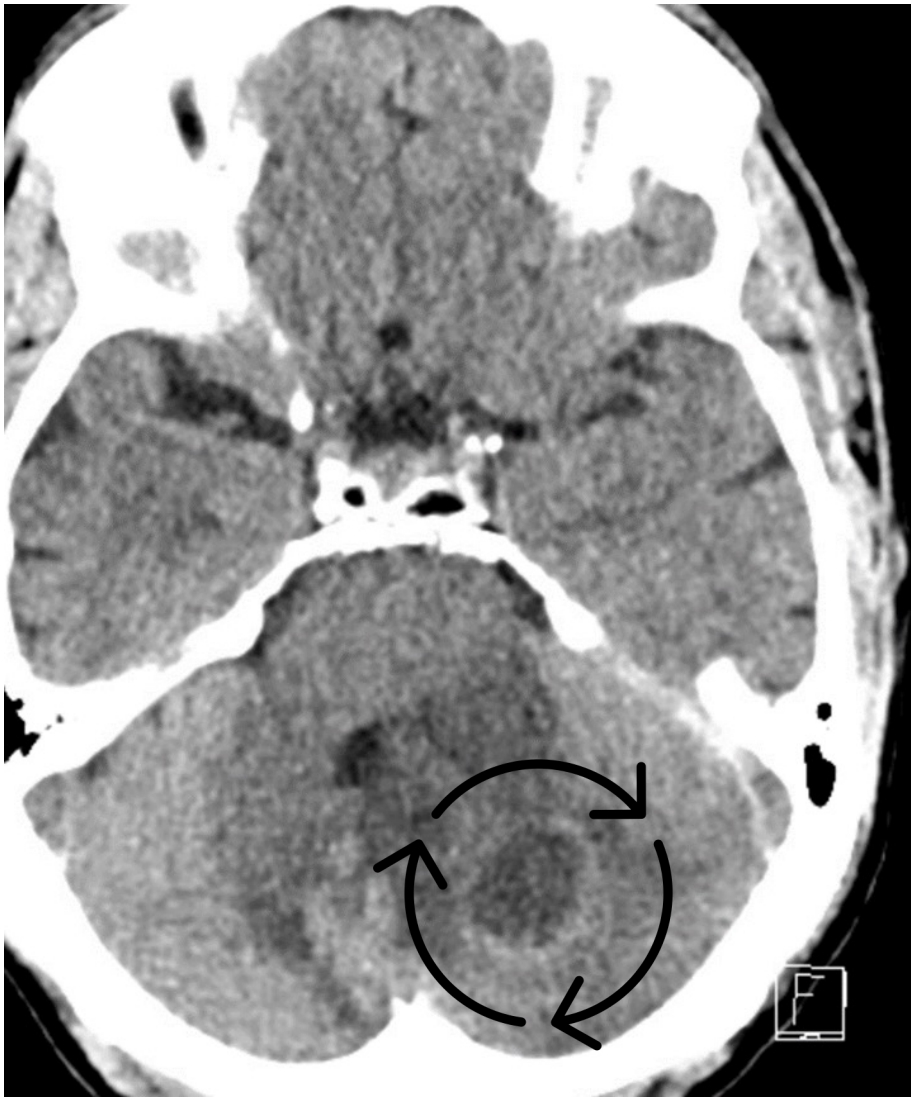
Trop neg x 1
CEA 0.9 nl
PSA 0.2 nl
COVID PCR neg



Patchy left basilar opacity. Atelectasis, possible alveolar edema, and/or pneumonia are all within the differential

