ILD Cases

Eyad Almasri

Case 1: 21 Male with h/o of Vaping

- 21 y.o. male with h/o of vaping mariajuana and wax
- presents for acute onset progressively worsening shortness of breath
- associated pleuritic chest pain
- acute hypoxemic respiratory failure
- dry cough with associated subjective fevers and lethargy X 2d
- BP: 123/86, HR: 127 Resp:18 Temp:37 °C SpO2 89% RA

Lab work

Search

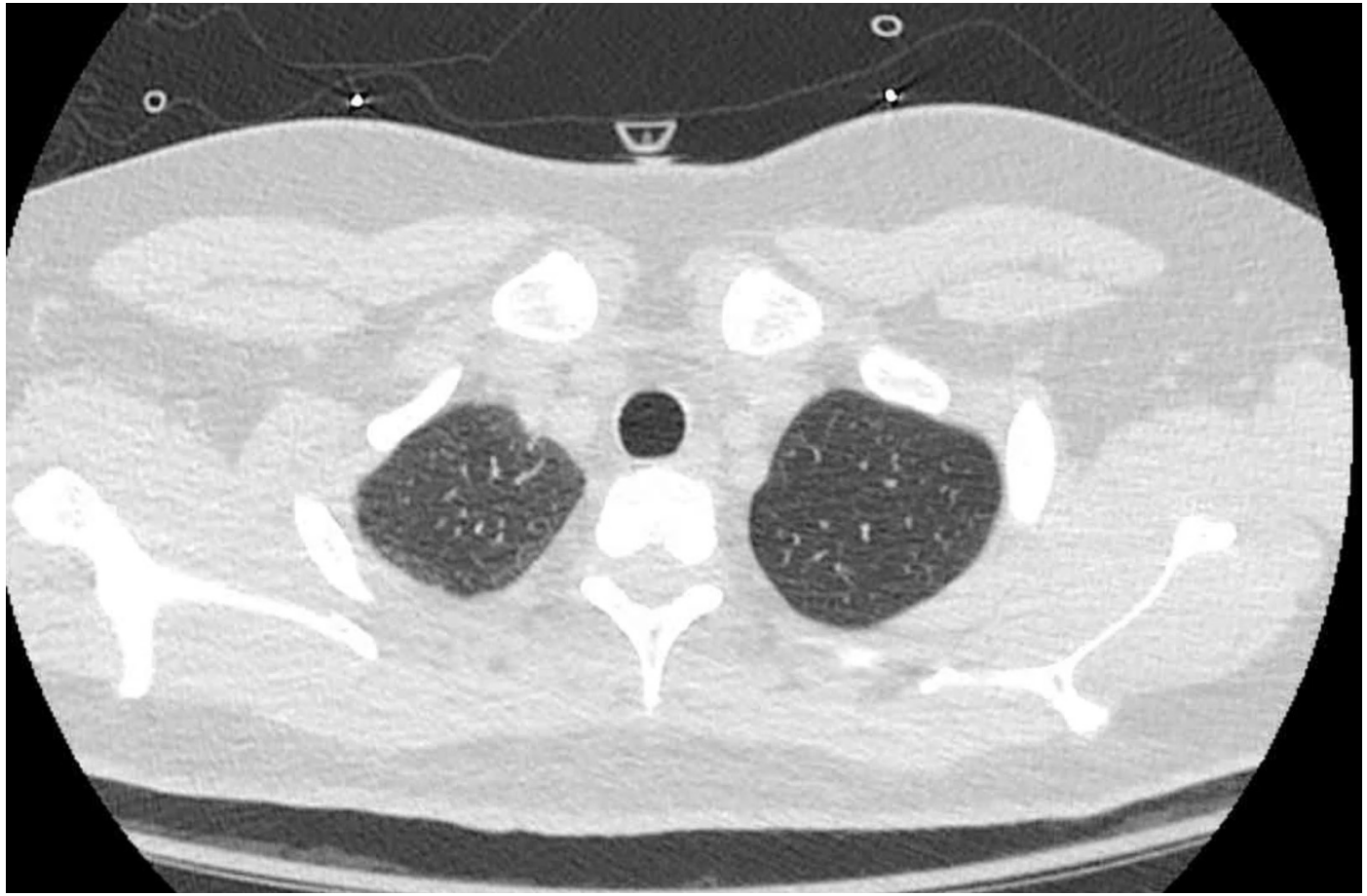
	2024 4/12/24 00:38	4/11/24 01:08
CBC / HEMOGRAM		
WBC	9.2	10.1
WBC		
RBC	4.09 ↓	4.03 ↓
HGB	12.2 ↓	12.0 ↓
HCT	36.1 ↓	34.2 ↓
MCV	88.3	84.9
MCH	29.8	29.8
MCHC	33.8	35.1
RDW	12.6	12.6
RDW-SD	41.1	38.7
Platelet Count	316.0	302.0
Nucleated RBC	0.0	0.0
CBC DIFFERENTIAL		
Neut Automated	77.4	88.1
Lymph Automated	18.0	8.9
Mono Automated	2.0	2.1
Eosinophils Auto	2.2	0.4
Basophils Auto	0.2	0.3
Immat. Granulocytes	0.2	0.2
Nucleated RBC	0.0	0.0

Search

	2024 4/13/24 05:48	4/13/24 02:37	4/12/24 00:38	4/11/24 01:08
GENERAL CHEMISTRY				
Sodium		135	134 ↓	137
Potassium		3.8	3.9	3.2 ↓
Chloride		98	99	100
CO2		23	25	22
Glucose		109 ↑	85	132 ↑
Mean Plasma Glucose				
BUN		8	7	7
Creatinine		0.6 ↓	0.7	0.6 ↓
BUN/Creat Ratio		13 ↓	10 ↓	12 ↓
Calcium Ionized				
Calcium		9.8	9.5	9.4
Anion Gap		14	10	15
Calc Osmolality		279 ↓	275 ↓	284
EGFR African-American				
EGFR Non-African-Amer.				
eGFR		>90	>90	>90
Albumin	3.8			
A/G Ratio	0.8 ↓			
Alkaline Phos				
Alkaline Phosphatase	91			
Phosphorus			3.0	2.4 ↓
Hemoglobin A1C				
Iron				17 ↓
TIBC				274
Iron Saturation				6 ↓

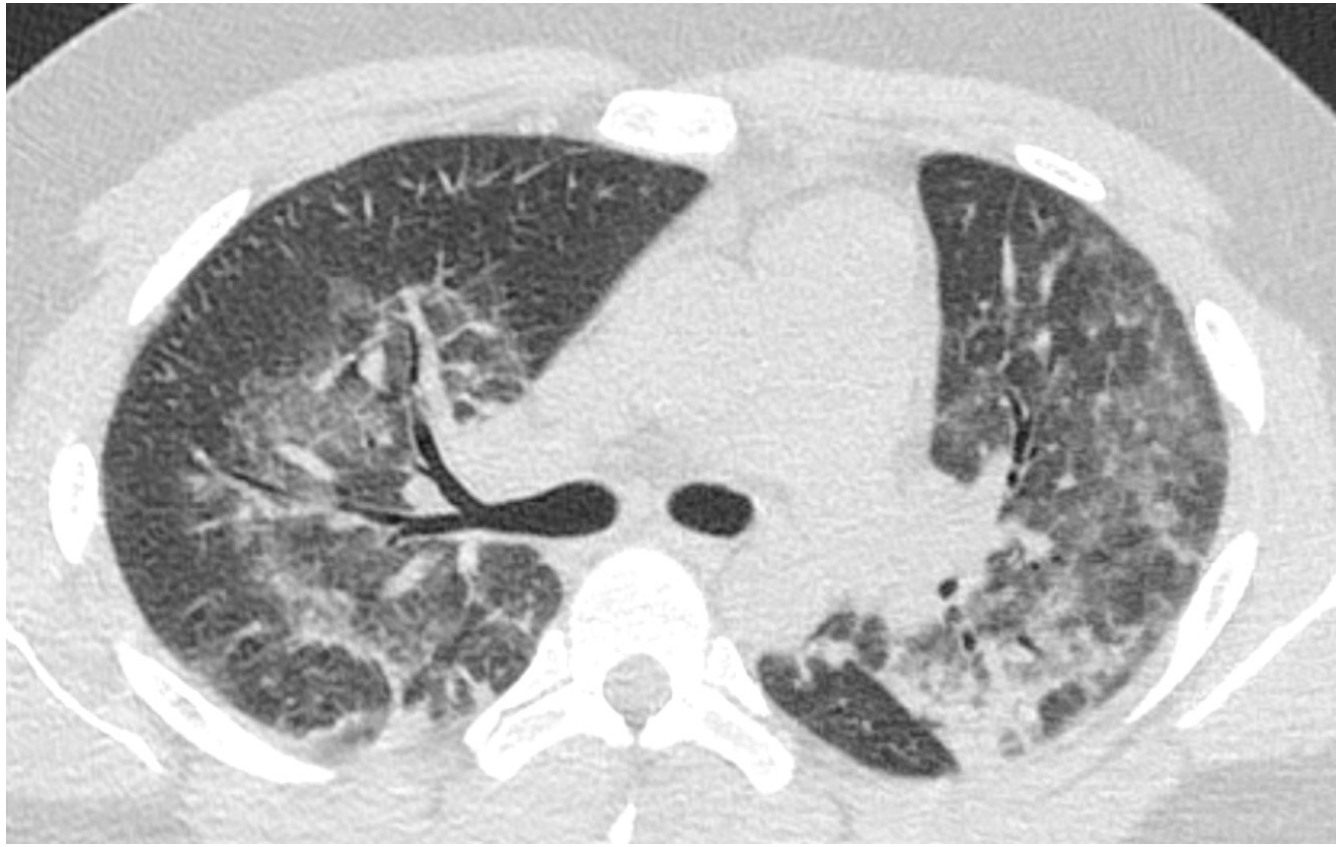
	4/14/24 02:37	4/13/24 12:57	4/13/24 10:50	4/13/24 04:41	4/10/24 02:29
CULTURES					
Culture, Blood (Peripheral)					
OTHER MICRO TESTS					
Adenovirus by PCR	Negative				
C. Diff Toxin PCR		Negative			
Campylobacter spp by PCR		Negative			
COVID SARS COV 2 PCR				Not Detec…	
Influenza A by PCR	Negative				
Influenza B by PCR	Negative				
Legionella Urinary Antigen					Negative
MRSA Screen by PCR Method			Negative		
Human Metapneumovirus by PCR	Negative				
Mycoplasma Pneumoniae PCR					
Norovirus by PCR		Negative			
Parainfluenza by PCR	Negative				
Rhinovirus by PCR	Negative				
Rotavirus by PCR		Negative			
RSV by PCR	Negative				
Salmonella spp by PCR		Negative			
Shiga Toxin 1 by PCR		Negative			
Shiga Toxin 2 by PCR		Negative			
Shigella spp by PCR		Negative			
Strep pneumoniae Urinary Antigen					Negative
Vibrio spp by PCR		Negative			
Yersinia enterocolitica by PCR		Negative			
COVID COV2 Source					
COVID-19 AG Specimen Source					
COVID Antigen SARS-COV-2				Negative	
COVID19 Result Comment					

