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대한결핵 및 호흡기학회
The Korean Academy of Tuberculosis and Respiratory Diseases

증례로 보는 ILD치료의 실제

Organizing pneumonia 감별진단과 치료

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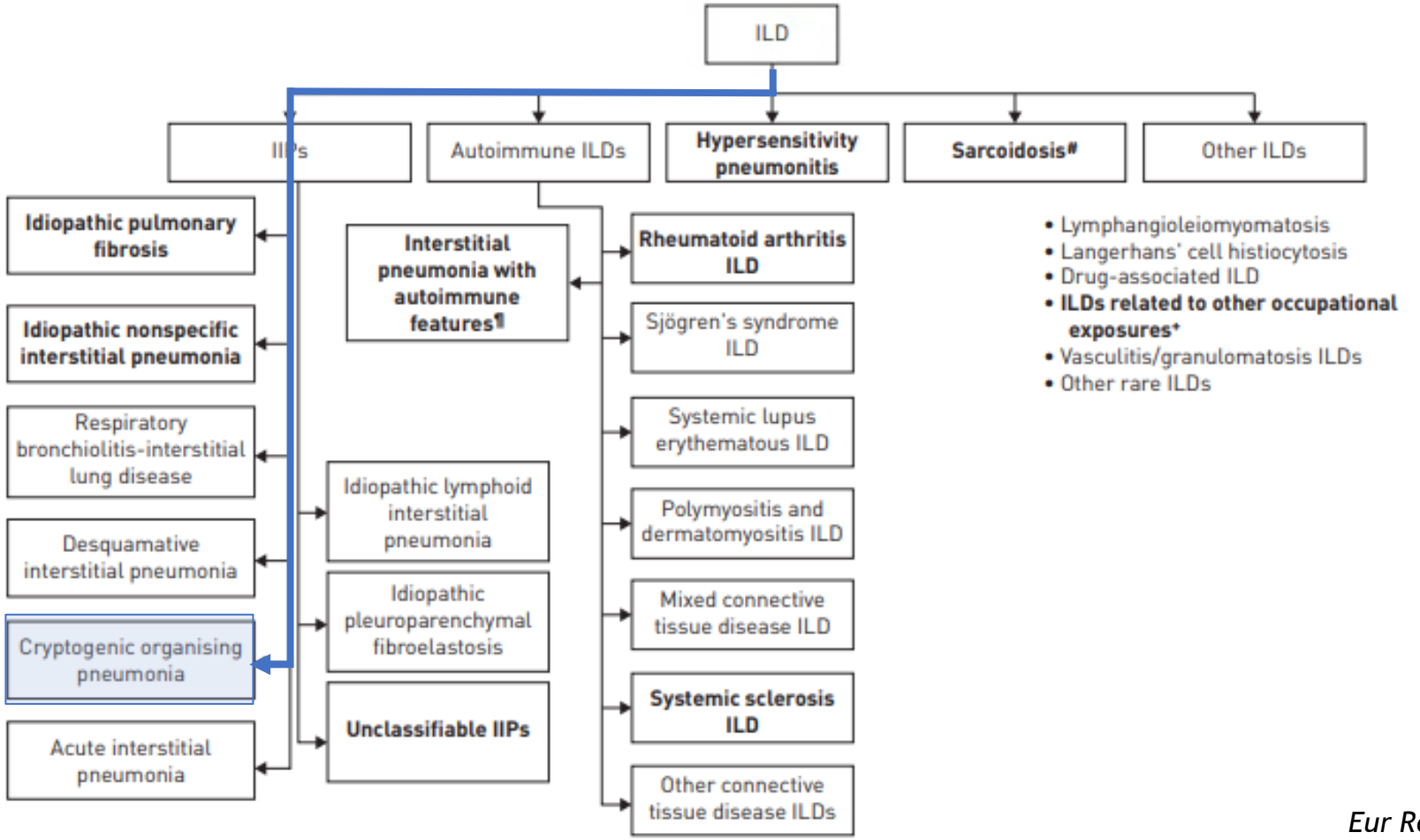
Disclosure of Conflict of Interest

- None to declare

Classification of ILDs



Eur Respir Rev 2018; 27: 180076

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History of terminology : BOOP vs. COP

- Alveolar disease -> cryptogenic organizing pneumonia (COP)
- Airway disorder -> obliterative bronchiolitis (OB)

- COP – bronchiolitis interstitial pneumonia (BIP)
  Bronchiolitis obliterans organizing pneumonia (BOOP)

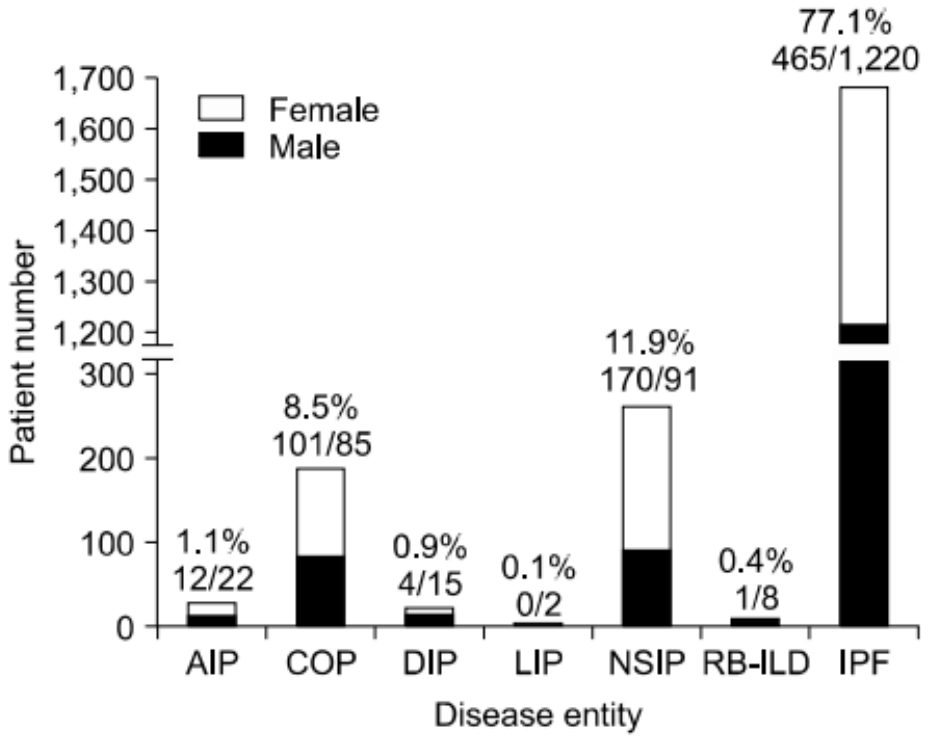
Eur Respir Rev 2021; 30: 210094

COP is,

- **acinar-centric disorder** rather than airway disease!
- The term BOOP should be discarded in the medical literature

Epidemiology

- 1.10 cases per 100,000
- 6.7 cases per 100,000



Tuberc Respir Dis 2009;66:141-151
N Engl J Med 2022;386:1058-69

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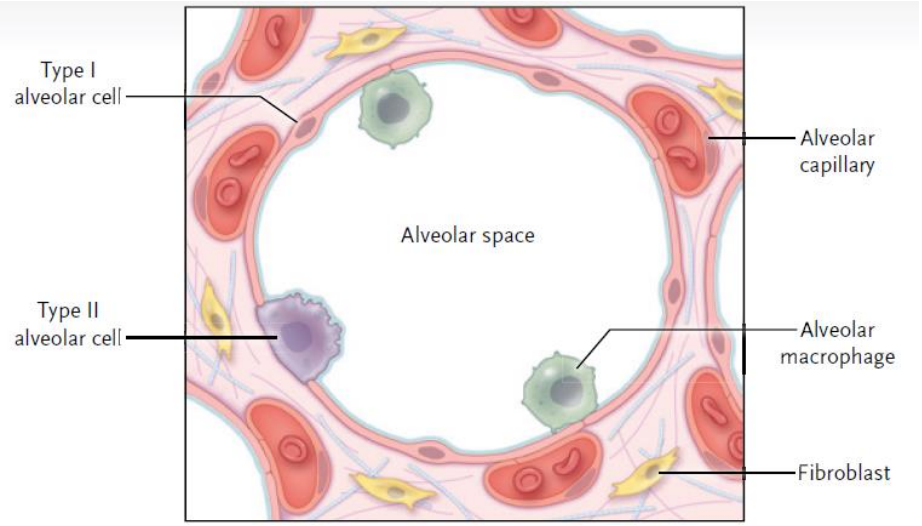
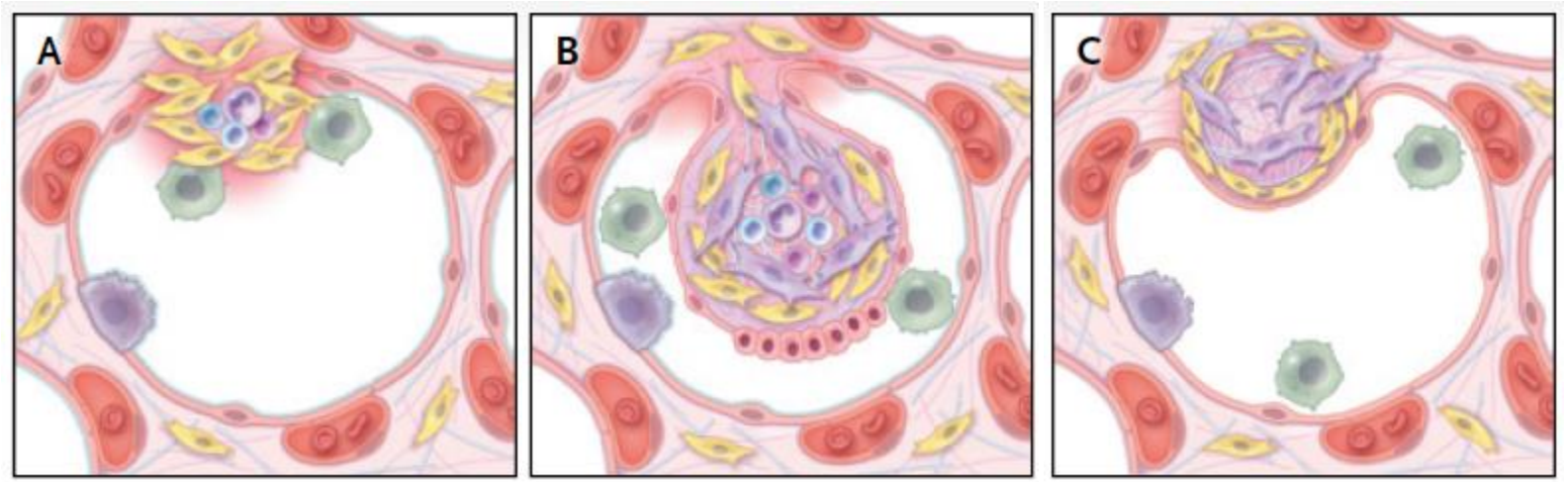
Lung repair, two-edged sword