CTH

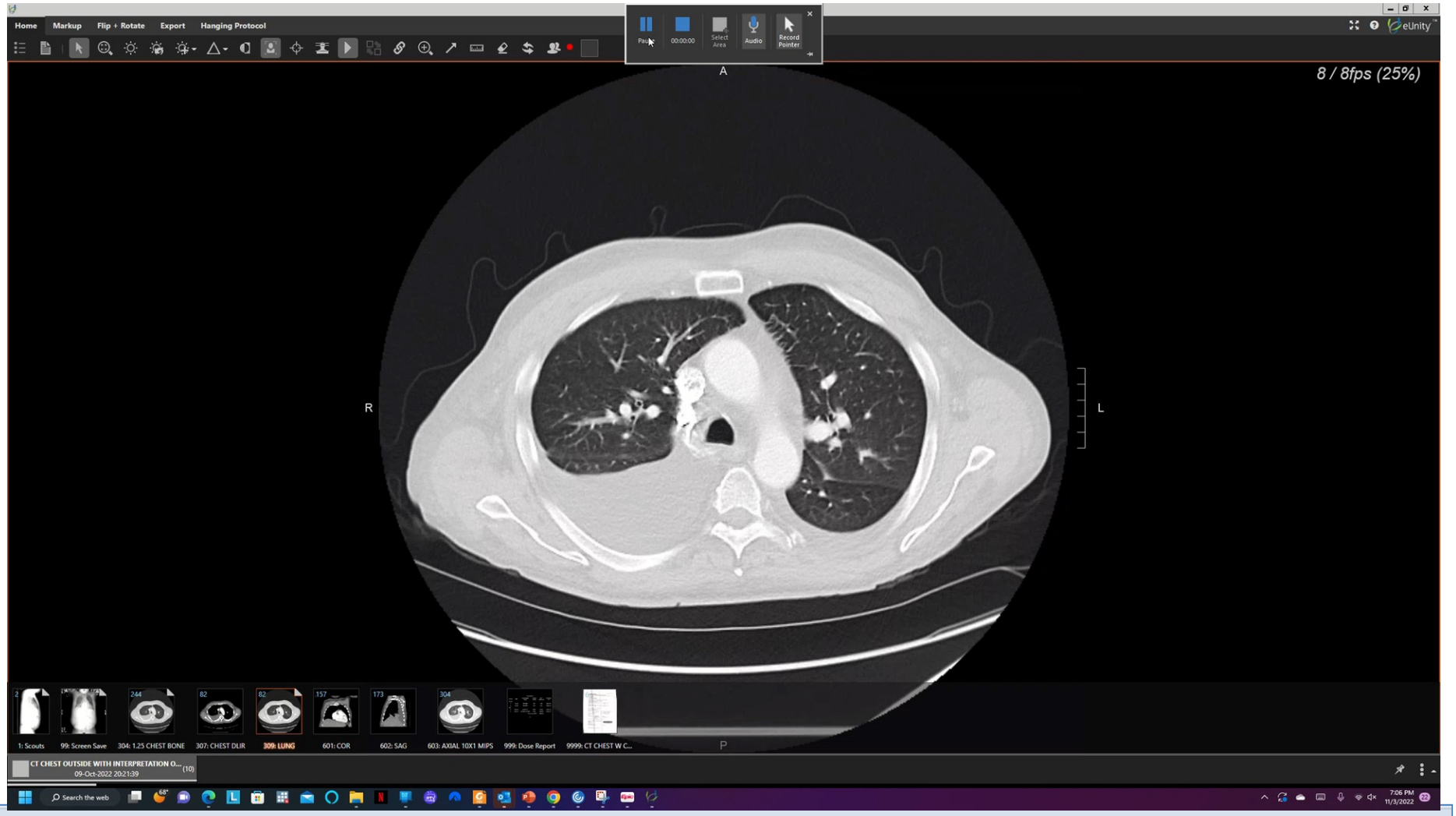




CTH read

Brain Parenchyma: There is an approximately 3 cm lesion centrally hypodense within the left cerebellum. There is marked mass effect on the fourth ventricle. There is slight edema which extends into the medial right cerebellum. No dilatation of the temporal horns.