Chest CT



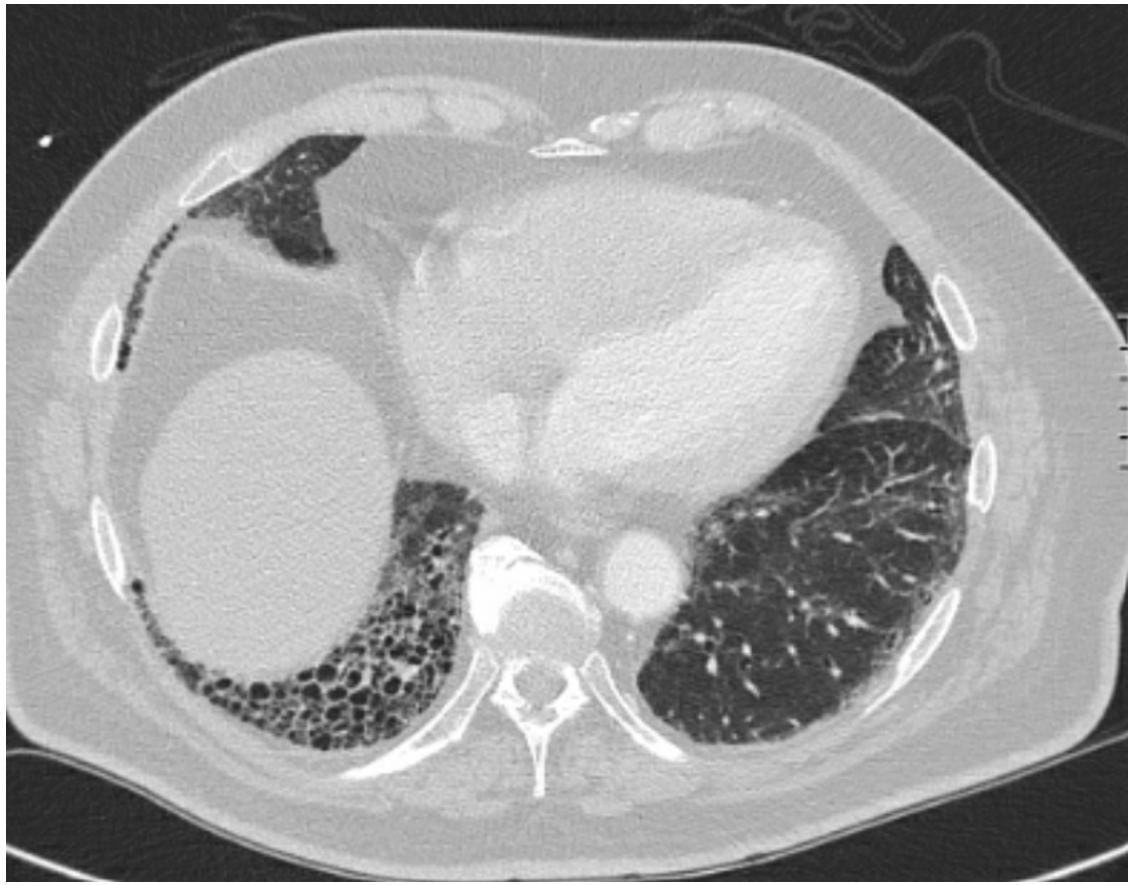
Discussion: EVALI

- E-cigarette or Vaping product use-Associated Lung Injury, a name the CDC adopted during a 2019 outbreak in the United States.
- peaked in Sep 2019, and by February 2020 the CDC had recorded 2,807 hospitalized cases and 68 deaths
- Vitamin E acetate, an additive was found in lung fluid samples from most patients and is considered the primary cause.
- patients had used THC-containing products, especially those from informal or illicit sources
- symptoms included cough, SOB, CP, f, N, V, diarrhea, and weight loss, often developing over days to weeks.
- Diagnosis recent vaping history, chest imaging, and ruling out other causes such as infection, no single test confirms EVALI.
- Rx supportive care, oxygen, and often corticosteroids, avoiding THC vaping products

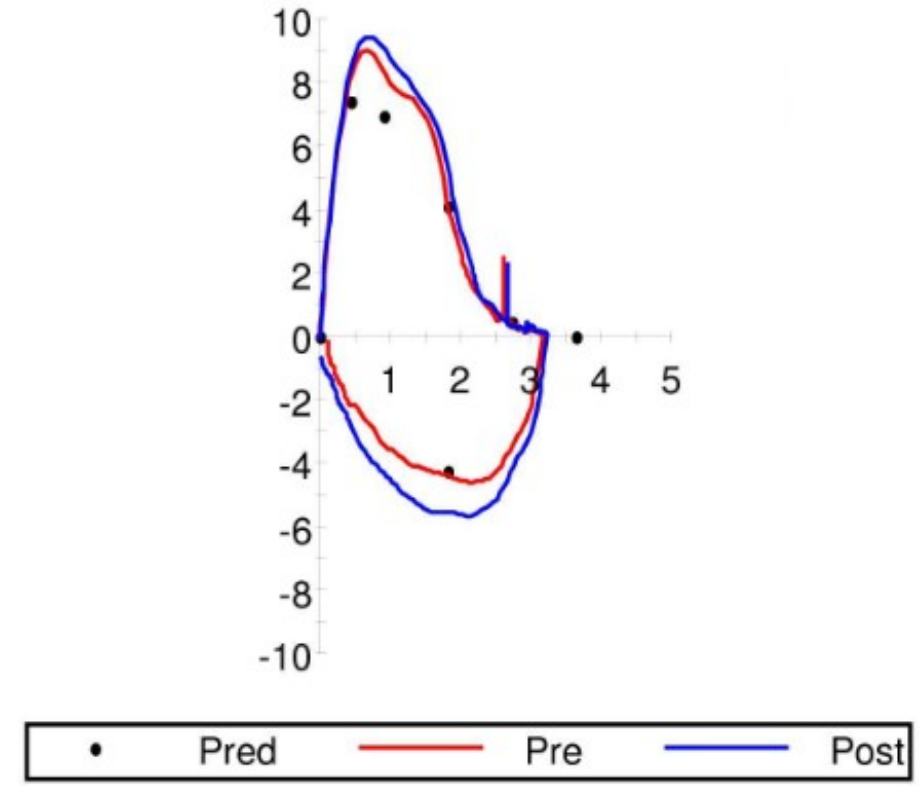


Case 2: Pt I saw for 12 years

- Started seeing him 2014 (was 70 then)
- Cardiac workup for aortic stenosis
- DOE that was attributed to cardiac
- Also CAD, CVA and OSA
- Chest CT: UIP pattern
- Dx: IPF



	Pre-Bronch						Post -Bronch			
	Actual	Pred	Pred	LLN	ULN	Score	ctual	Chng	% Prede	(Post)
---- SPIROMETRY ----										
FVC (L)	3.19	3.65	87	2.65	4.68	-0.76	3.25	+2	89	-0.65
FEV1 (L)	2.64	2.73	96	1.91	3.50	-0.19	2.70	+2	98	-0.06
FEV1/FVC (%)	82.79	75.29	109	60.68	88.45	+0.92	83.06	+0	110	+0.96
FEV3 (L)	3.03						3.09	+1		
FEV3/FEV6 (%)	95.09						95.56	+0		
FEV6 (L)	3.19	3.62	87	2.79	4.46	-0.86	3.23	+1	89	-0.77
FEV1/FEV6 (%)	82.82	77.42	106	68.82	86.03	+1.03	83.62	+0	107	+1.19
FEF 25-75% (L/sec)	3.29	1.99	165	0.79	3.74	+1.27	3.60	+9	180	+1.54
FEF Max (L/sec)	9.01	7.45	121	4.02	10.87	+0.75	9.43	+4	126	+0.95
FIVC (L)	3.07						3.28	+6		
FIF Max (L/sec)	4.61						5.67	+22		
---- LUNG VOLUMES -										
SVC (L)	3.25	3.65	88	2.65	4.68	-0.66				
IC (L)	3.04	3.06	99							
ERV (L)	0.19	0.59	32							
FRC(pl) (L)	2.33	3.53	66	2.09	4.97	-1.67				
RV (Pleth) (L)	2.12	2.49	85	1.74	3.24	-0.99				
TLC (Pleth) (L)	5.37	6.59	81	5.01	8.17	-1.54				
RV/TLC (Pleth) (%)	39.48	38.16	103	29.40	46.92	+0.30				
Trapped Gas (L)										
---- DIFFUSION ----										
DLCOunc (ml/min/mmH	12.33	28.13	43	18.47	37.79	-3.27				
DLCOcor (ml/min/mmH		27.83		18.19	37.47					
DL/VA (ml/min/mmHg/	2.81	4.43	63	2.75	6.11	-1.93				
VA (L)	4.39	6.59	66	5.28	7.90	-2.77				
IVC (L)	3.18									