Leakage Organization Resorption

N Engl J Med 2022;386:1058-69

Causes of organizing pneumonia

TABLE 1 Conditions associated with organising pneumonia (OP)[#]
Connective tissue disorders
Hypersensitivity pneumonitis (acute)
Adverse drug reactions
Bone marrow, stem cell or solid organ transplantation
Infection
Airway diseases complicated by infection
Airway obstruction (distal changes)
Inhalation injury
Aspiration syndromes
Chronic eosinophilic pneumonia
Radiation pneumonitis
Inflammatory bowel disease
Neoplasms and myeloproliferative disorders
Organising diffuse alveolar damage
Coexistent with pathologic changes of IIP (*e.g.* UIP or NSIP)
Acute exacerbation of IPF (OP lesions superimposed on chronic UIP pattern)
Proximal bronchial obstruction (OP found distal to focus of obstruction)
Miscellaneous
Immunodeficiency syndromes
Cryoglobulinemia
Granulomatosis with polyangiitis
Other vasculitis

vs. cryptogenic OP

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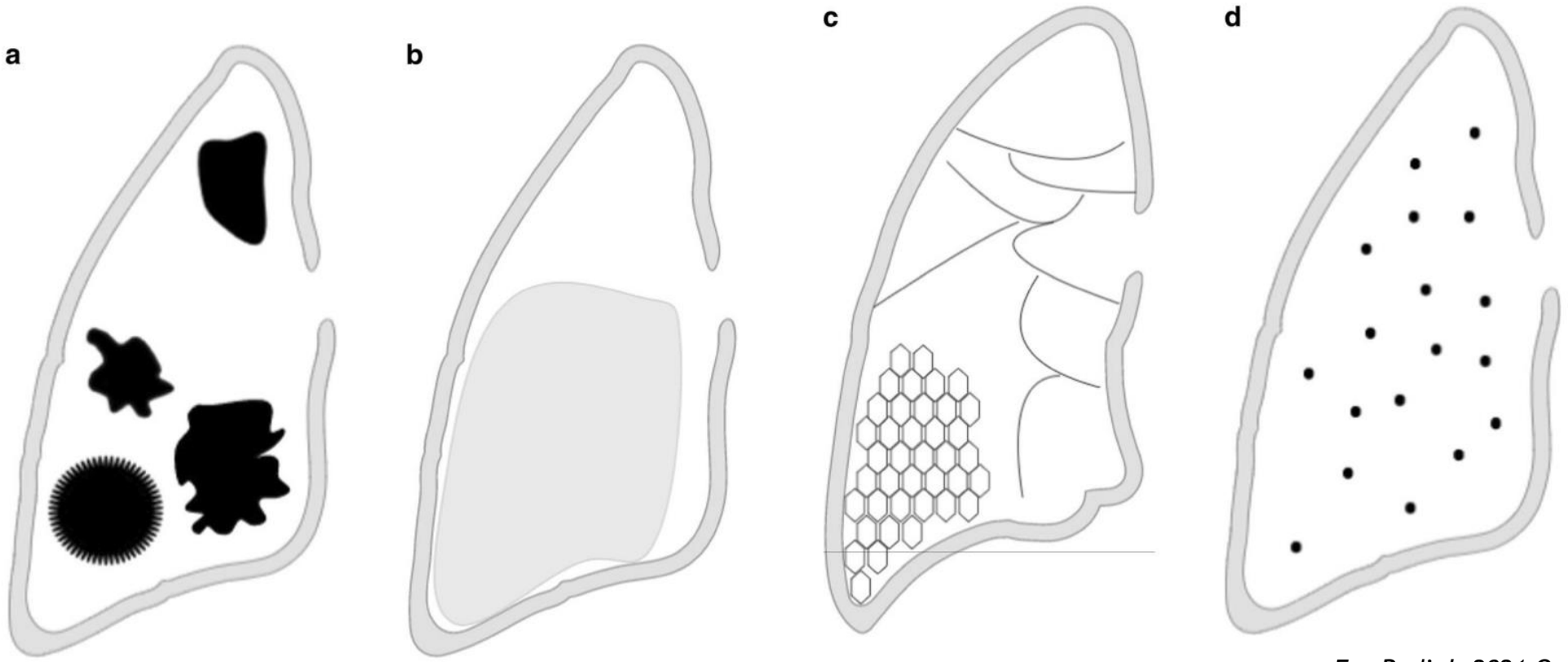
Clinical presentation

- Subacute, several weeks to months
- Symptoms
  - Dry cough
  - DOE
  - Fever
  - Influenza-like symptoms
  - Hemoptysis (rare)
- Infectious pneumonia do not have a response to antibiotics

Radiology of OP

- Pattern
  - Peripheral and multifocal GGO / consolidation, with or without air-bronchogram
  - Nodules (10-40%)
- Location
  - Unilateral / bilateral
  - Peribronchovascular
  - All lung zones (subpleural and lower lung zone distribution>)
- Others
  - Migratory opacities
  - Spontaneous regression
  - Reversed halo sign

Radiology of OP



Eur Radiol. 2021 Oct;31(10):7283-7294

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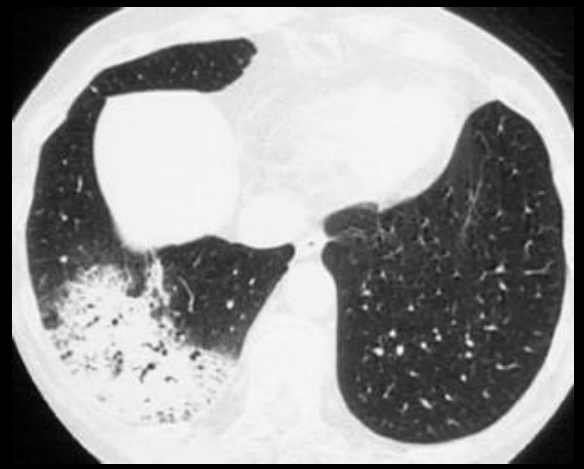
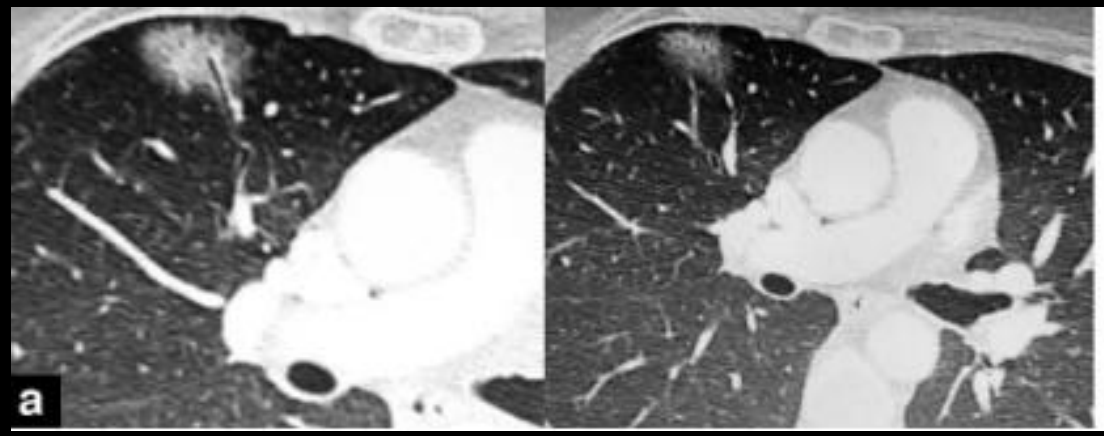
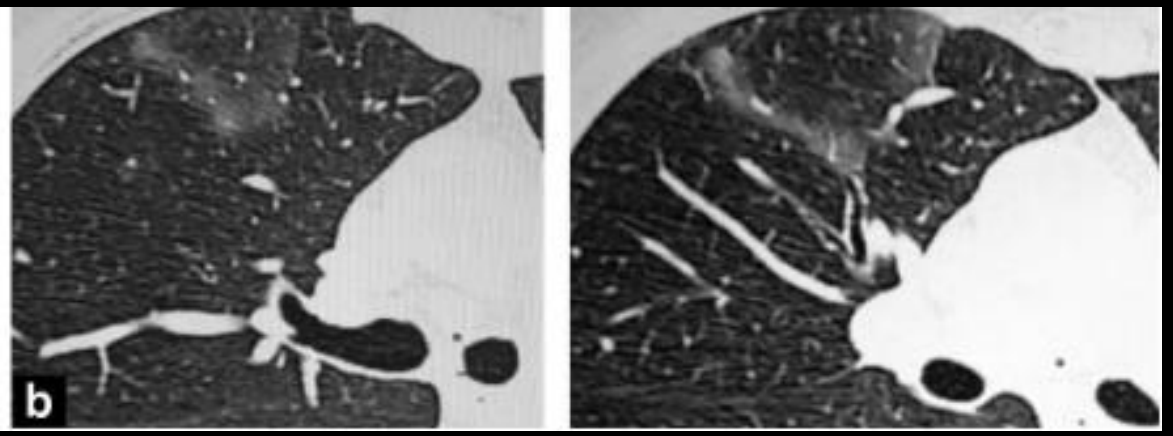


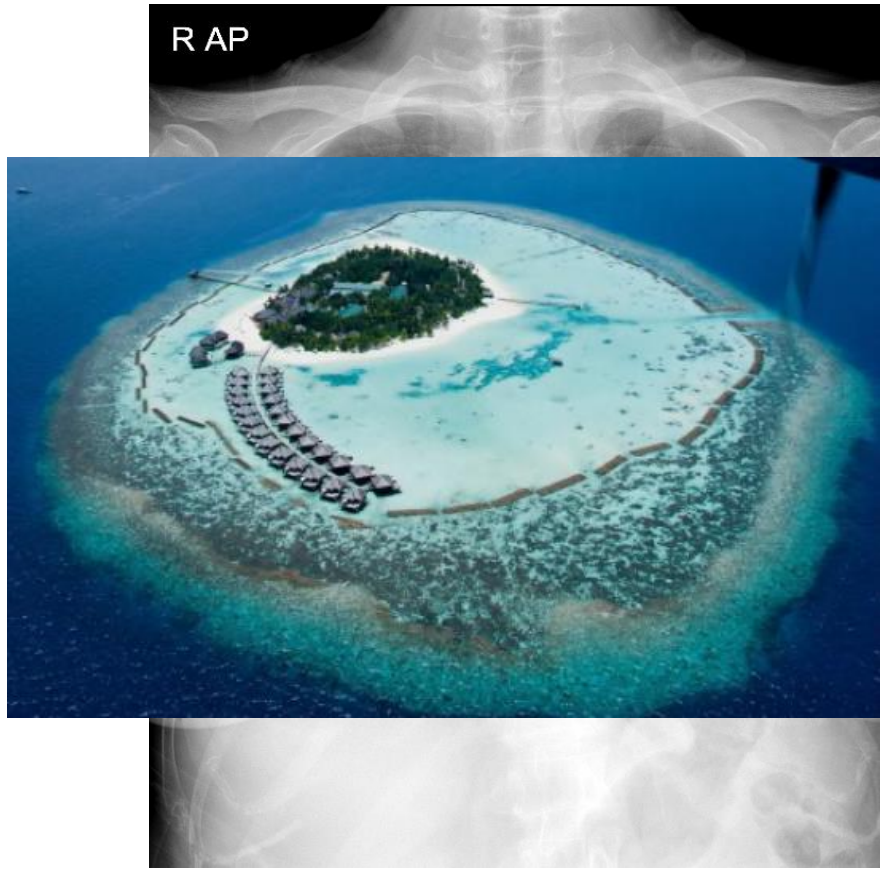




Diagnostic and Interventional Imaging (2014) 95, 771—777
Eur Radiol. 2011 Nov;21(11):2244-54

Reversed halo (atoll) sign

- 60, Female



Diagnostic accuracy of HRCT

CT Finding	UIP (%)	BOOP (%)	DIP (%)	AIP (%)	NIPF (%)
Areas of ground-glass attenuation	97	100	100	100	100
Air-space consolidation	23	83	13	80	41
Honeycombing	71	13	39	30	26
Intralobular reticular opacities	97	71	78	70	93
Nodules	11	63	44	25	19
Zonal predominance					
Upper	0	4	0	10	4
Lower	71	48	83	25	74
Random	29	48	17	65	22
Anatomic distribution					
Peripheral	89	71	43	10	85
Peribronchovascular	3	17	0	5	19
Dorsal	0	25	0	10	11
Random	11	13	57	80	11

Disease	Correct Diagnosis*
UIP ($n = 35$)	25.0 (71)
BOOP ($n = 24$)	19.0 (79)
DIP ($n = 23$)	14.5 (63)
AIP ($n = 20$)	13.0 (65)
NIPF ($n = 27$)	2.5 (9)
Total ($n = 129$)	74.0 (57)

Radiology. 1999 May;211(2):555-60

BAL: to rule out infection & eosinophilia

Disease	n
COP	28
Chronic eosinophilic pneumonia	2
Metastatic kidney adenocarcinoma	1
Primary large cell anaplastic lymphoma	1
Tuberculosis	1
Bronchoalveolar carcinoma	2
Total	35

Predefined criteria

BAL

lymphocytosis, more than 25%, plus
- foamy macrophage >20%
- neutrophils > 5%
- eosinophil 2 - 25%

TBLB

bud of granulation tissue within small airway / alveoli
preservation of alveolar architecture

Diagnostic test	Pts n	True +ve	True -ve	False +ve	False -ve	Specificity	Sensitivity	PPV	NPV	Accuracy
BAL	34	17	4	3	10	0.57	0.63	0.85	0.29	0.62
TBLB	32	16	6	1	9	0.86	0.64	0.94	0.40	0.69

Eur Respir J, 1996, 9, 2513-2516

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BAL: to rule out infection & eosinophilia