CTC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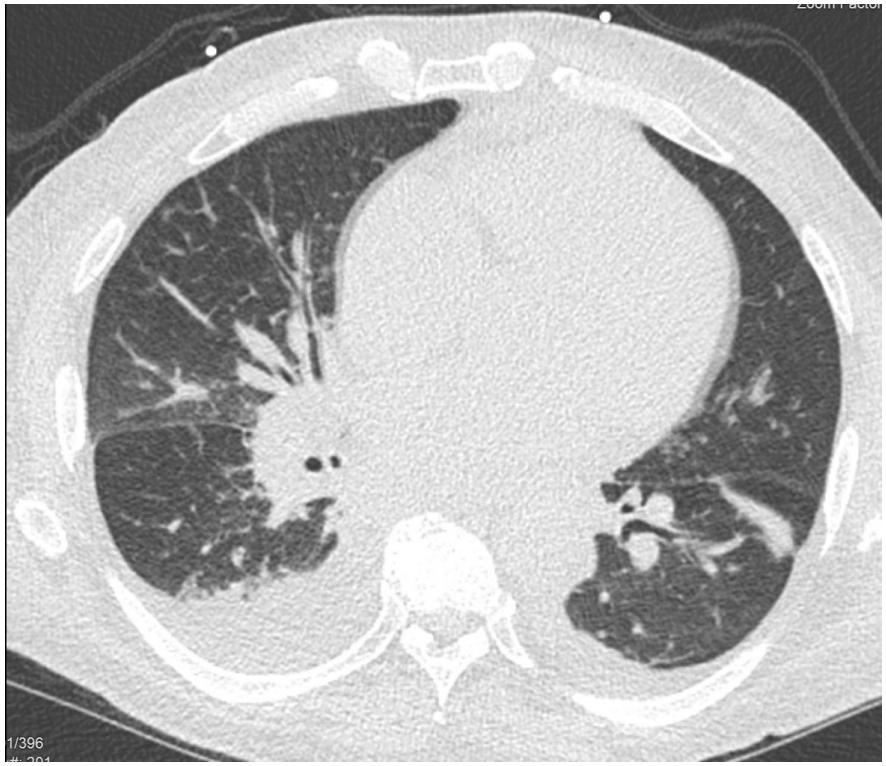