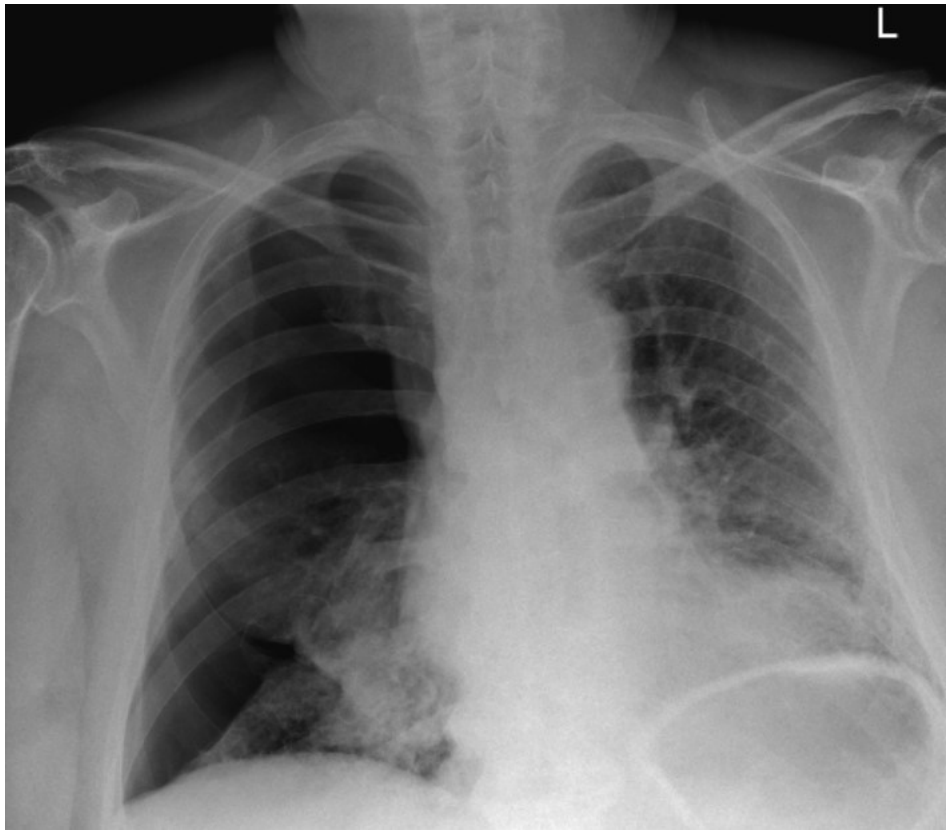
Started Pirfenidone

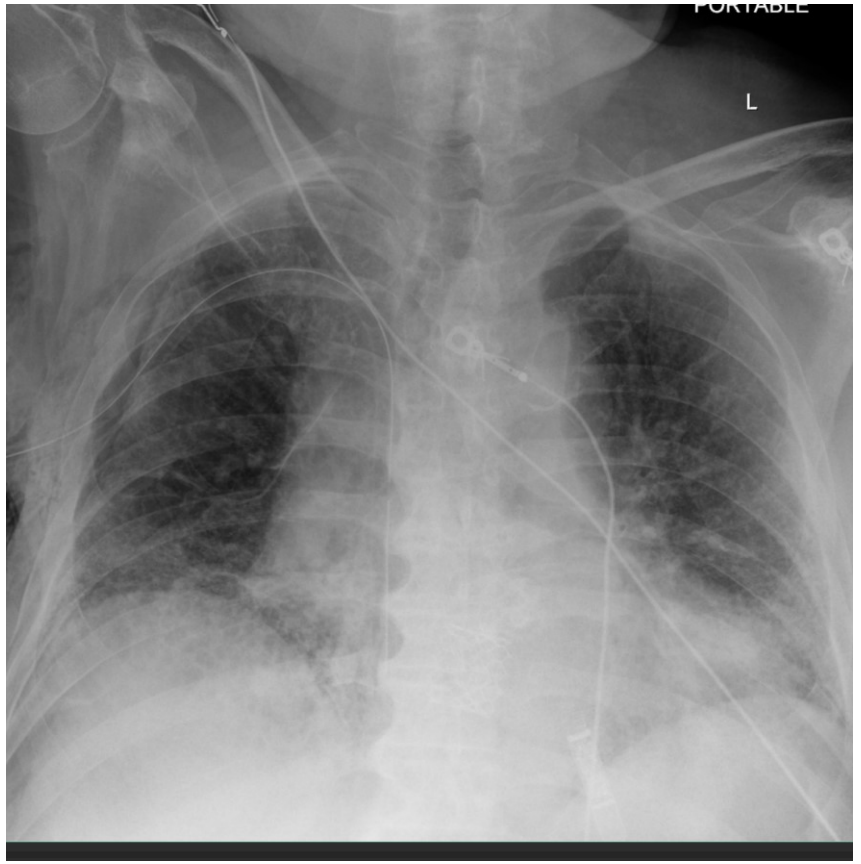


2019



2023

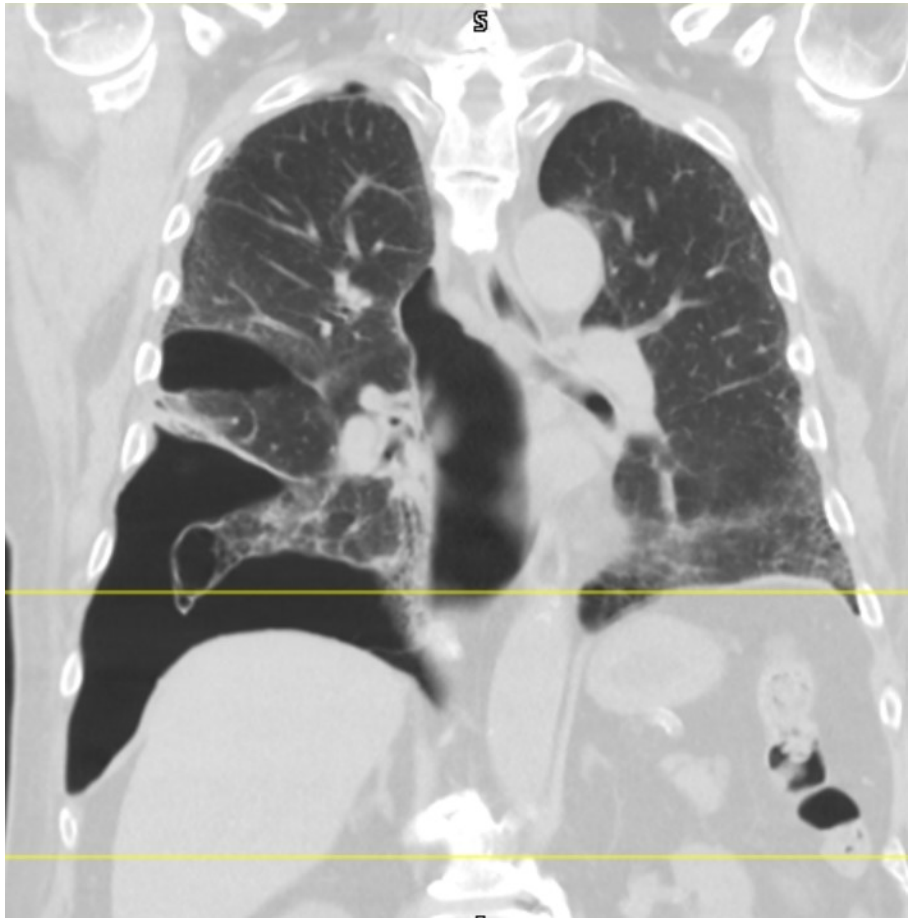




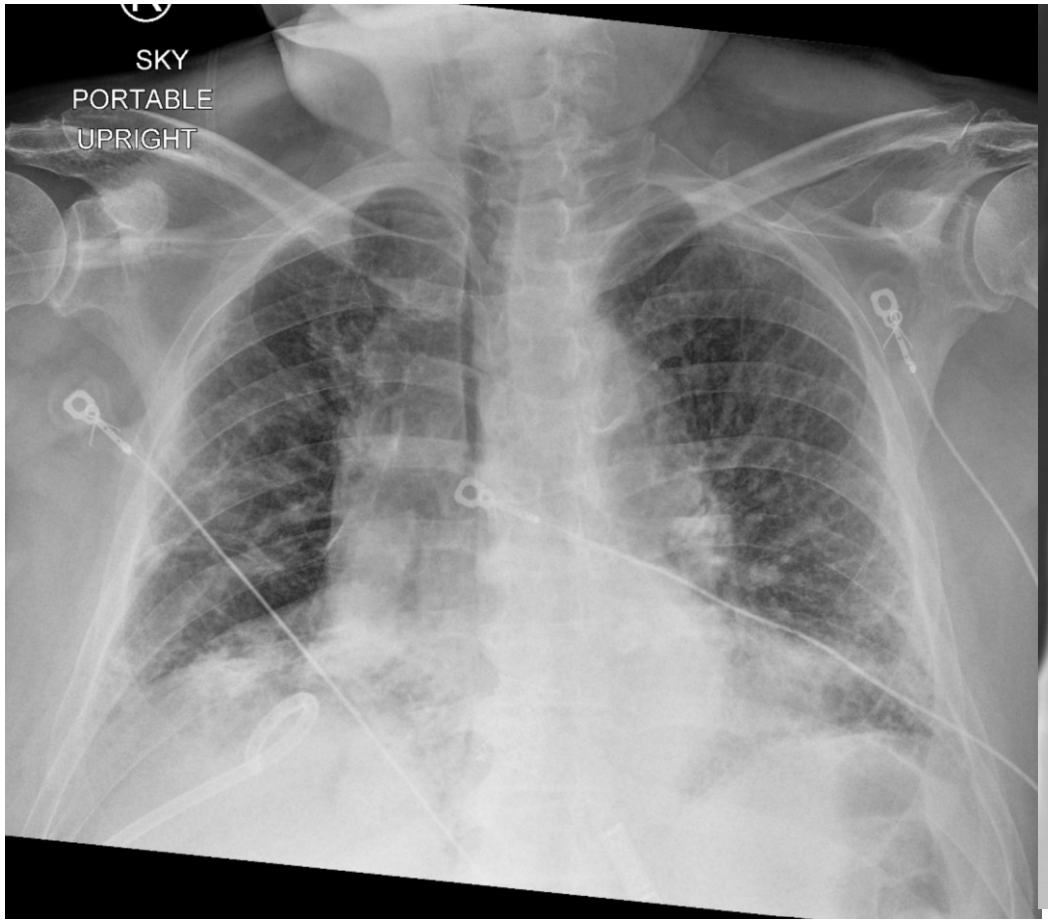
Jan 2025

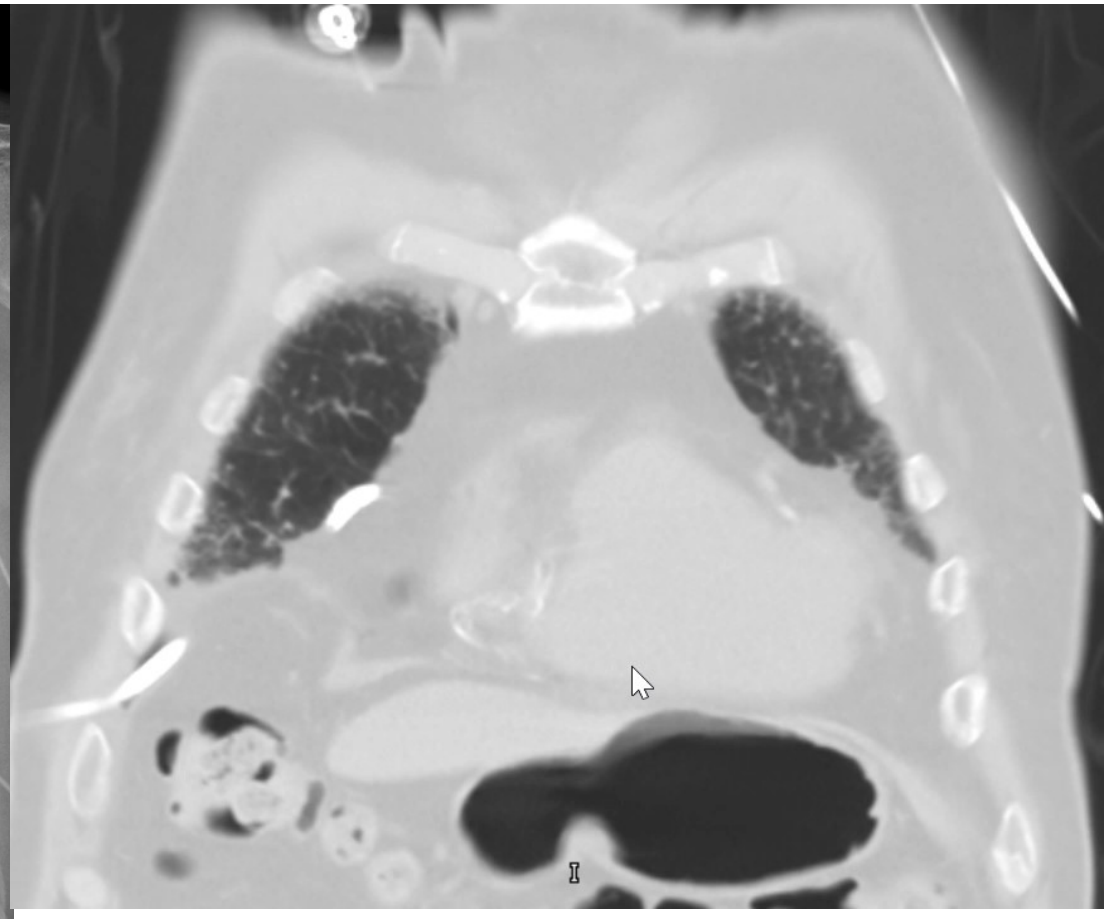
June 2025 (5 m later!)