- French collaborative group
  - Histopathologic diagnosis
  - Clinical / radiological features
  - Absence of identifiable causes
  - Treated by corticosteroids
- 48 cases
  - Relapse (R group)
  - Absence of relapse (NR group)

	n	NR Group	% pred	n	R Group	% pred	p Value
BAL							
n		14			20		
Total cell count, cell/μl		417 ± 310			341 ± 235		NS
Macrophages, %		54 ± 25			53 ± 28		NS
Lymphocytes, %		32 ± 21			25 ± 18		NS
Neutrophils, %		9 ± 9			13 ± 16		NS
Eosinophils, %		5 ± 10			8 ± 13		NS
Pulmonary function tests							
FEV_1, L	15	1.8 ± 0.6	71 ± 22	17	1.8 ± 0.6	79 ± 18	NS
FVC, L	15	2.4 ± 0.7	75 ± 20	17	2.4 ± 0.7	81 ± 16	NS
FEV_1/FVC, %	15	74 ± 11	94 ± 14	17	75 ± 12	97 ± 14	NS
TLC, L	12	4.6 ± 1.3	85 ± 13	14	4.5 ± 1.4	84 ± 15	NS
RV, L	12	2.0 ± 0.8	101 ± 30	14	1.7 ± 0.7	96 ± 36	NS
T_{LCO}, % pred	9		74 ± 21	13		90 ± 25	NS
Resting Pa_{O2}, mm Hg	16	68 ± 11		15	72 ± 8		NS

Am J Respir Crit Care Med. 2000 Aug;162(2 Pt 1):571-7

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BAL cellular pattern in ILDs

a. Disorders associated with increased percentage of specific BAL cell types

Lymphocytic cellular pattern	Eosinophilic cellular pattern	Neutrophilic cellular pattern
>15% lymphocytes	>1% eosinophils	>3% neutrophils
Sarcoidosis	Eosinophilic pneumonias	Collagen vascular diseases
Nonspecific interstitial pneumonia (NSIP)	Drug-induced pneumonitis	Idiopathic pulmonary fibrosis
Hypersensitivity pneumonitis	Bone marrow transplant	Aspiration pneumonia
Drug-induced pneumonitis	Asthma, bronchitis	Infection: bacterial, fungal
Collagen vascular diseases	Churg-Strauss syndrome	Bronchitis
Radiation pneumonitis	Allergic bronchopulmonary aspergillosis	Asbestosis
Cryptogenic organizing pneumonia (COP)	Bacterial, fungal, helminthic, *Pneumocystis* infection	Acute respiratory distress syndrome (ARDS)
Lymphoproliferative disorders	Hodgkin's disease	Diffuse alveolar damage (DAD)

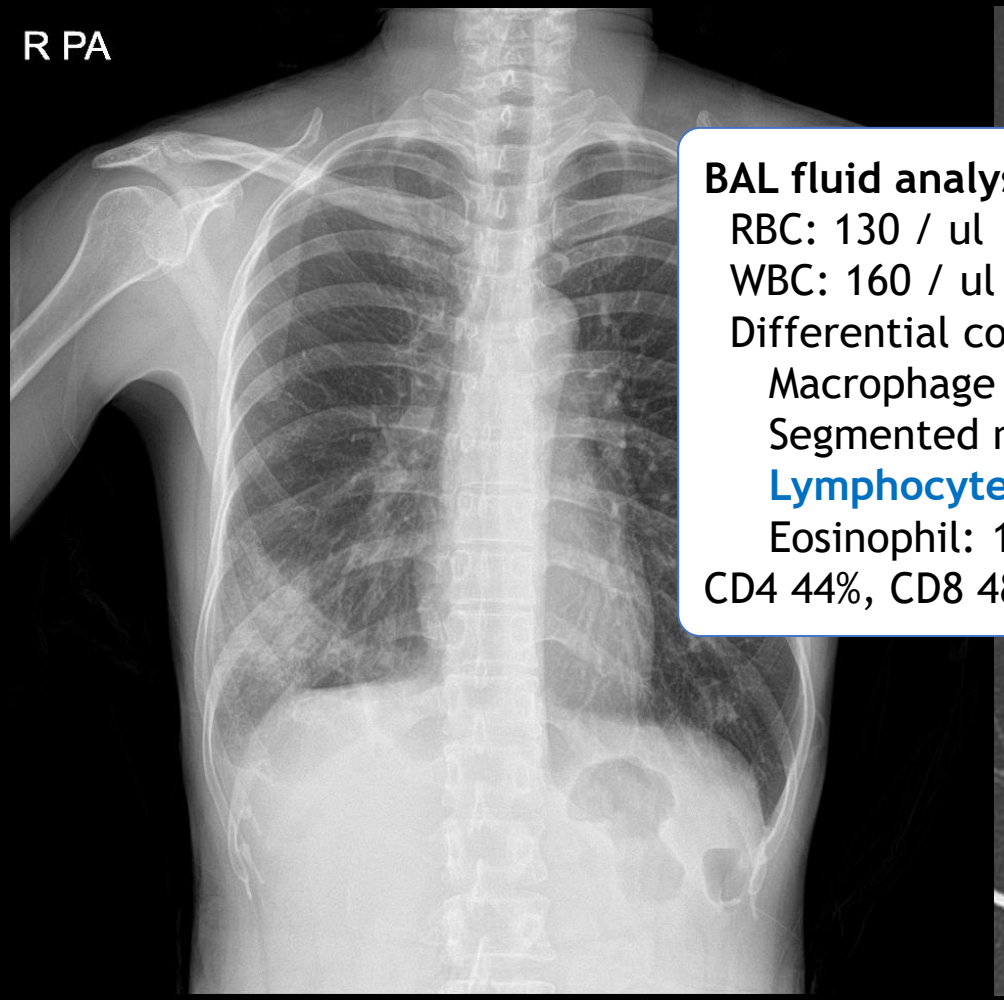
A lymphocyte differential count ⩾25% suggests granulomatous disease (sarcoidosis, hypersensitivity pneumonitis, or chronic beryllium disease), cellular nonspecific interstitial pneumonia, drug reaction, lymphoid interstitial pneumonia, cryptogenic organizing pneumonia, or lymphoma.

Am J Respir Crit Care Med 2012; 185, 9, 1004-14

47/Female

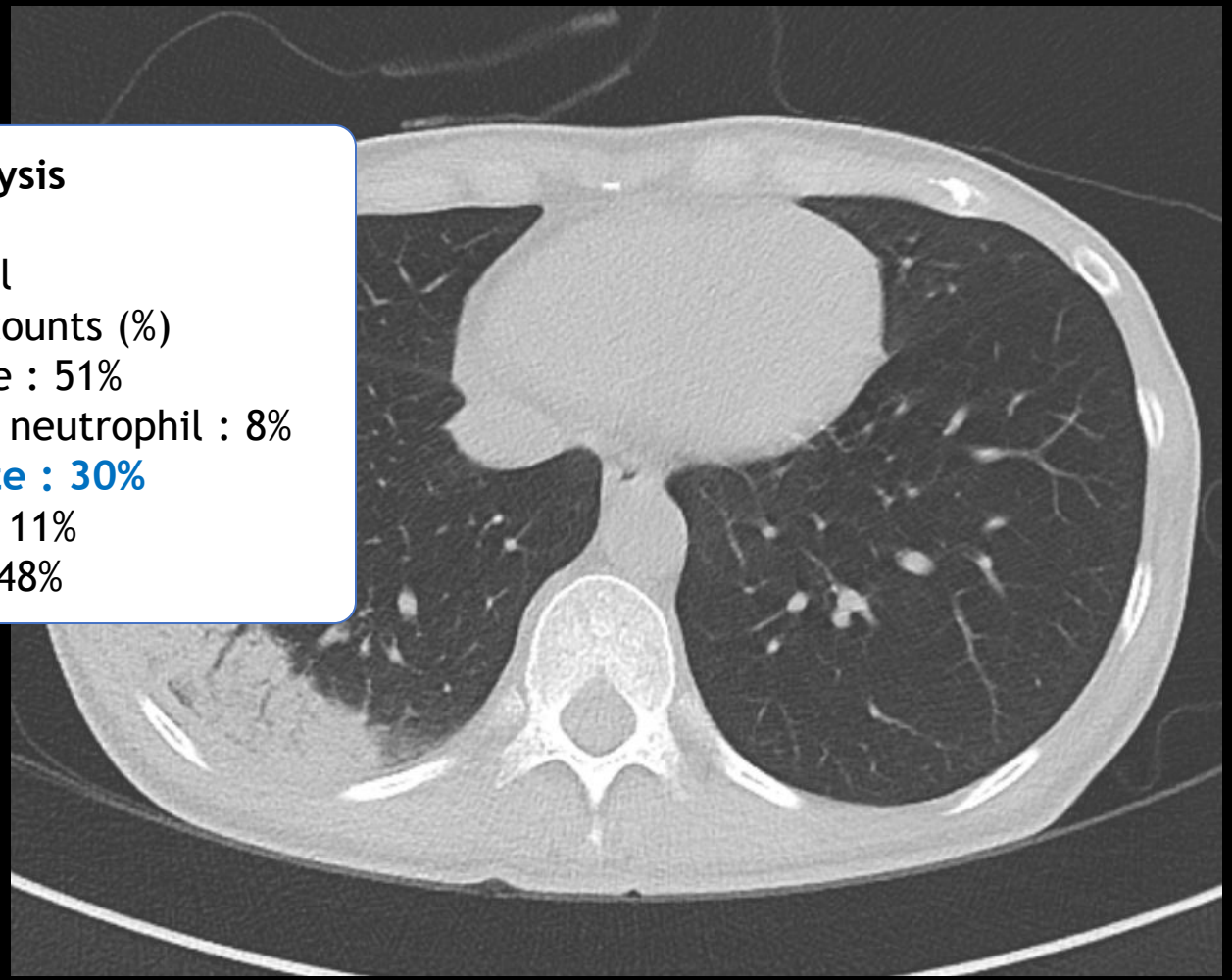
- 주소: 발열
- 현병력: 1달 전 부터 지속되는 마른 기침, 열감으로 연고지 병원 내원, COVID-19 PCR 시행, 음성이었고, 이후 기침은 호전되지 만 발열 지속 및 호흡곤란 발생, 체중감소를 주소로 COVID-19 배제 위해 감염내과 입원함.
- 체중감소 (+), -3kg/1달
- Initial laboratory tests
  - CBC: 8250 – 12.2 – 501K
  - CRP: 6.44
  - ESR: 103

47/Female



BAL fluid analysis
- RBC: 130 / ul
- WBC: 160 / ul
- Differential counts (%)
  - Macrophage : 51%
  - Segmented neutrophil : 8%
  - **Lymphocyte : 30%**
  - Eosinophil: 11%