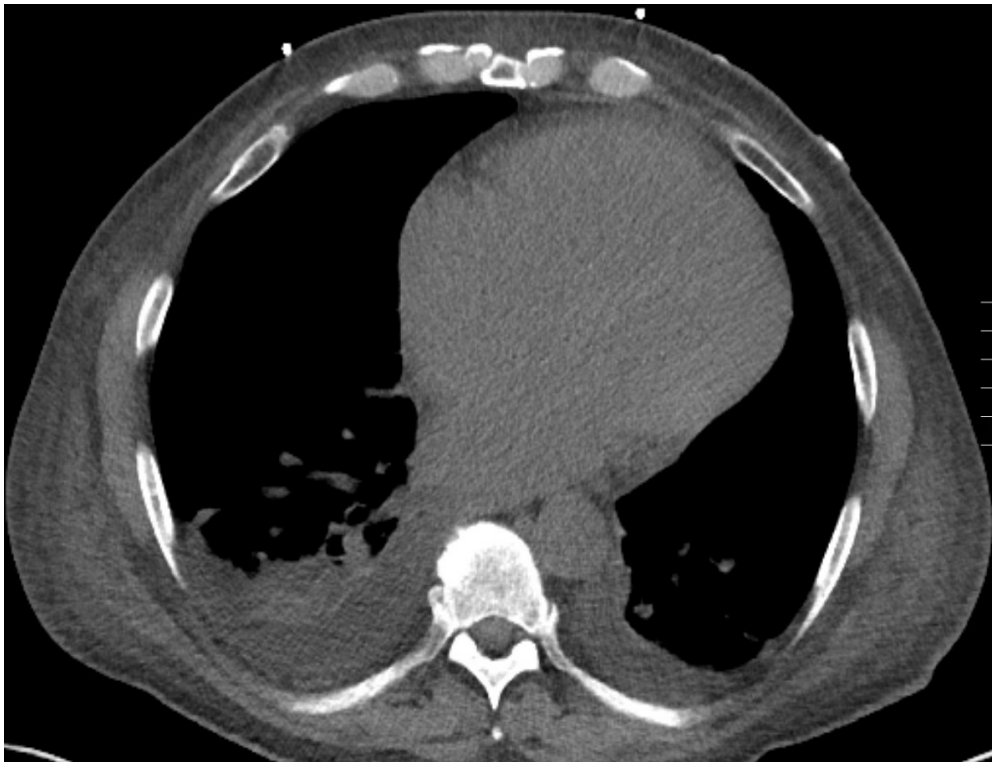
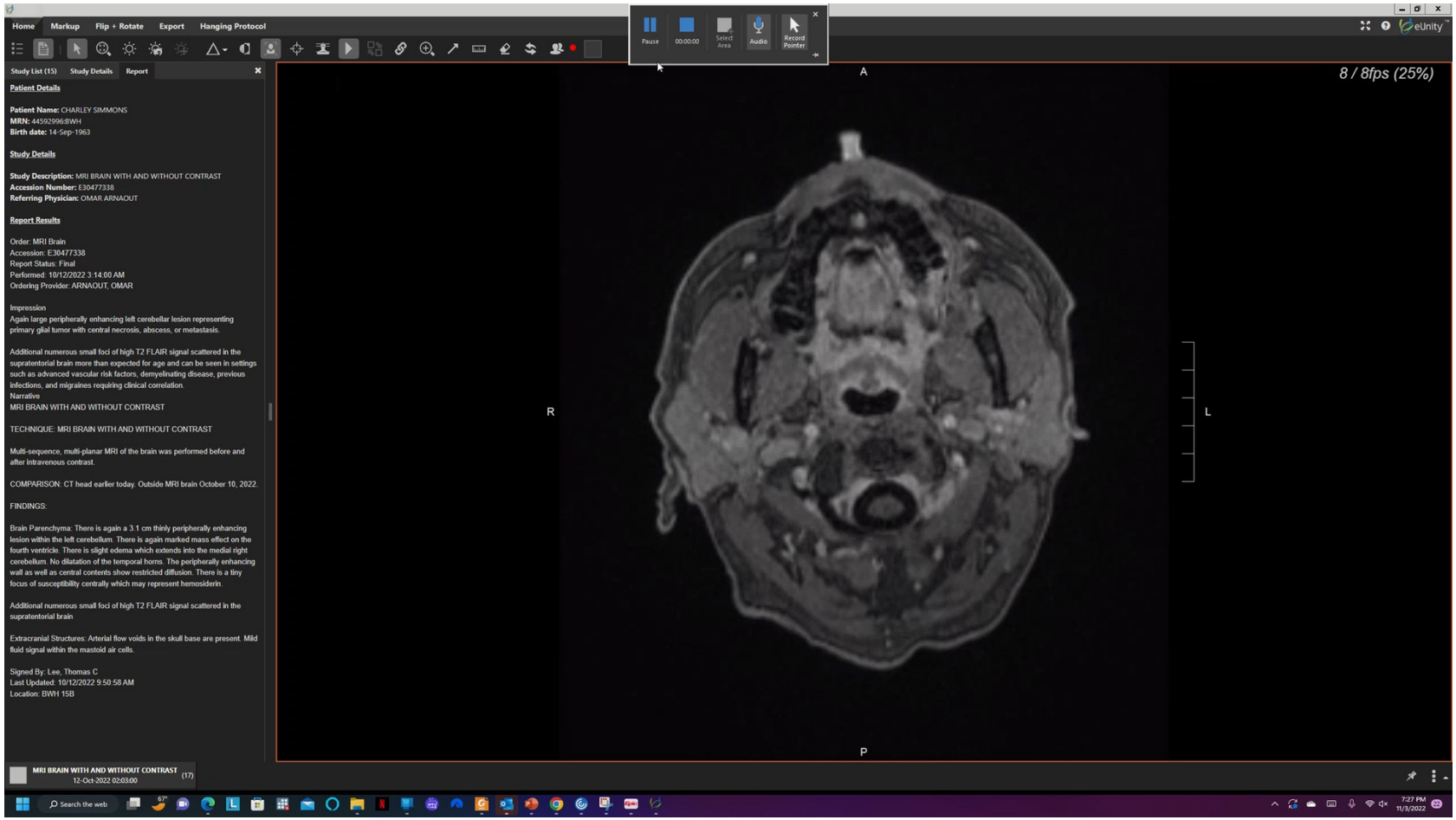
CTC