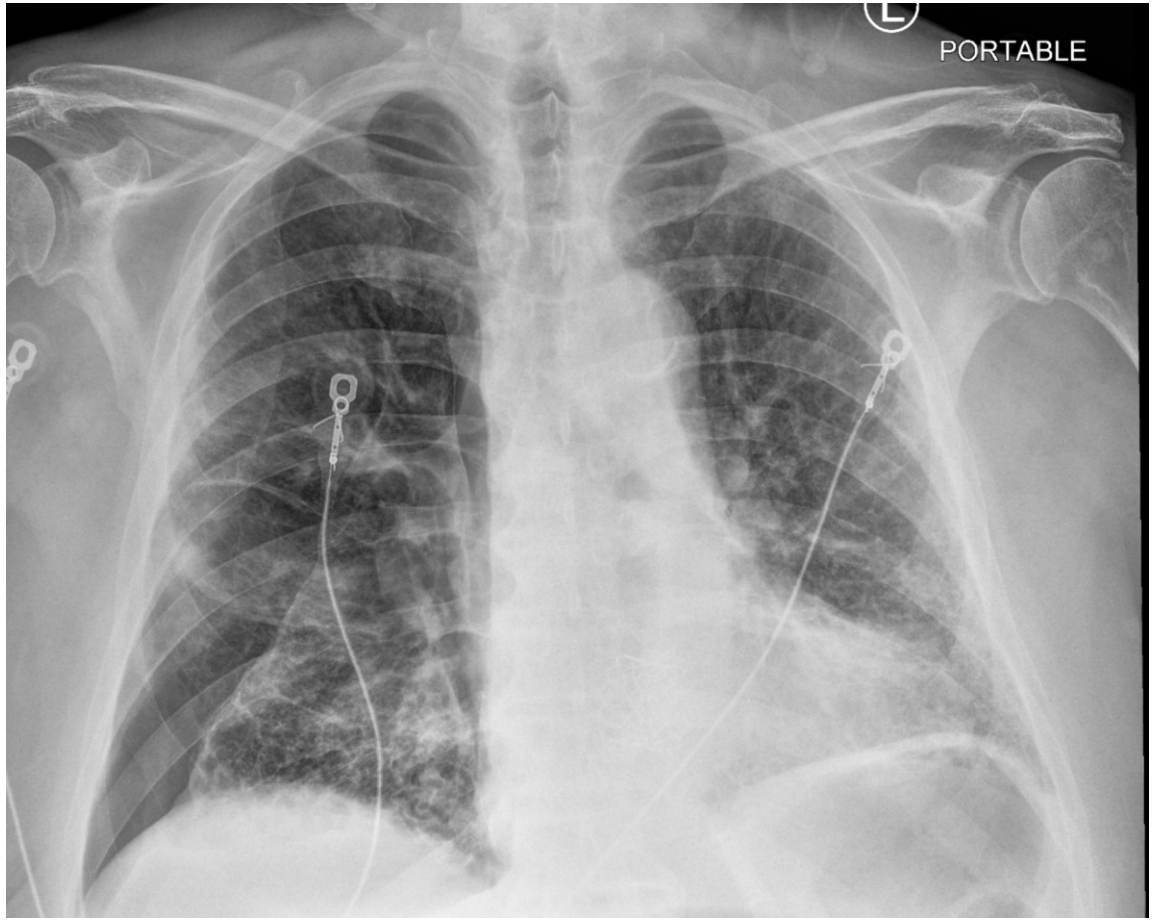


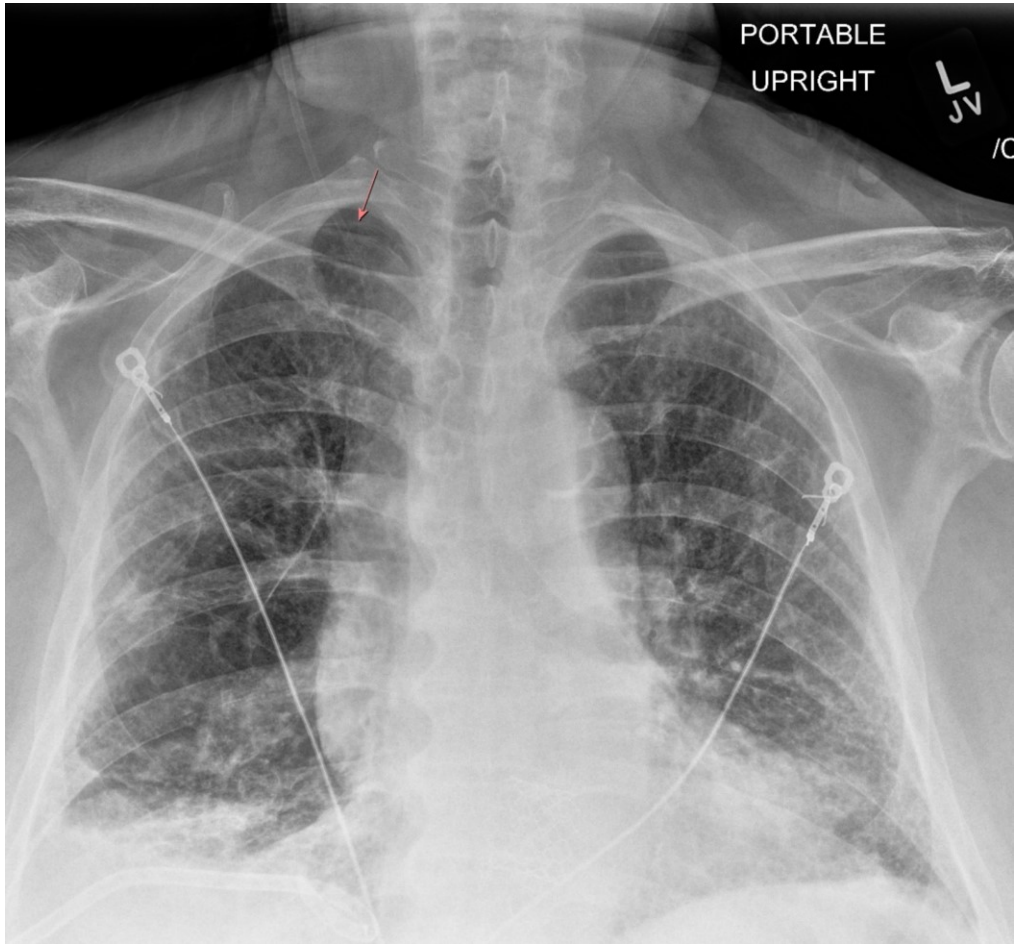
Chest tube & Talc



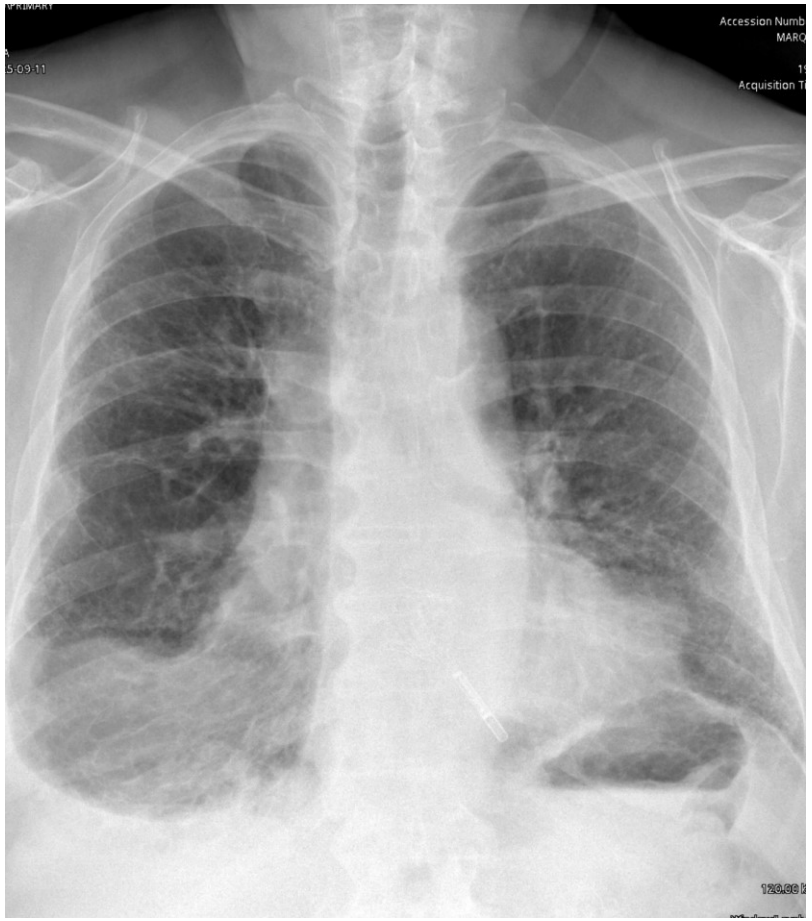


Aug 2025

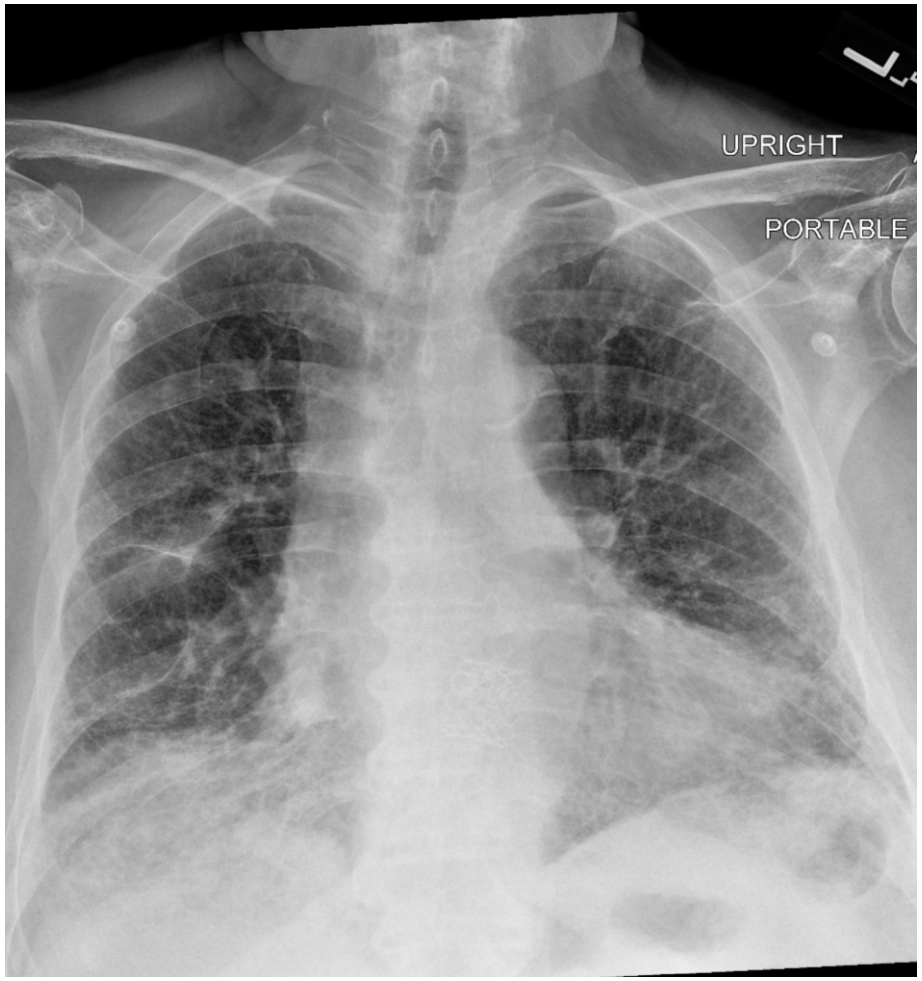




Follow up > 1 y now



Sept 2025



July 2026

Case 3

- 71M never smoker with progressive DOE and negative cardiac workup.
- Had pesticide shop and raised chicken
- 2023: CT chest with UIP pattern
- Started on Nintedanib 150 mg BID
- Struggled with diarrhea and had to be put on lower dose 100 mg BID