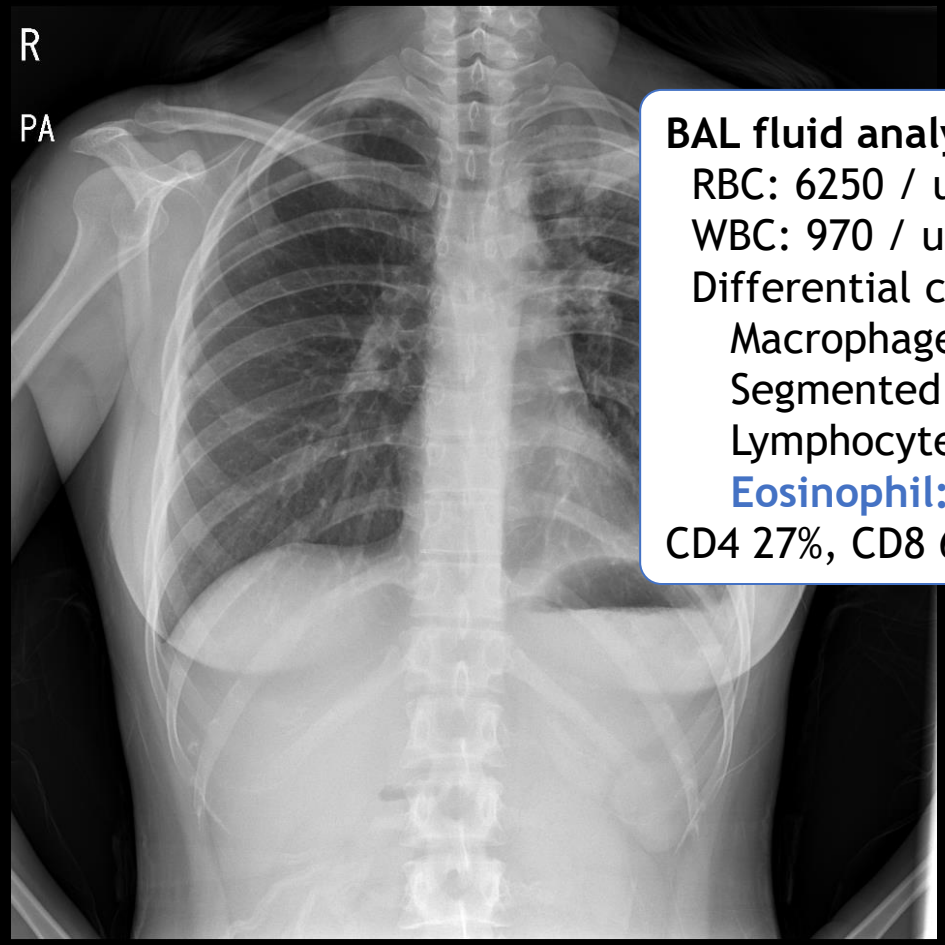
CD4 44%, CD8 48%



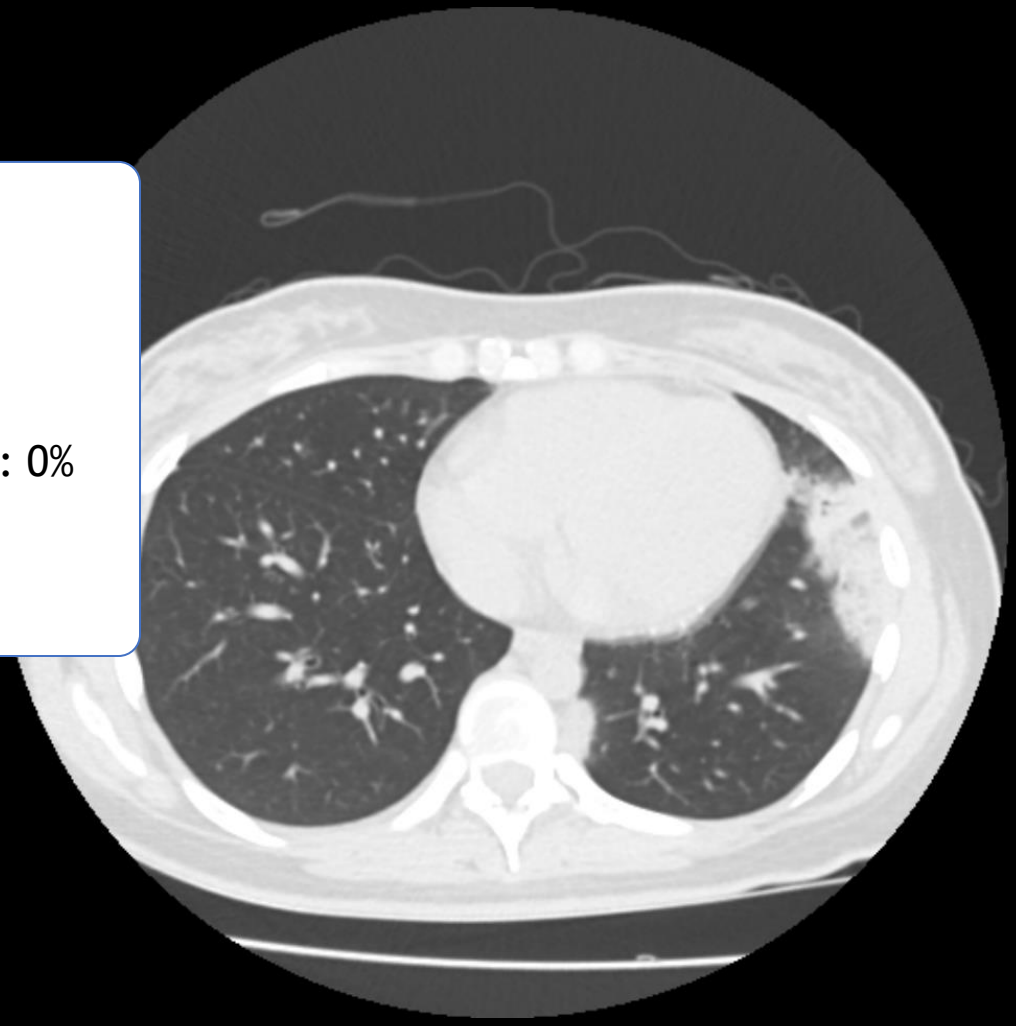
25/Female

- 주소: 호흡곤란
- 현병력: 1달 전 기침 발생하였고, 점차 악화 추세 및 mMRC grade 2 으로 폐렴에 준하여 연고지병원에서 항생제 치료 받았으나 증상 지속되어 방문.
- Initial laboratory tests
  - CBC: 5420 (eos. 9.1%) – 13.3 – 345K
  - CRP: 8.1

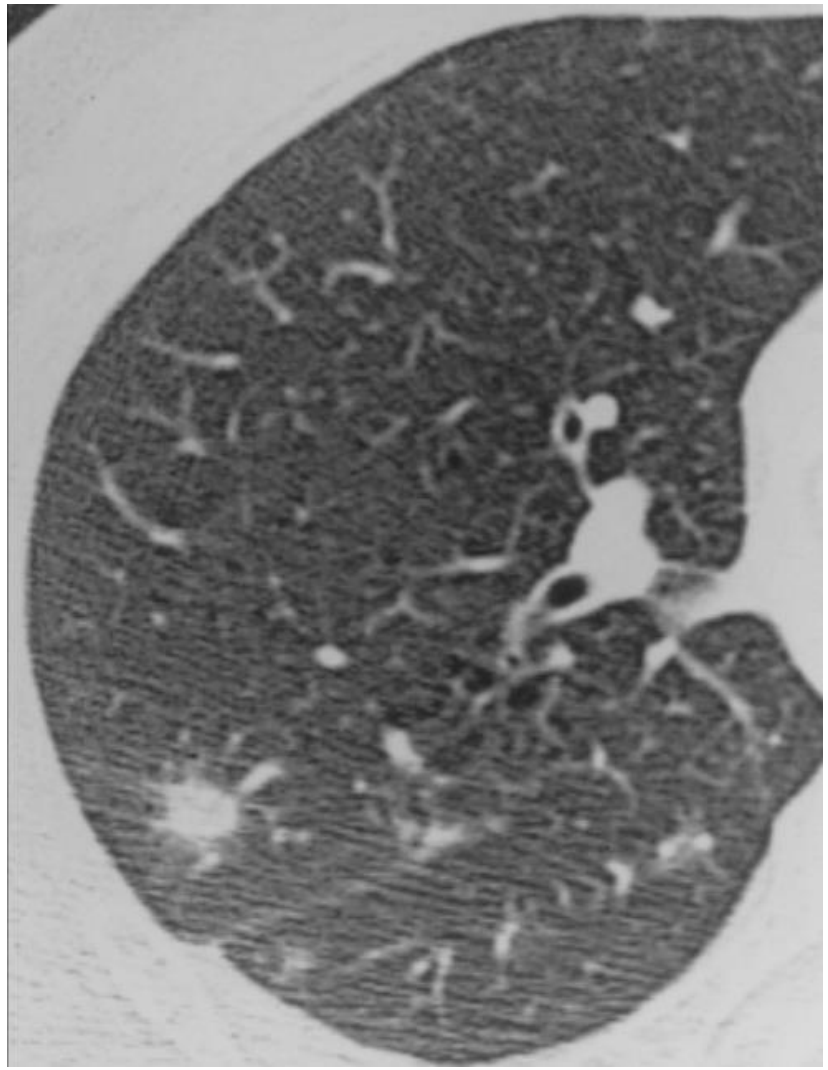
25/Female

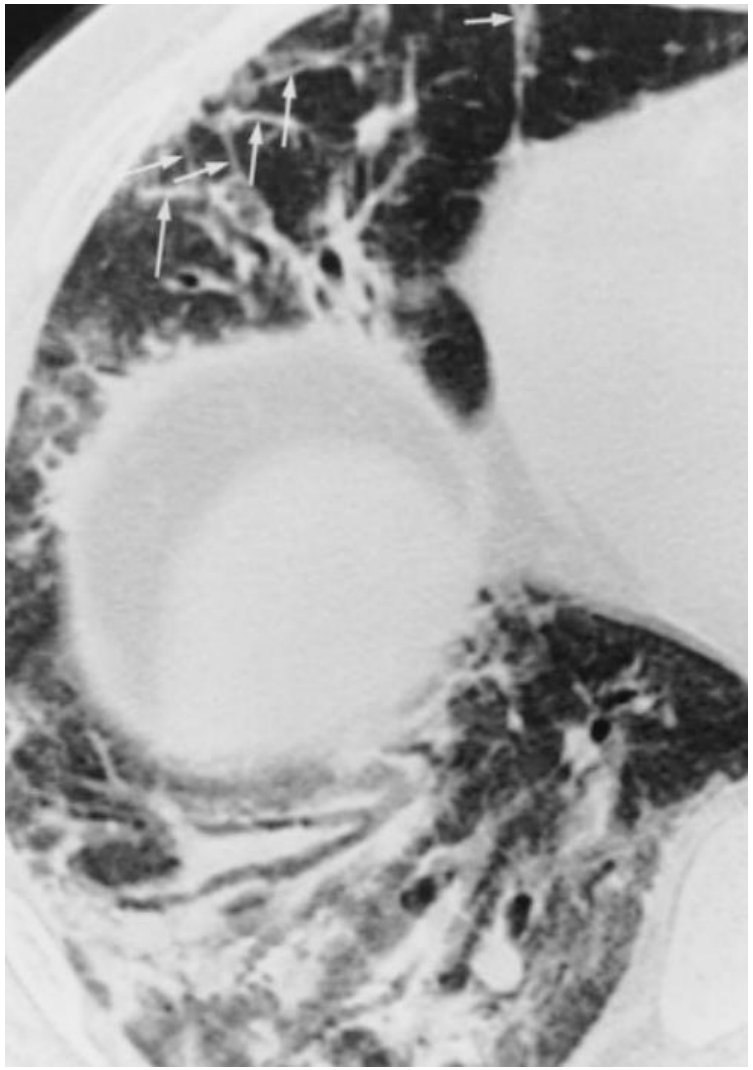


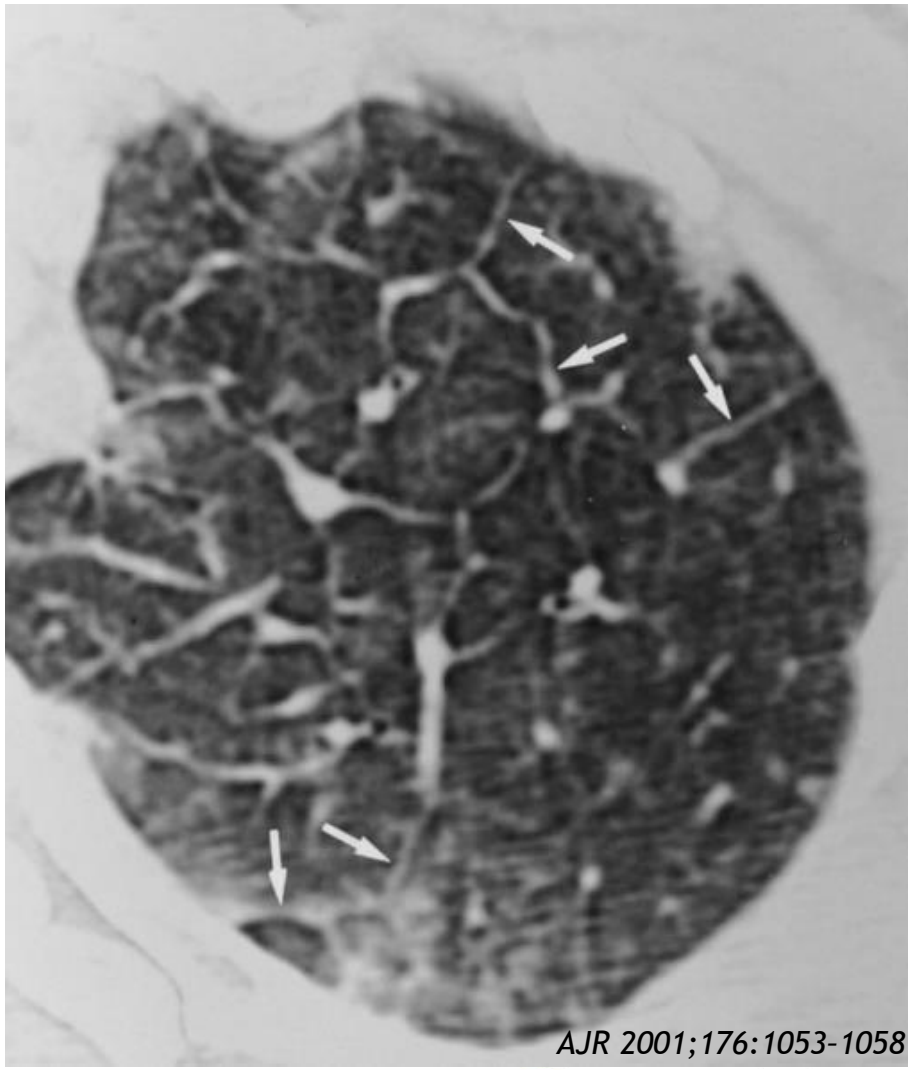
BAL fluid analysis
RBC: 6250 / ul
WBC: 970 / ul
Differential counts (%)
Macrophage : 38%
Segmented neutrophil : 0%
Lymphocyte : 20%
Eosinophil: 42%
CD4 27%, CD8 64%