1. R>L pleural effusion 2. Interlobular septal thickening. 3. 2.9 cm mass-like opacity in the right lower lobe concerning for a primary lung neoplasm. Subcarinal and right paratracheal LAD.

MRI brain



3.1 cm thinly peripherally enhancing lesion within the left cerebellum. Marked mass effect on the fourth ventricle. There is slight edema which extends into the medial right cerebellum.

Summary

- This is a middle- aged relatively immunocompetent man who presented with **balance issues** & **cough** who was found to have **cerebellar lesion, RLL consolidative mass/ LAD and pleural effusion**.

Ddx?

DDX

- Pyogenic lung and brain abscesses due to mixed oral flora, staph, strep, Kleb
- Invasive fungal infections(Aspergillus species, mucormycosis, Cryptococcus neoformans)
- Tuberculosis
- Nocardiosis
- Malignancy (lymphoma and lung Ca)
- Waldenström macroglobulinemia with lung and brain involvement

Care Plan Questions

- Empiric treatment while work up is in process?
- Is biopsy indicated? Where to biopsy?
- Role of bronchoscopy ?
- How would you confirm your diagnosis?
- Any more investigation

Additional investigation

- Negative infectious work up includes- **HIV/ T spot/ AFB/ BDG/ GM/ Fungal ags – aspergillus /blasto /histo/ crypto / MRSA**
- Negative Inflammatory work up **CRP/ ANA / RF / CCP / p/ANCA/ CCP/ MPO /Anti-PR3**
- TTE/ **no vegs**/ Preserved EF
- CTAP -Liver with nodularity suggestive of **cirrhosis** and R adrenal adenoma

Thoracentesis

- Pleural effusion tapped with removal of 1.1 L

Ph 7.51
TG- <10
Glu 136
LDH 71
Total prot <3

Fluid Type		Pleural Fluid
Color, Fluid		Colorless
Appearance, Fluid	Clear	Cloudy !
Total Nucleated Cells, Body Fluid	0 - 100 /mm3	1,196 ^
RBC, Body Fluid	0 - 50,000 /mm3	<2,000

Neutrophil Count, Body Fluid %	%	87
Lymphocytes, Body Fluid %	%	3
Mono+Macro, Body Fluid %	%	7
Mesothelial, Body Fluid %	%	3

Exudative neutrophil predominant effusion

Cultures – no growth

Cyto- The specimen is cellular, containing abundant leukocytes and reactive mesothelial cells.

Course

Transferred to BWH NSG ICU

POD0

- IV steroids
- Left posterior fossa craniotomy for lesion resection
- IO – abscess with purulent fluid encountered- Drained and sample sent to path and micro
- ID/ Pulm consult
- Placed on vanc/ceftriaxone/flagyl pending cultures

POD3

- Cultures remain negative
- Underwent Bronchoscopy BAL, Navigational Bronchoscopy with EBUS-Biopsy/TBNA
- Purulent fluid again noted in RL/ML and LAD biopsy during bronch- intra-op path with neutrophilic/necrotic aspirate/sample

POD5

Micro data

Special Requests	Specimen received from OR
GRAM STAIN	4+ POLYS
	NO EPITHELIAL CELLS
	NO ORGANISMS SEEN
Fluid Culture/Smear	1+ NOCARDIA PAUCIVORANS !
	Sent to Mayo for susceptibility testing. Results will be filed under LABS > SUSCEPT AEROBIC, MIC. Results can take 2-10 days to return. Sample was sent on 11/1/22

Started on High-dose Bactrim + linezolid

POD8

B. LEFT CEREBELLAR LESION:

FILAMENTOUS BACTERIA in a background of necrotic debris, acute inflammation, and reactive glial tissue (see NOTE)

NOTE: The findings are consistent with an abscess, and review of culture results for the cerebellar lesion demonstrates growth of Nocardia asteroides. The morphologic appearance of the bacteria on GMS stain is consistent with Nocardia.