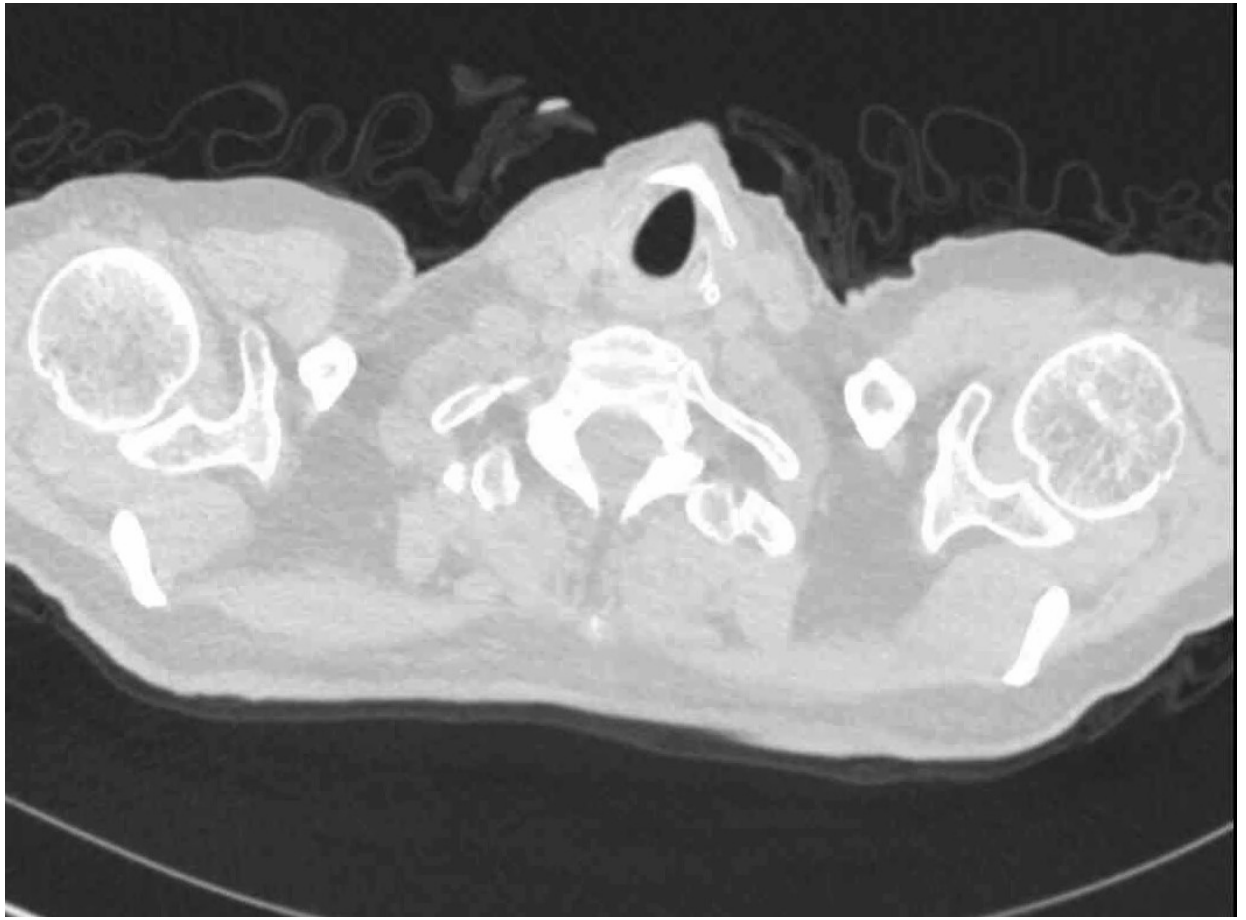
Case 3 - 2025

- Slow progression
- MMRC grade 2
- Minimal cough
- 2LPM of O2 with exertion
- FVC: 1.37L (37%), FEV1: 1.32L (47%)
- 6MWD: 813 ft (248m)

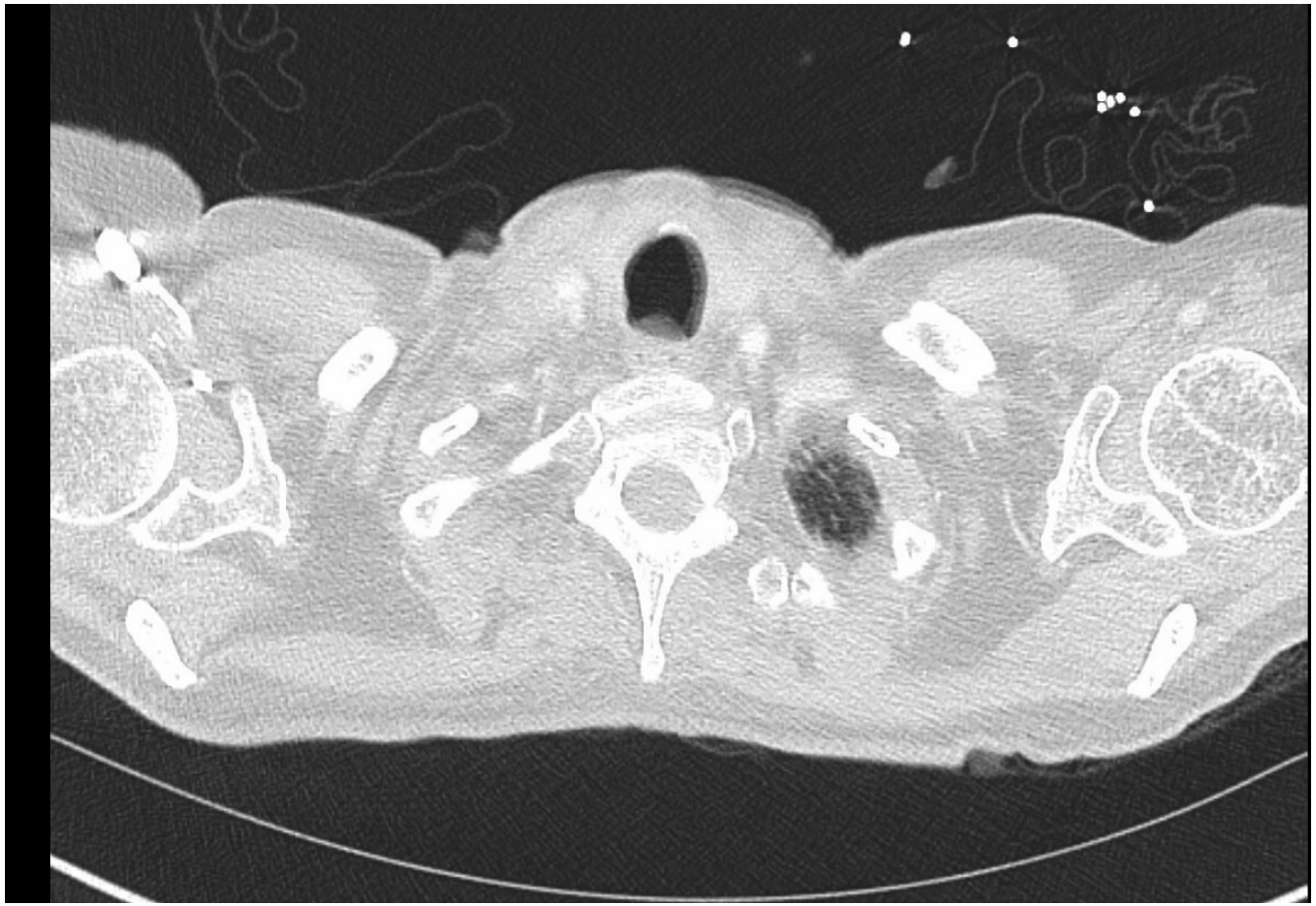
Case 3 - 2026

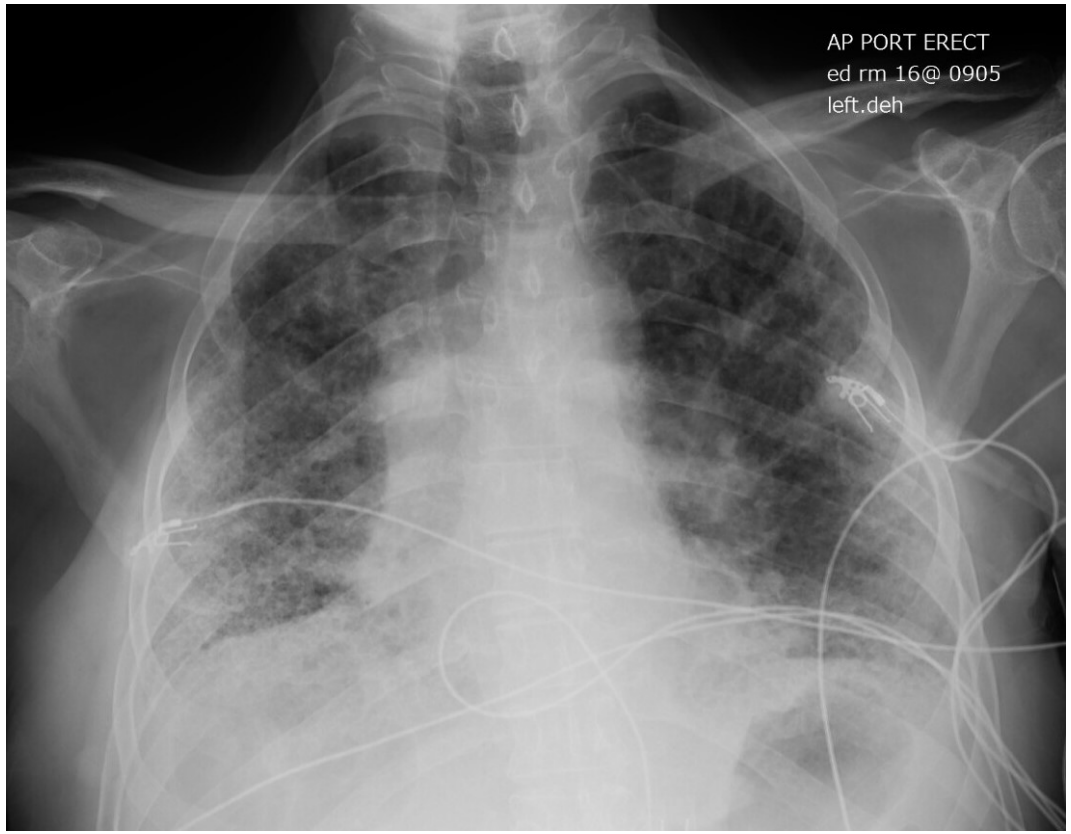
- 2-2026: ?AE → methylprednisolone 4 mg daily
- 5-2026: O2 at 4LPM with ambulation

Case 3 – May 2026



Case 3 – Aug 2026





Case 3

- Admitted for worsening hypoxia, and acute dyspnea
- Required 10 LPM then placed on HFNC (60L, 60%)
- Treated with systemic steroids, antibiotics
- MBSS → oropharyngeal dysphagia
- Discharged on prednisone taper
- Referred to pulmonary rehab and transplant evaluation
- Switched Nintedanib to Nerandomilast