COP vs. CEP



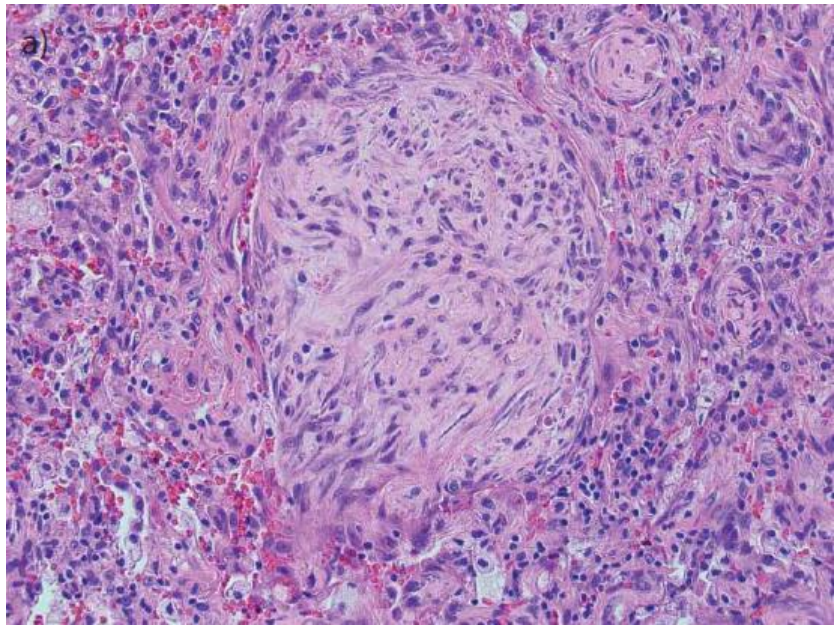


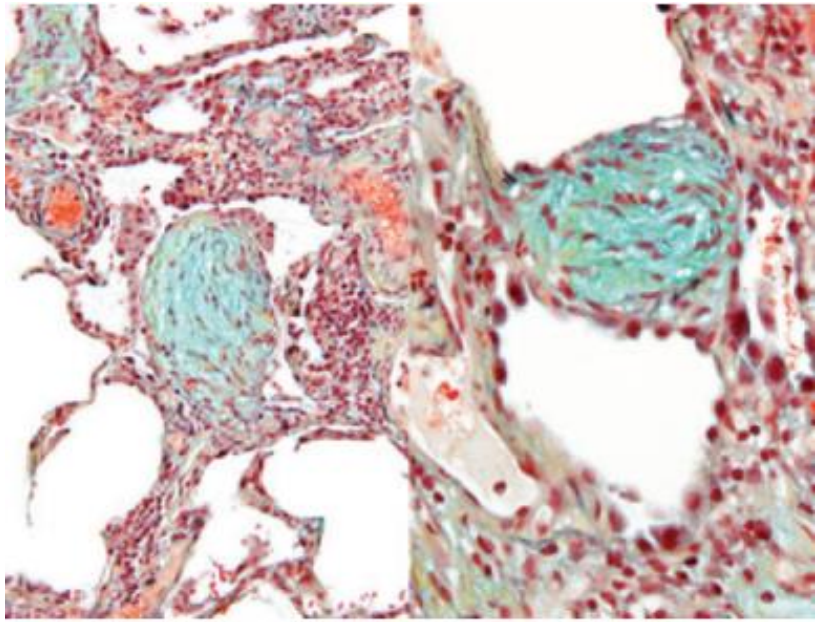


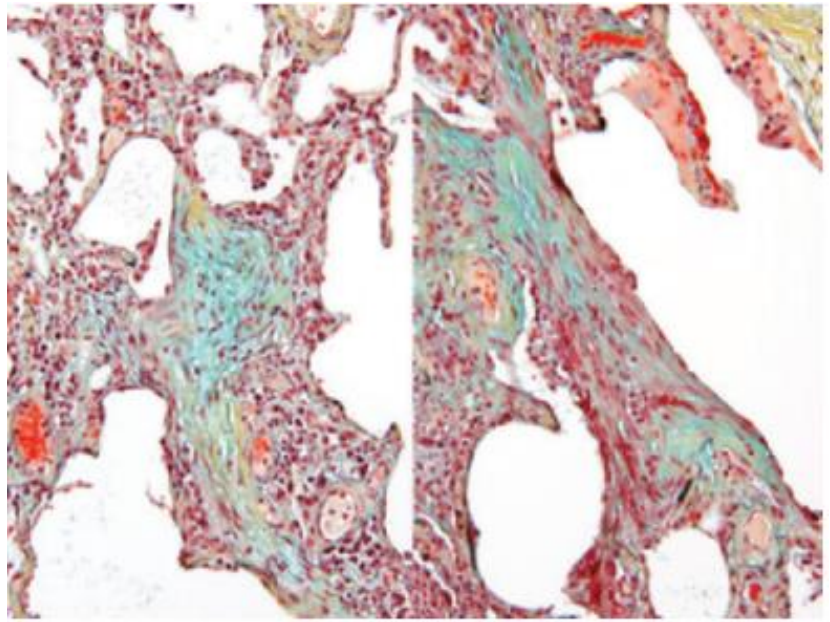
AJR 2001;176:1053-1058

Histopathology of OP

- Proliferation of granulation tissue buds
- Preserved underlying lung architecture







Eur Respir Rev 2021; 30: 210094
N Engl J Med 2022;386:1058-69
RadioGraphics 2013; 33:1951–1975

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Histopathology of OP

- Can be managed without histopathological confirmation
- Biopsy is recommended,
  - Clinical follow-up is not consistent with the diagnosis of COP
  - Absence of typical waxing/waning image
  - Need to be ruled out of vasculitis
- Biopsy modalities
  - Core needle biopsy
  - TBLB
  - TBLC
  - SLBx

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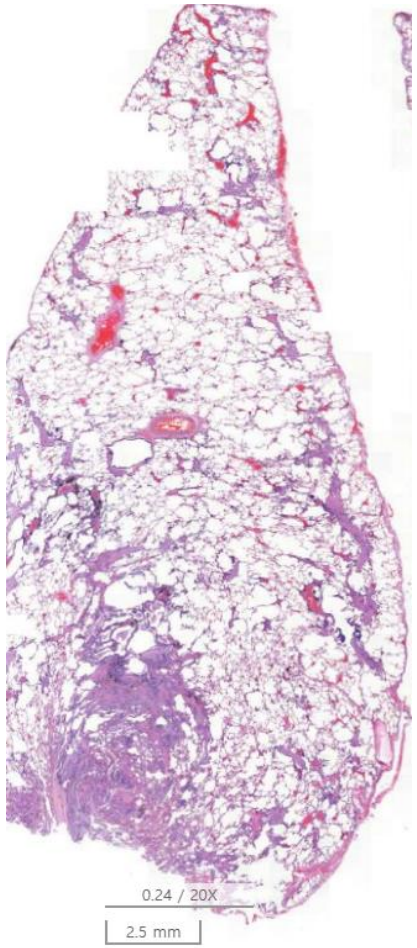
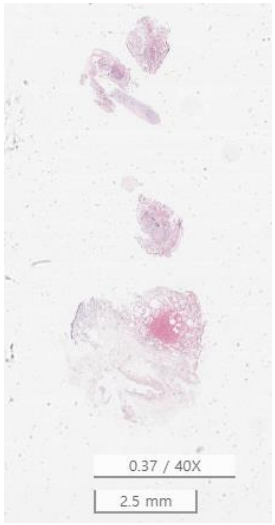
Tissue acquisition

VATS



TBLC



TBLB

PCNBx

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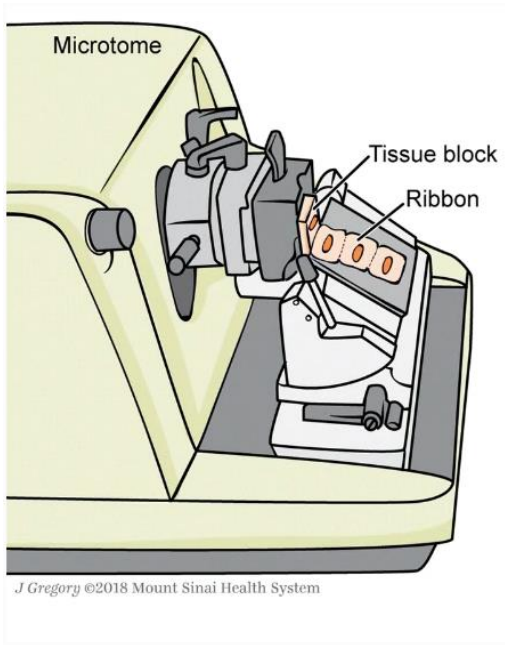
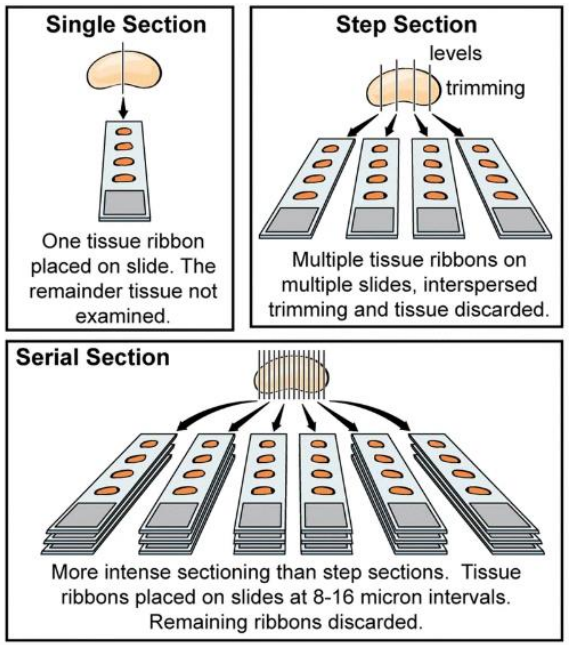
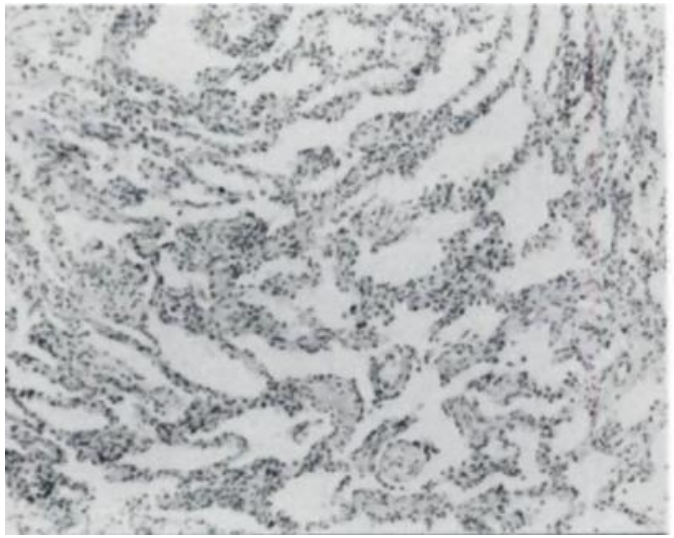
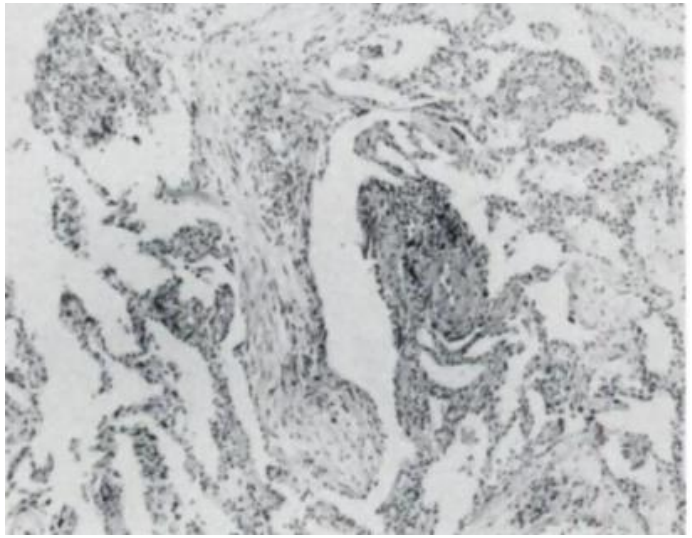
Tissue confirmation