Immunohistochemistry and special stains performed at BWH demonstrate the following (block B2):

MSS (GMS): thin, filamentous bacteria
Gram stain: focal Gram-positive organisms
AFB: negative for acid-fast bacilli
Toxoplasma: negative
Fite (also performed on block B4): equivocal
Mycobacteria (performed on block B4): equivocal
P40: negative
TTF-1: negative

Navigational Bronch/EBUS biopsy results

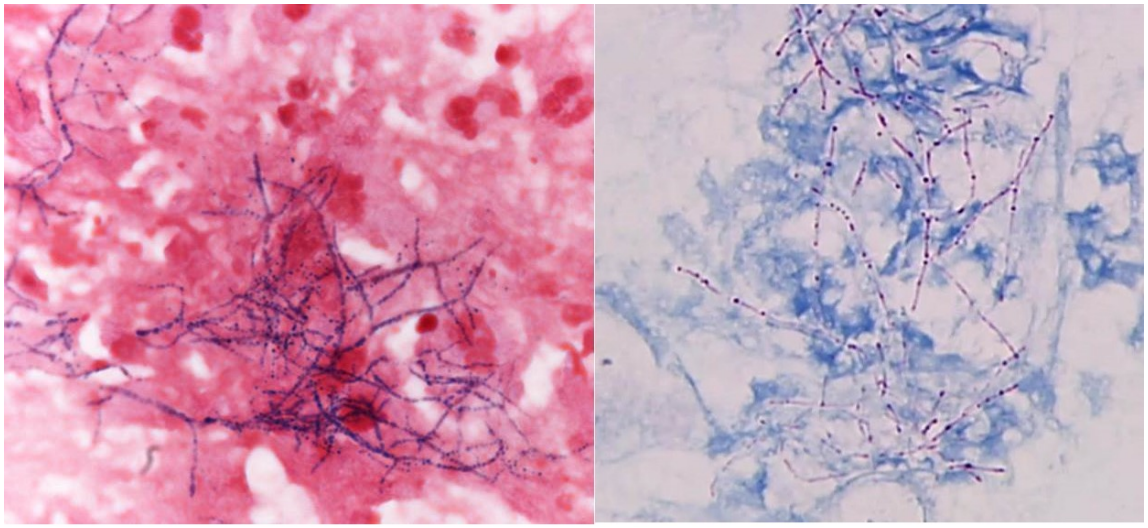
- Abundant necroinflammatory debris.
- Reactive bronchial cells.
- Scattered lymphocytes and rare histiocytic aggregates
- No malignant cells
- No nocardia so far

Disseminated Nocardiosis

- We established diagnosis of Disseminated Nocadiosis
- Cleared by PT
- Dced with double-treatment with high-dose Bactrim + linezolid

Nocardiosis

- Microbiology



- Epidemiology

– Environmental - ubiquitous in soil and water

- Can be inhaled, inoculated or ingested

Nocardiosis

- Risk factors- Human infection most commonly occurs in patients with impaired cell-mediated immunity but may occur in otherwise healthy individuals.
- Clinical manifestations-
  - Isolated pulmonary infection is most common
  - Disseminated disease
  - Isolated involvement of the skin
  - Central nervous system

Nocardiosis

- Treatment
- Bactrim – not all are susceptible
- Alternative therapies include imipenem, meropenem, amikacin and linezolid
- Duration - ? 12 mo
- Mortality may be as high as 50% among patients with involvement of the central nervous system

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