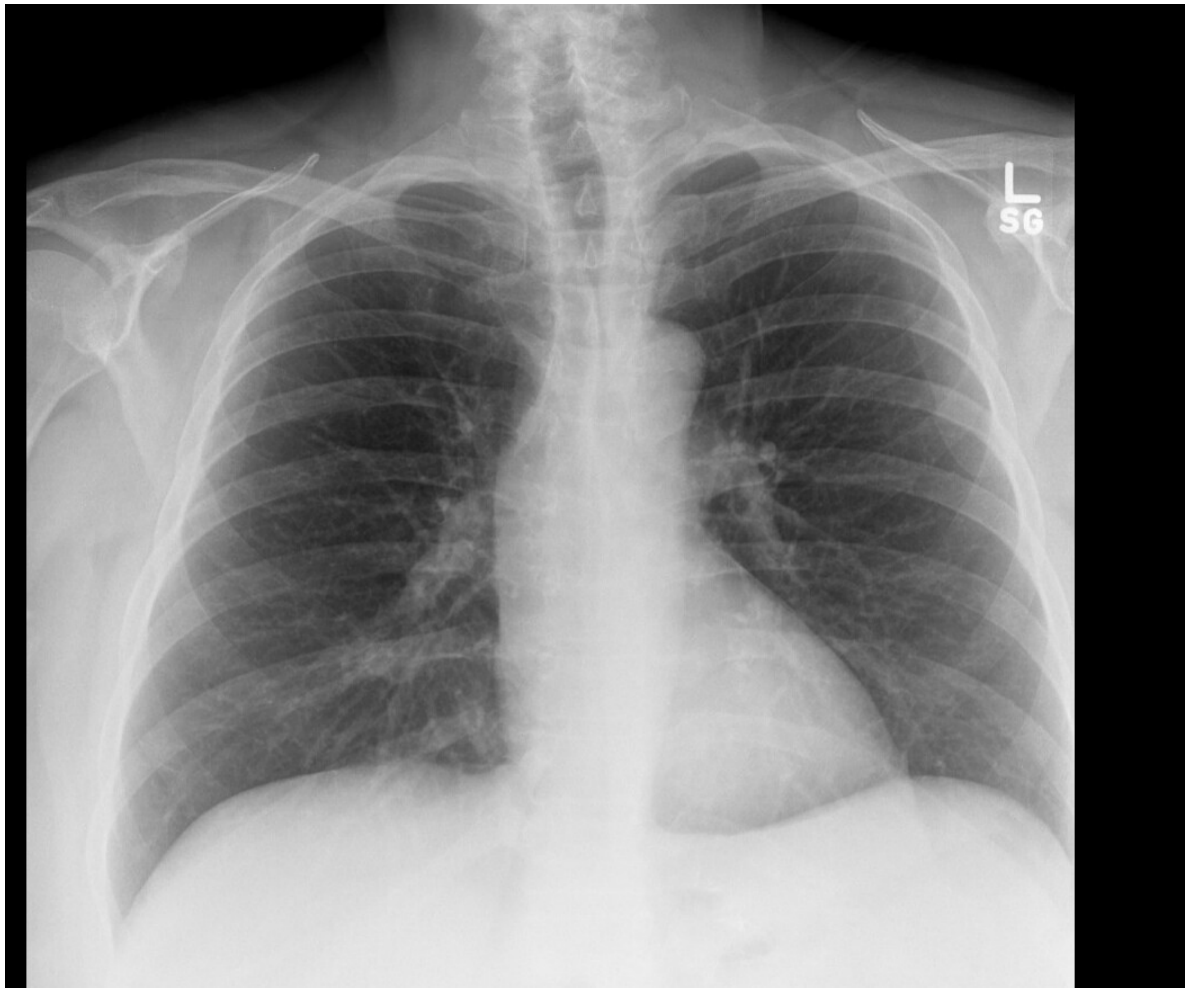
Case 3 - Sep 2026



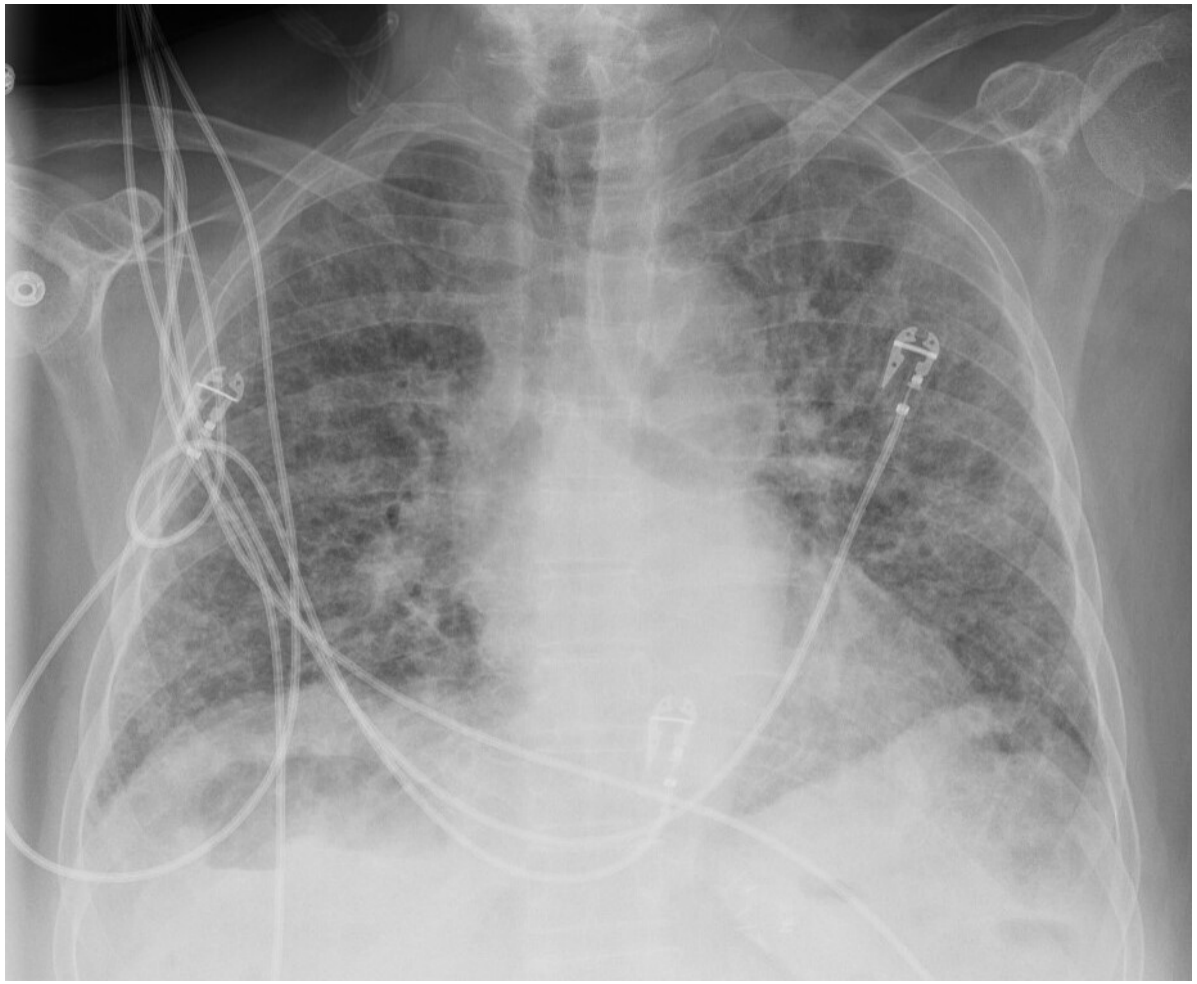
Case 4

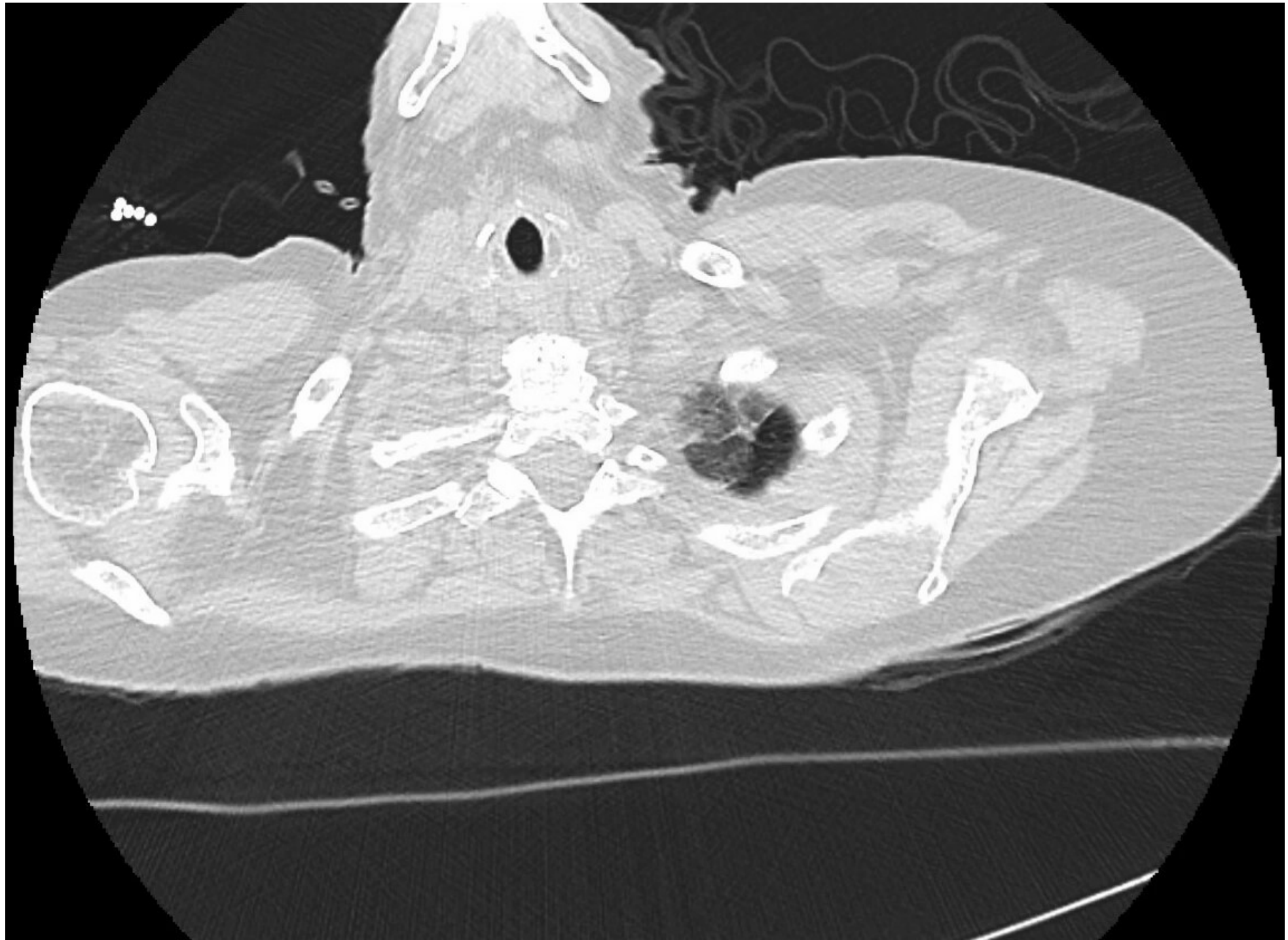
- 65F with trivial smoking hx who moved to Cleveland in 12-2021
- Worked in IT with no exposures
- Hx of allergic rhinitis
- Acute DOE for days
- Hypoxic in ED

2012



2021





Dec 2021

- Admitted
- Started on O2, broad spectrum antibiotics
- Negative COVID-19/FluA/FluB/RSV PCR
- Negative microbiologic studies
- What next?

Jan 2022

- Bronchoscopy with BAL and TBBx

Color	Colorless
pernatant Color, BA Lavage	Colorless
upernatant Clarity, BA Lavage	Clear
BAL Turbidity	Slightly Cloudy
RBC Count, BAL	<2,000
WBC Count, BAL	244
BAL Neutrophil Percent	43
BAL Lymphocyte Percent	18
BAL Monocyte Percent	1
BAL Eosinophil Percent	1
Atyp C1%, BA Lavage	2
BAL ALV Macrophage Percent	35
Slide Number BA Lavage	A225
L Comment	SEE COM…

Bronchoscopy with TBBx

Right lung, lower lobe, transbronchial biopsy - Organizing pneumonia with areas of multinucleated reactive pneumocytes and rare giant cells.