- The best modalities ? Ongoing debate









World Journal of Surgery volume 44, pages1892–1897 (2020)
Chest 1991; 100: 959-62

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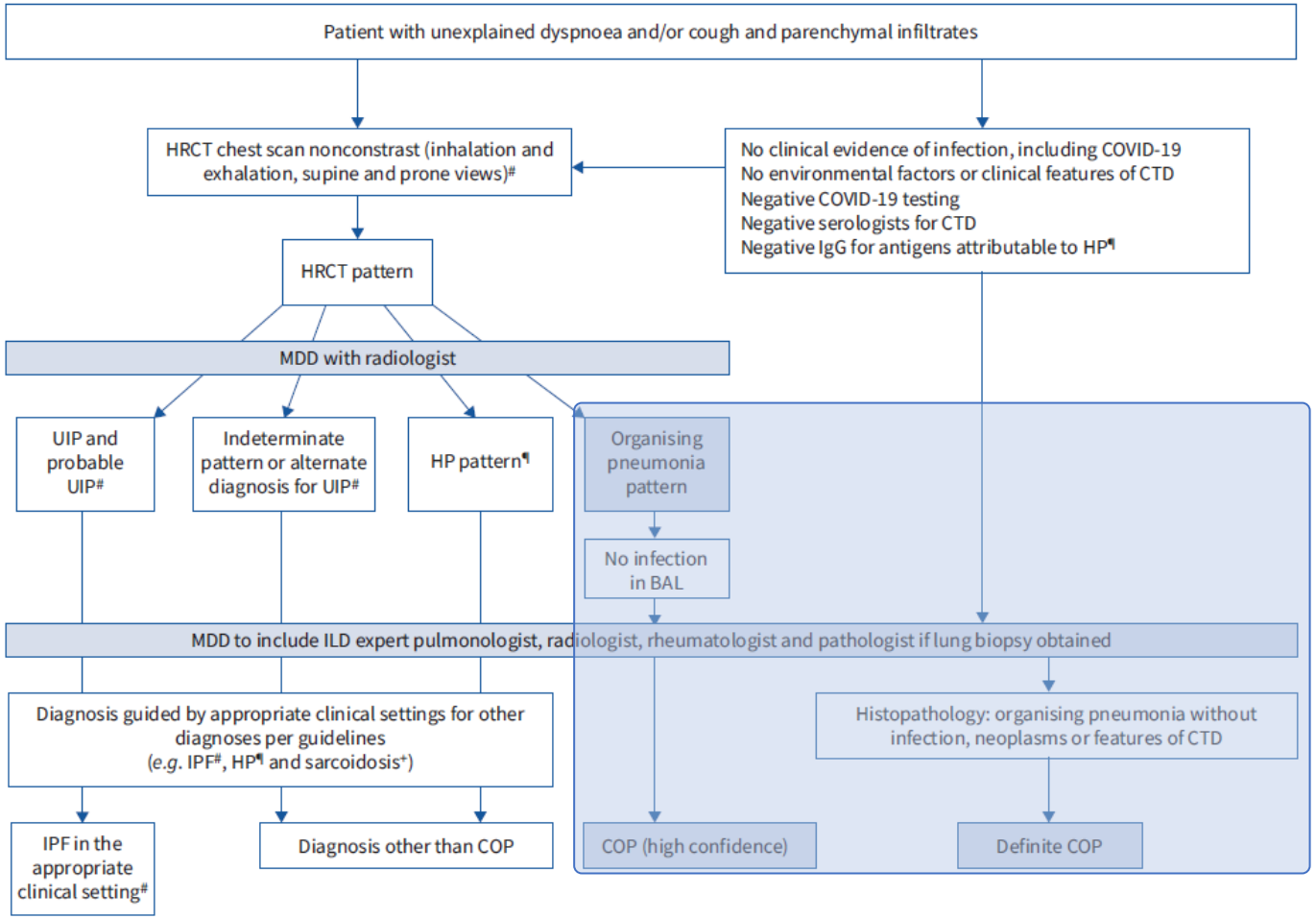
Diagnostic algorithm



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Treatment

권고사항

- 특발성기질화폐렴(COP) 치료는 스테로이드를 권장한다(근거수준: 전문가 의견, 권고수준: 강함).
- 특발성기질화폐렴(COP) 환자에서 스테로이드 단독 치료가 효과가 없는 경우 azathioprine이나 cyclophosphamide, 그리고 cyclosporin과 같은 면역억제제와 병합치료를 하지 않을 것을 고려한다(근거수준: 전문가 의견, 권고수준: 약함).

간질성폐질환 임상진료지침 , 2018

Treatment

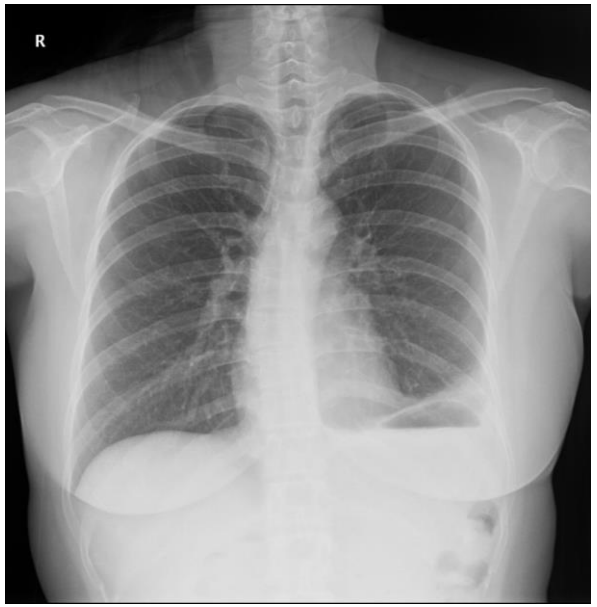
- Spontaneous improvement (<10%) vs. empirical treatment
  - Systemic glucocorticoid, 0.5 – 1mg / kg (max. 60mg) up to 6 -12 mos.

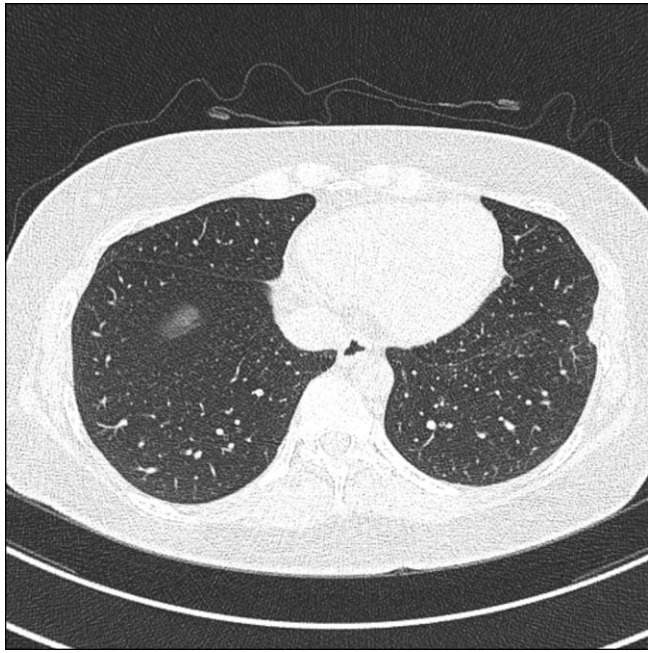
- Cytotoxic agents
  - Azathioprine
  - Cyclophosphamide

- Mycophenolate mofetil

41 / Female

- 수술전 평가로 시행한 흉부 엑스레이 이상소견으로 방문
- 호흡기증상: 무

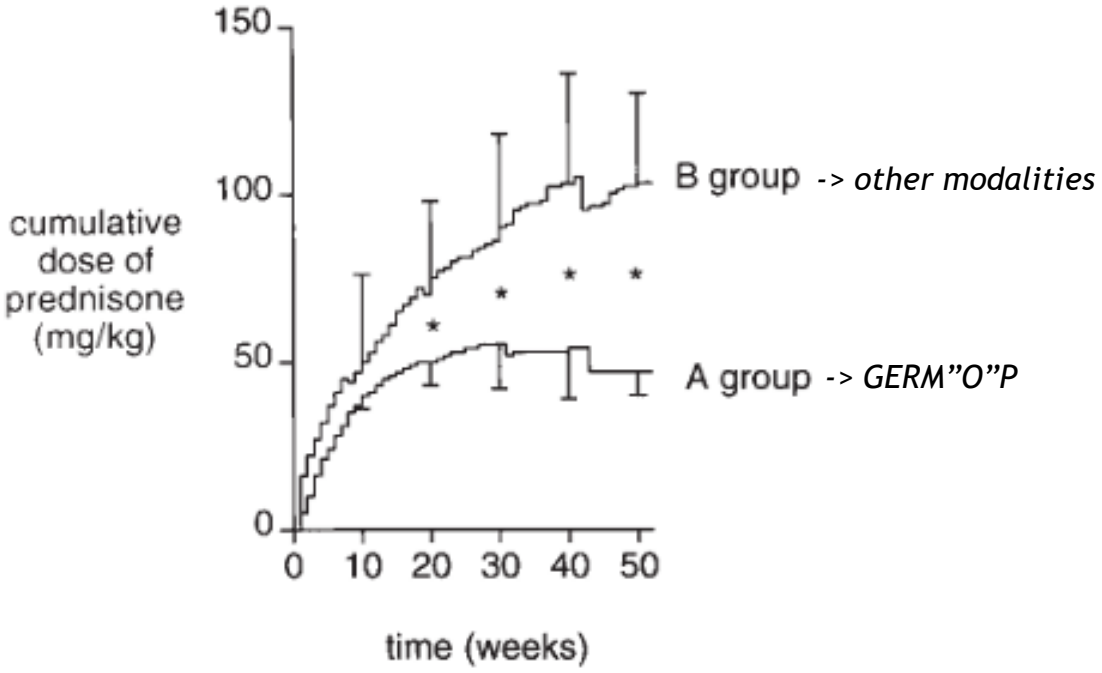




Treatment

- GERM”O”P protocol
  - 0 – 4 wk : 0.75mg/kg prednisolone
  - 4 – 8 wk : 0.5mg/kg
  - 8 – 12wk : 20mg
  - 12 – 18wk: 10mg
  - 18 – 24wk: 5mg

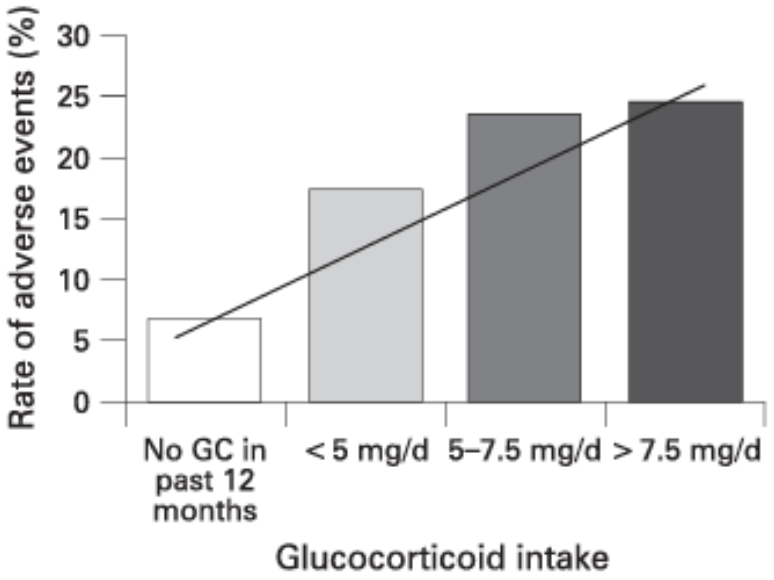
Ex. 60kg
45mg -> 30mg -> 20mg -> 10mg -> 5mg -> off



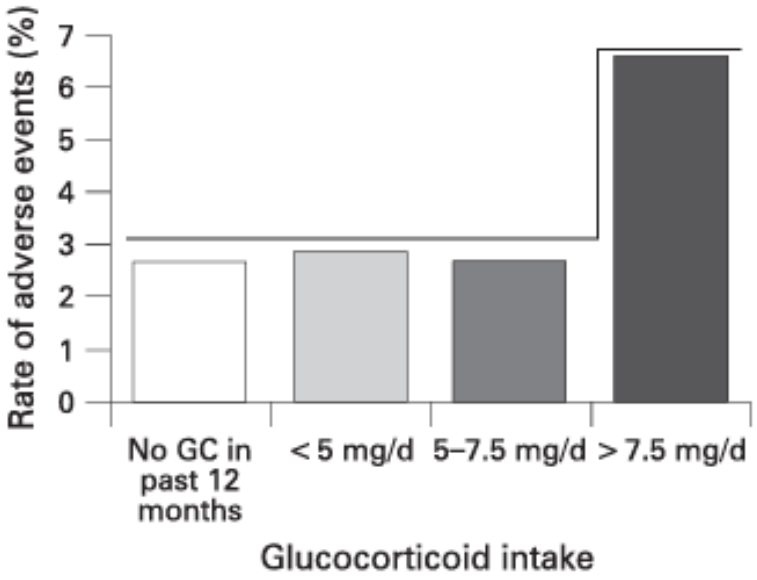
Am J Respir Crit Care Med. 2000 Aug;162(2 Pt 1):571-7

Treatment related side effects

- Linear & threshold pattern



Cushingoid, ecchymosis, leg edema, mycosis, sleep disturbance



<5: cataract
5 – 7.5: epistaxis, weight gain
7<: depression, glaucoma, high BP

Ann Rheum Dis 2009;68:1119-1124

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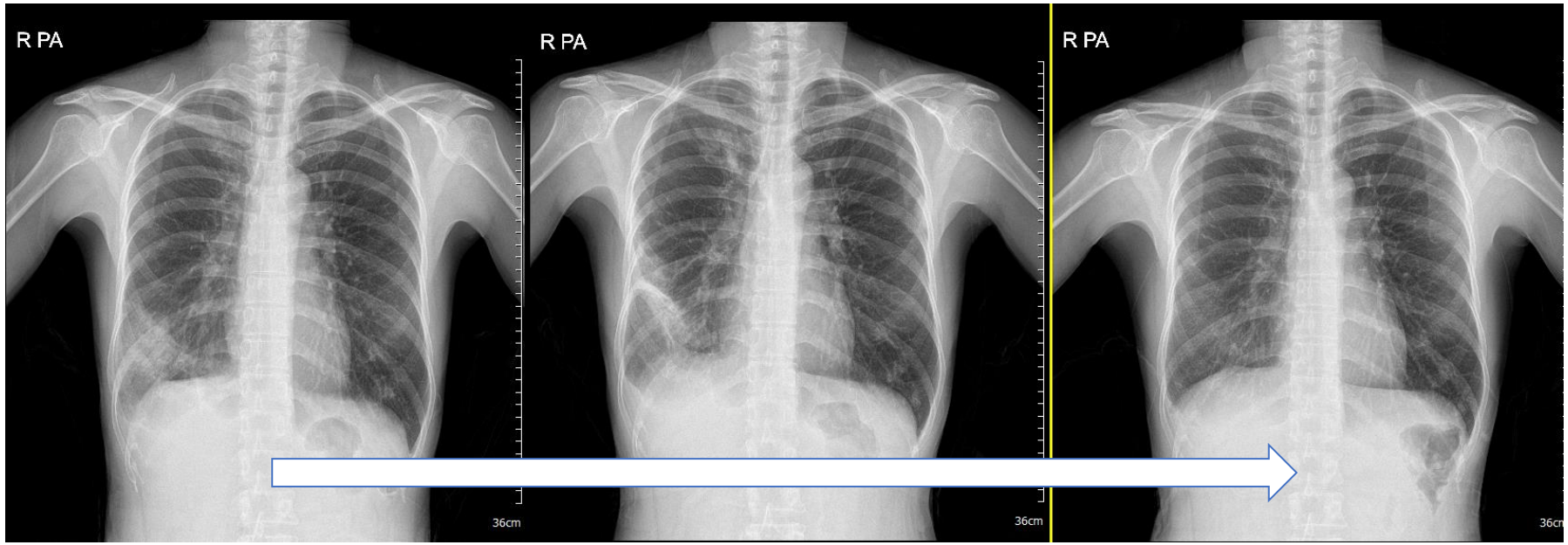
Prognosis

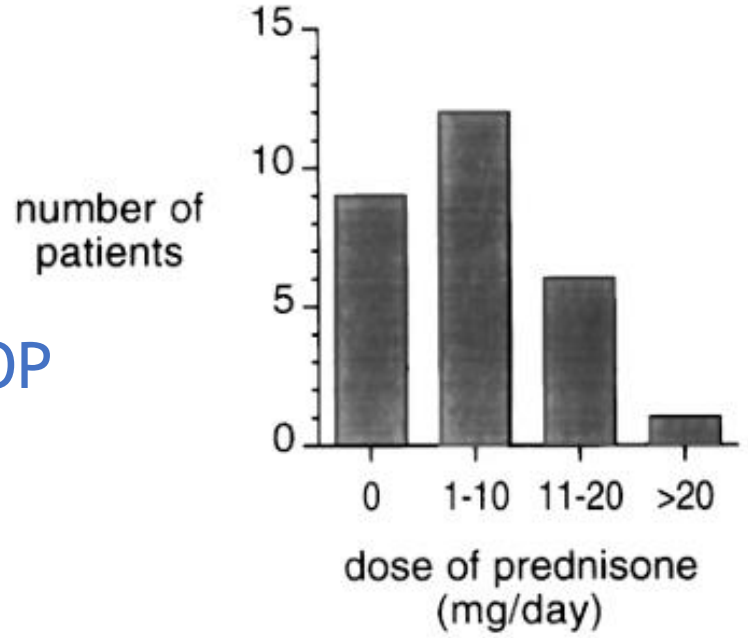
- Generally excellent
  - Clinical improvement within 2-3 days



  - 5yr survival rate > 90%

Prognosis

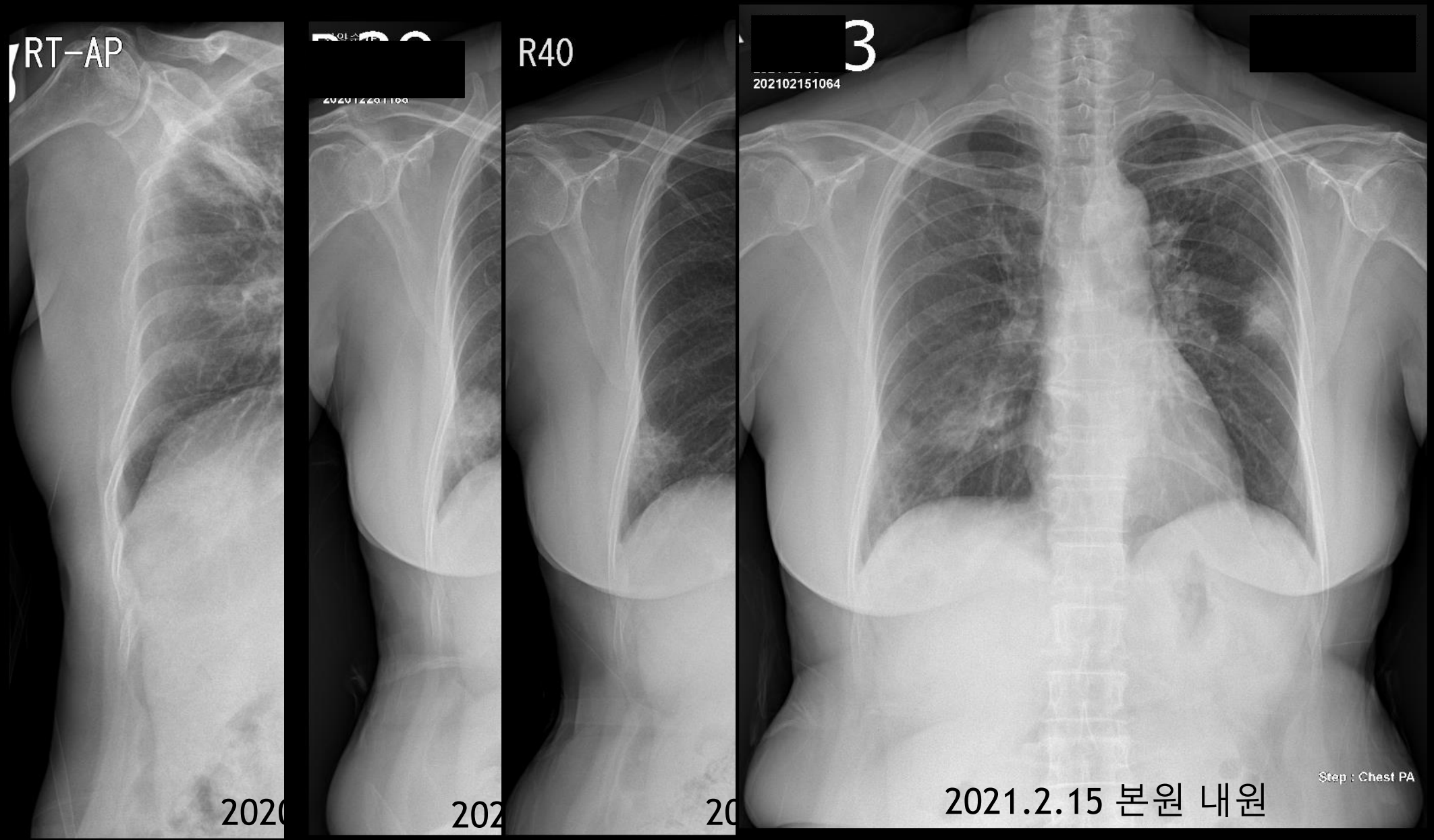
- Relapse is relatively frequent : 13 – 58%
  - Delayed initiation of treatment (> 2months after diagnosis)
  - Rapid tapering or early discontinuation
  - Severe disease
  - Traction bronchiectasis / fibrosis
- **Unusual cases of relapse**
  - while on medium doses of steroids
  - >18 months following the initial onset of COP
- Treatment
  - Resuming or increasing steroids
- Morbidity / mortality –