CFF/rw 01/06/2022

COMMENT
This biopsy contains approximately seven diagnostic fragments of lung tissue all predominantly alveoli. Throughout, there are areas of fibromyxoid proliferations consistent with organizing pneumonia. In addition, the adjacent pneumocytes are reactive and show focal areas of two to three multinucleated cells. Finally, in at least one airway, there is a giant cell, which may be a reaction to intraluminal mucin. A GMS stain for fungal organisms and immunohistochemical studies for CMV will be performed and the results reported as an addendum. No neoplasm is seen. No granulomas are seen. The findings represent an ongoing acute lung injury.

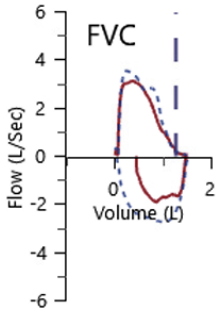
Diagnosis

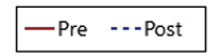
Management

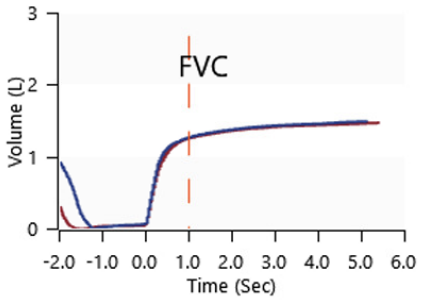


May 2022

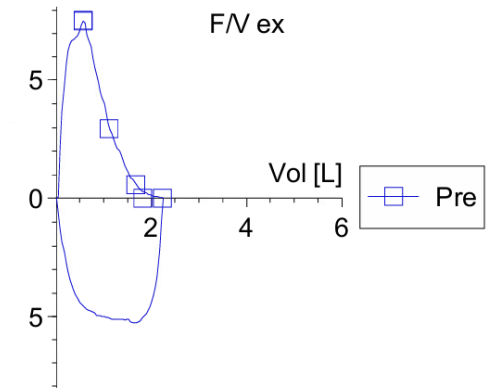
	Pre-Bronch					Post-Bronch		
	Pre	LLN	Pred	ULN	%Pred	Post	%Pred	%Chg
-----SPIROMETRY-----								
FVC (L)	1.49	2.06	2.78	3.53	53	1.52	54	1
FEV1 (L)	1.26	1.61	2.18	2.72	57	1.27	58	0
FEV1/FVC	0.85	0.66	0.79	0.90	107	0.84	106	0
PEF L/s (L/sec)	3.32	4.03	5.64	7.24	58	3.55	62	7
FEF50 (L/sec)	2.24	1.43	3.04	4.65	73	2.84	93	26
FIF50 (L/sec)	1.73					2.72		57
FEF50/FIF50	1.29		90-100			1.04		-19
FIVC (L)	1.04					1.46		40
FEF25-75 (L/sec)	1.65	0.94	1.94	3.33	84	1.98	102	20
FET (sec)	4.67					4.71		0
FET PEF (sec)	0.12					0.06		-45
VBEx (L)	0.06					0.08		21
Vol Extrap % (%)	4					5		19
-----LUNG VOLUMES----------								
FRC-Pleth (L)	1.80	1.83	2.69	3.55	66			
ERV (L)	0.32		0.93		34			
RV-Pleth (L)	1.40	1.38	2.01	2.63	69			
VC (L)	1.27	2.06	2.78	3.53	45			
IC (L)	0.95		1.85		51			
TLC-Pleth (L)	2.61	3.87	4.75	5.64	54			
RV/TLC-Pleth (L)	54	33	42	51	128			
-----LUNG DIFFUSION----------								
DLCOunc (ml/min/mmHg)	9.43	13.99	20.16	26.33	46			
VA	2.34	3.63	4.73	5.84	49			
DLunc/VA (ml/min/mmHg/L)	4.03	3.13	4.44	5.76	90			
BHT (sec)	12.08							
IVC (L)	1.34							

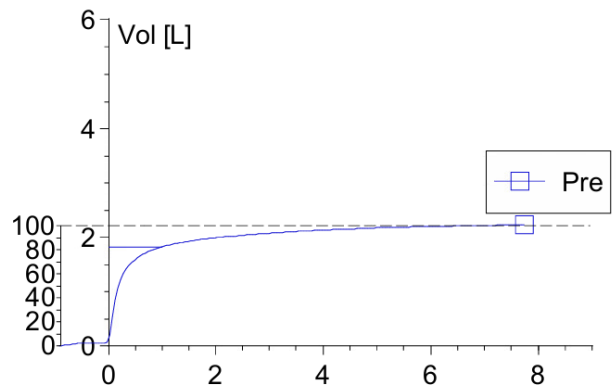




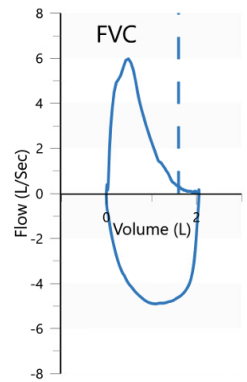


		Meas	LLN	Pred	ULN	%
FVC	L	2.22	2.05	2.76	3.51	80.3
FEV1	L	1.82	1.60	2.17	2.71	83.8
FEV1/FVC	%	82	66	79	90	103.7
PEF	L/s	7.47	4.02	5.63	7.23	132.8
FEF50%	L/s	2.94	1.22	3.03	4.85	96.9
FIF50%	L/s	5.07				
FE%FIF	%	58				
FIVC	L	2.23				
FEF25-75%	L/s	2.07	0.92	1.92	3.31	107.7
FET100%	sec	7.66				
FETPEF	sec	0.08				
VBe%FV	%	5				
VBEex	L	0.10				
FIVC/FVC	%	100				
DLCO_SBml/(min*mmHg)		11.22	13.64	20.14	26.64	55.7
VA_SB	L	3.37	3.63	4.74	5.84	71.1
DL/VAml/(min*mmHg*L)		3.33	3.13	4.44	5.76	75.0
IVC_SB	L	2.23	2.05	2.76	3.51	80.9
IC_SB	L	2.08	1.79	1.79	1.79	116.5
BHT	sec	10.82				
Pbar	mmHg	739.00				

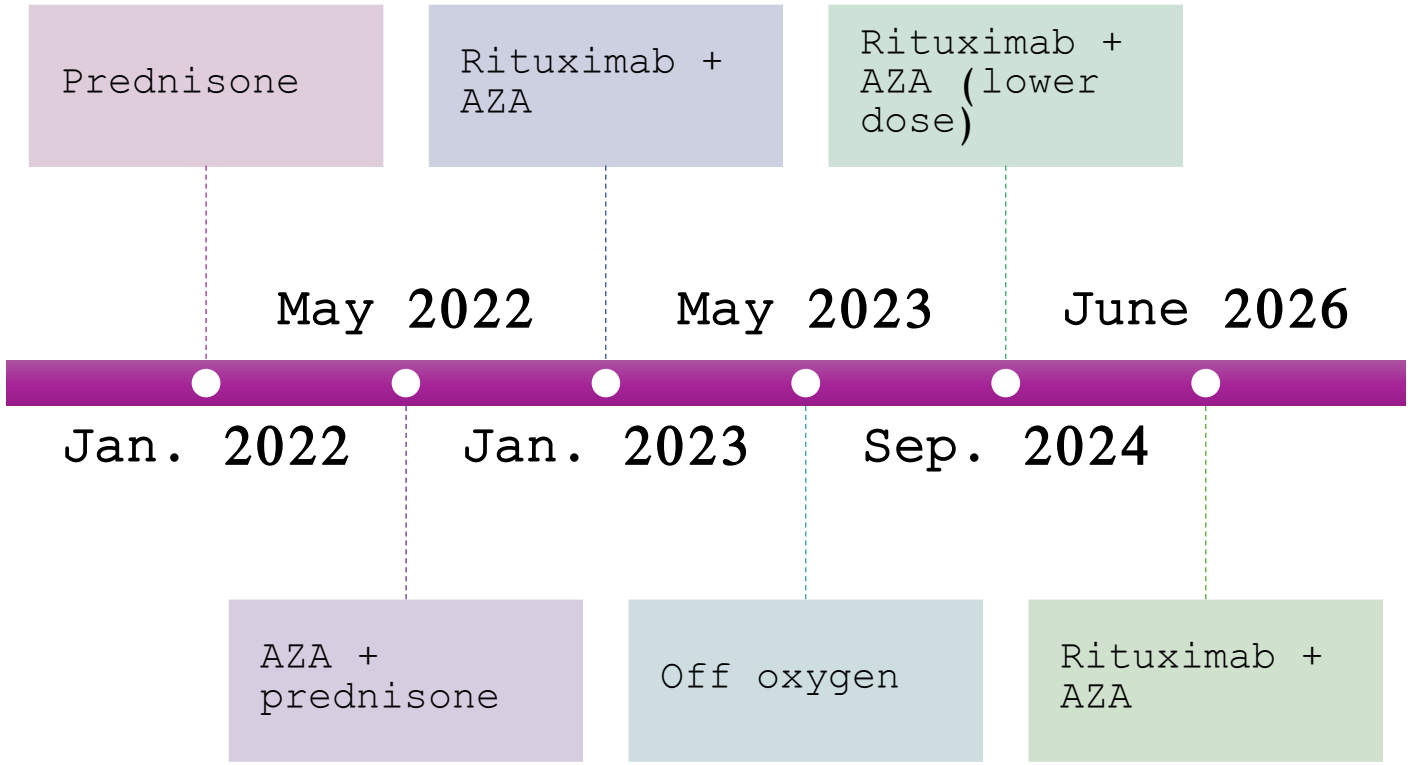


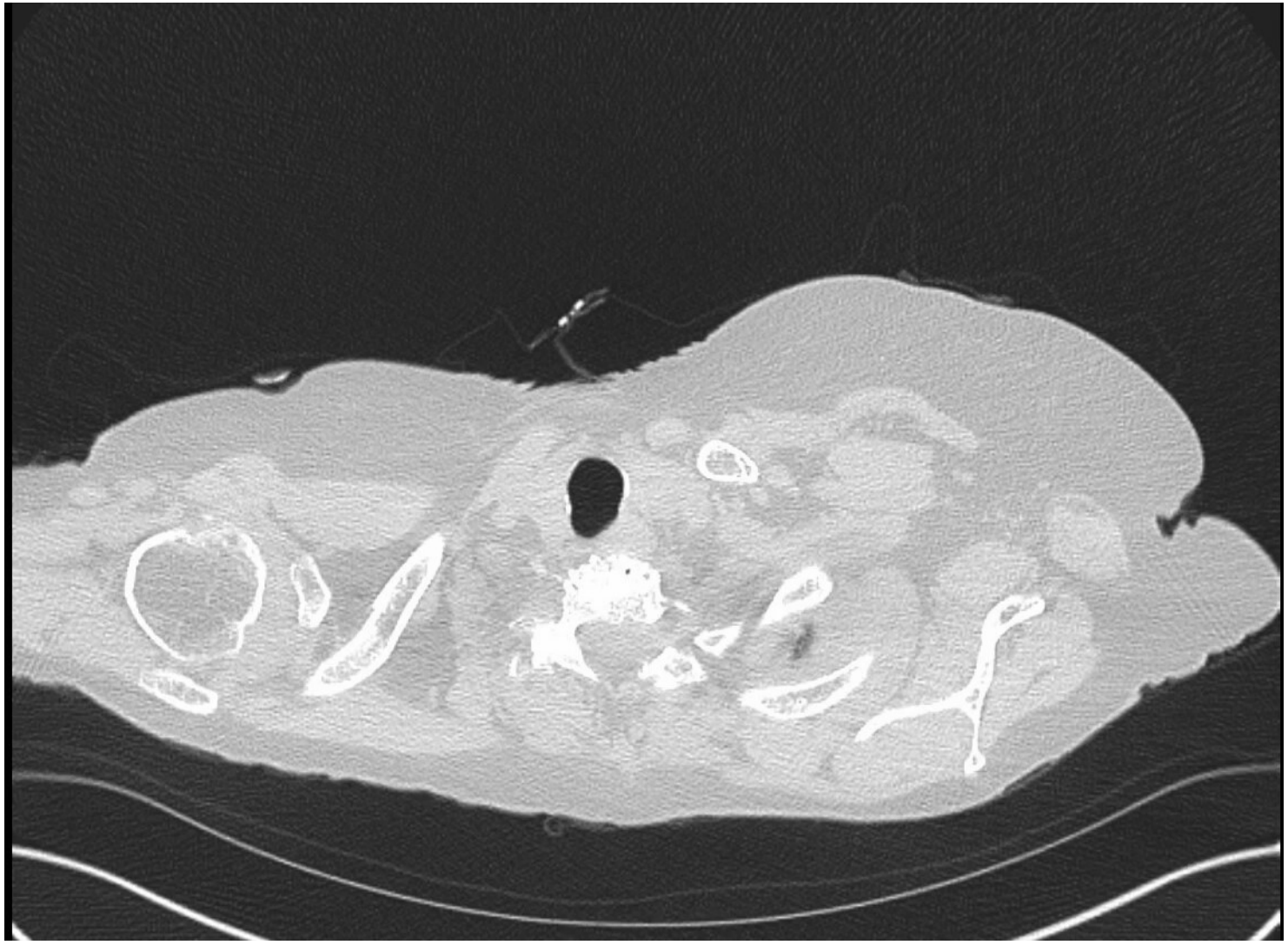


	Pre-Bronch						Post-Bronch			
	Meas	LLN	Pred	ULN	%Pred	Z Score	Meas	%Pred	%Chg	Z Score
---- SPIROMETRY ----										
FVC (L)	2.06	1.65	2.33	3.03	88	-0.65				
FEV1 (L)	1.61	1.29	1.85	2.37	87	-0.71				
FEV1/FVC	0.78	0.67	0.80	0.90	97	-0.23				
FEF Max (L/sec)	6.06	3.59	5.09	6.59	119	1.06				
FEF50 (L/sec)	2.13	1.18	2.78	4.39	76	-0.67				
FEF25-75 (L/sec)	1.39	0.81	1.73	3.04	80	-0.53				
FIF50 (L/sec)	4.90									
FEF50/FIF50	0.43		90-100							
FIVC (L)	2.06									
FET (sec)	6.55									
---- LUNG DIFFUSION ----										
DLCO (mL/min/mmHg)	11.87									
DLCO (at standard PB)	11.72	12.90	17.11	22.29	68	-2.18				
VA	3.07	3.17	3.96	4.83	77	-1.86				
Kco (ml/min/mmHg/L)	3.87	3.31	4.33	5.49	89	-0.72				

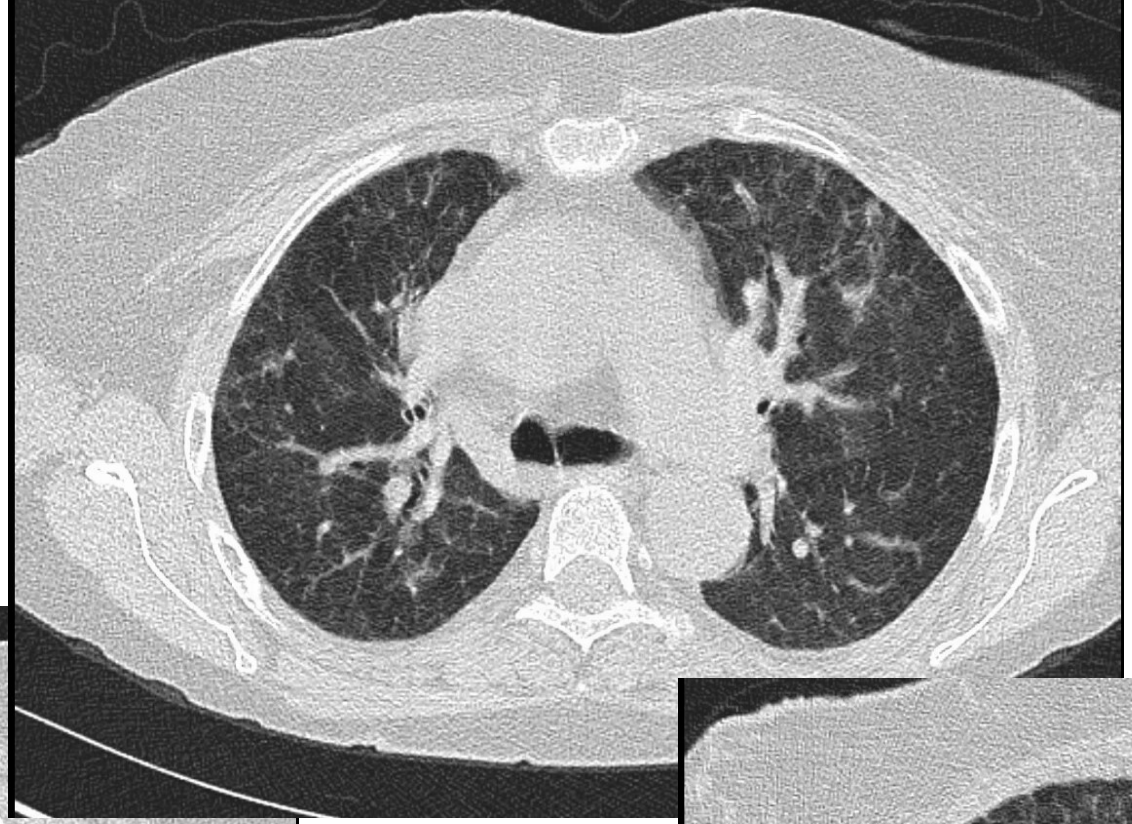


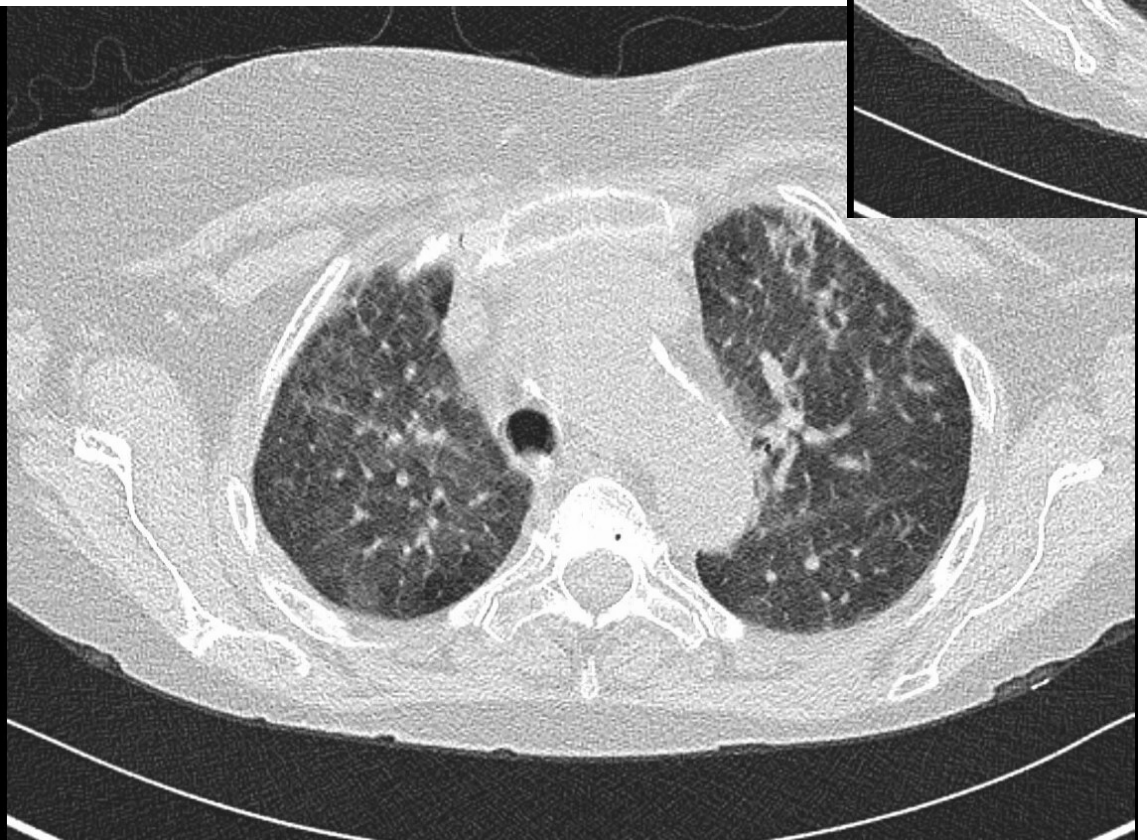
Treatment course

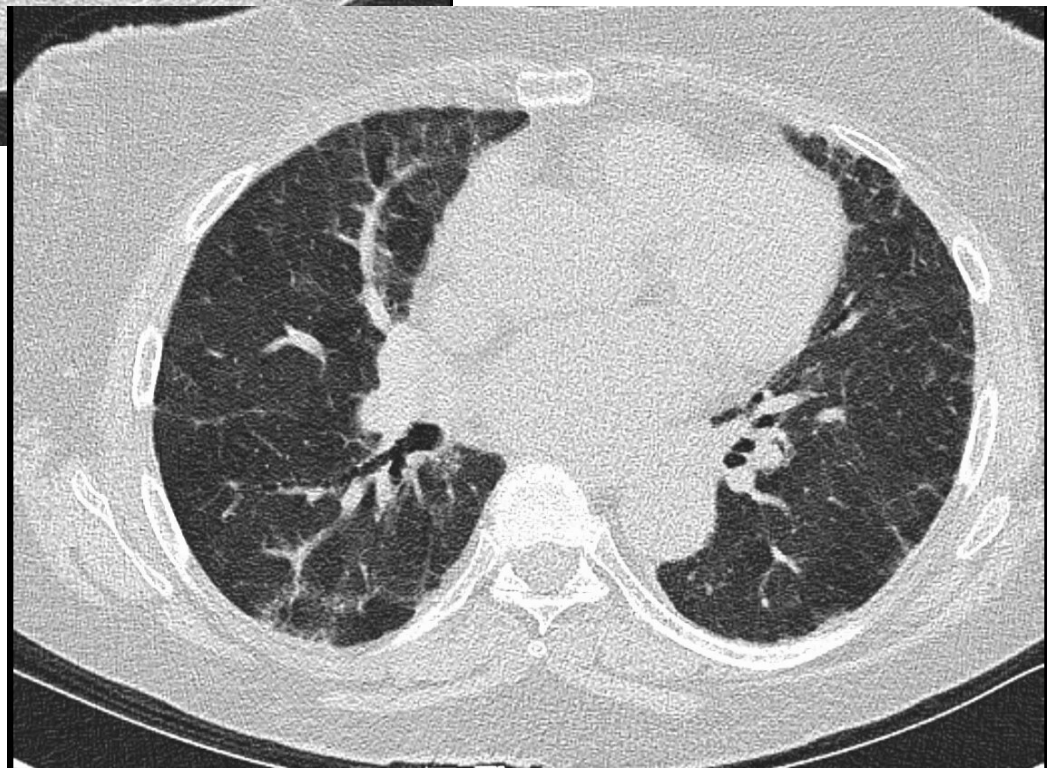




Free Breathing Protocol







Case 5

Case 6