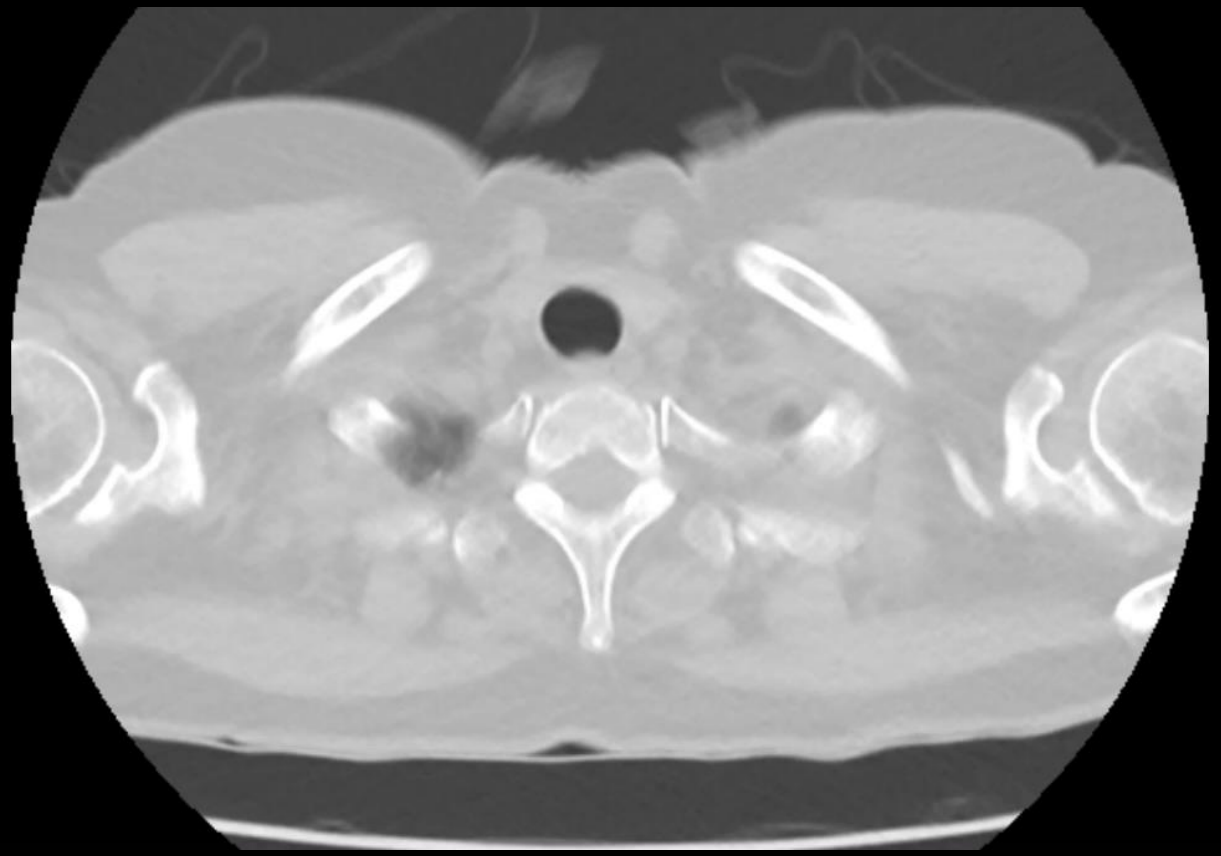
Am J Respir Crit Care Med. 2000 Aug;162(2 Pt 1):571-7

65 / Female

- 주소: 호흡곤란
- 현병력: 3개월 전 호흡곤란으로 연고지 병원 입원, 호산구성 폐렴으로 판단하고 2개월 간 스테로이드 투약 후 흡입스테로이드 유지 중으로, 이후 폐렴 재발하여 2차 의견 청취 위해 방문


RT-AP
R40
3
202102151064
Step : Chest PA
2021.2.15 본원 내원

65 / Female

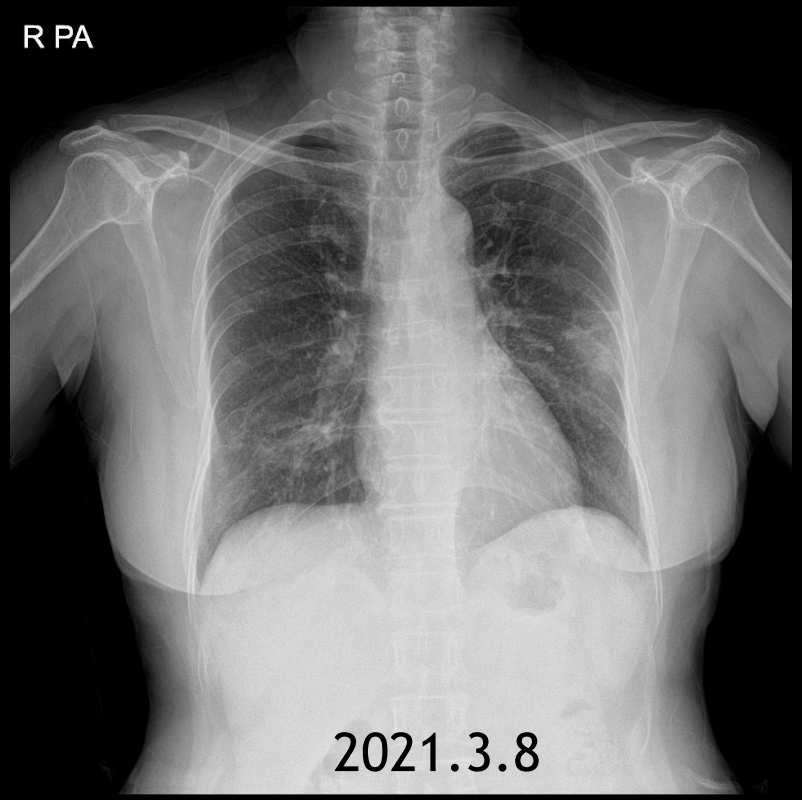


BAL

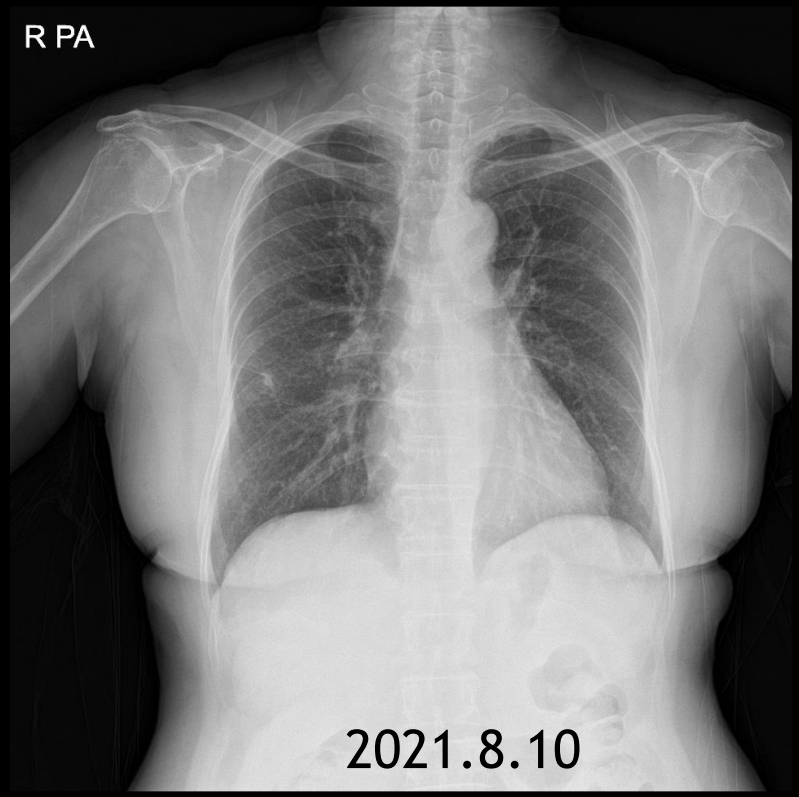
RBC (/μℓ)	340
WBC (/μℓ)	140
Differential count (%) Total count:	
Macrophage	79
Mesothelial cell	0
Segmented neutrophil	2
Lymphocyte	19
Eosinophil	0
Basophil	0
Tumor cell	0

65 / Female

2021.2.15



2021.3.8

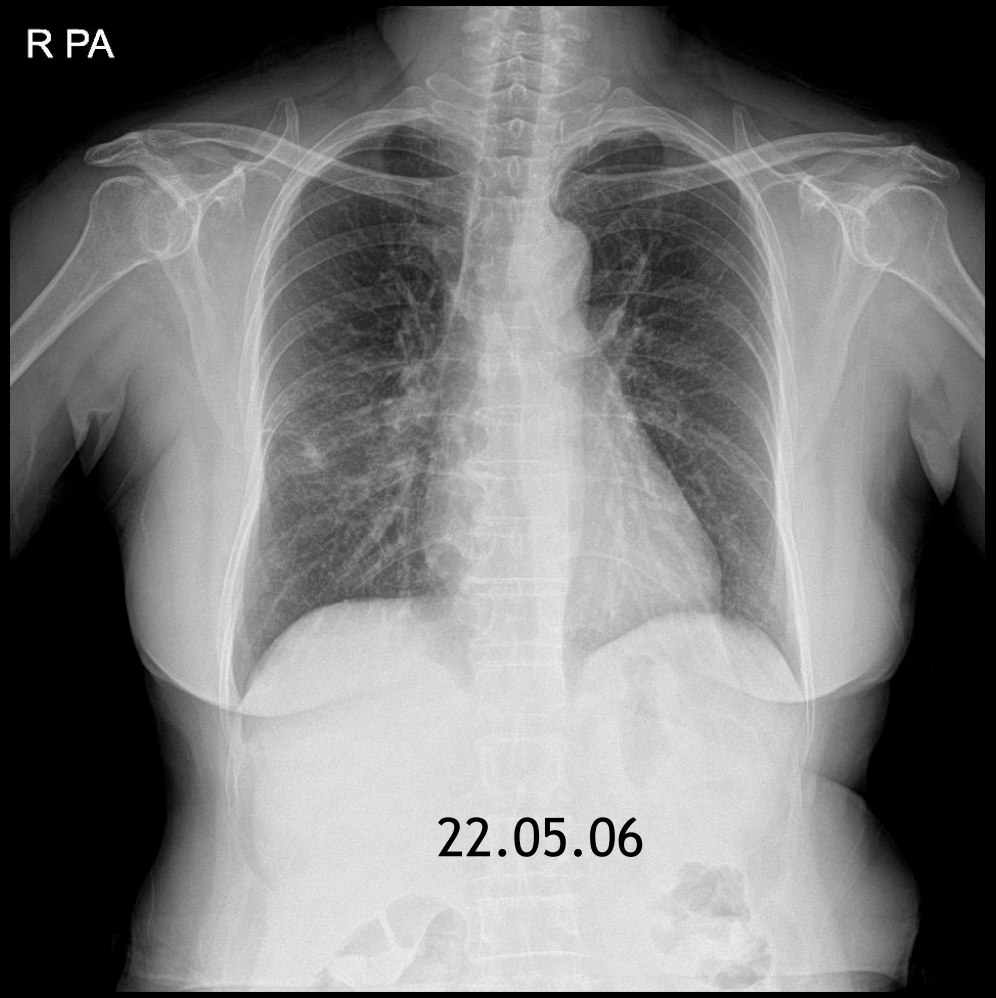


2021.8.10

65 / Female

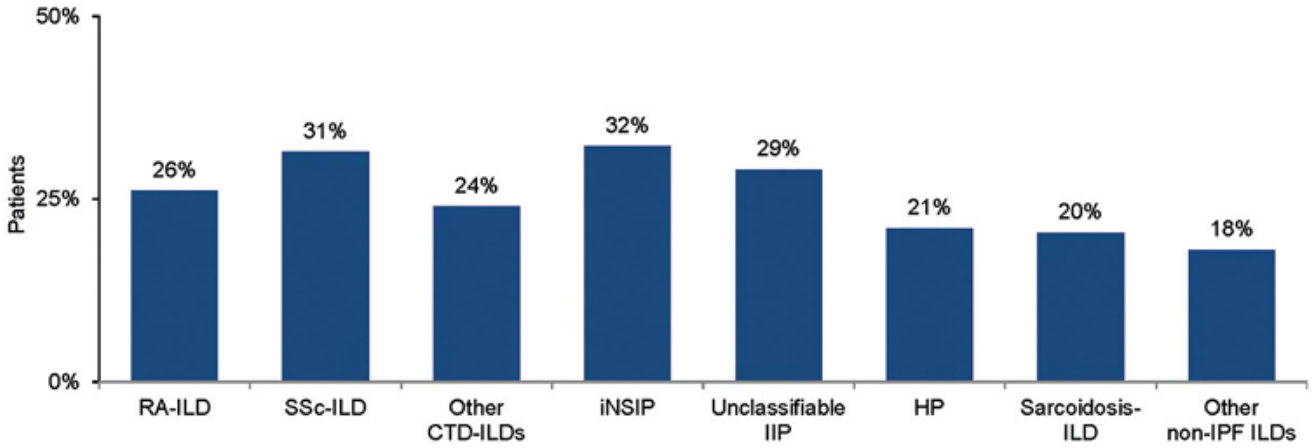
ANA, cytoplasmic, 1:160
ANCA, MPO/PrIII, negative <0.1

Relapse of COP
→ prednisolone



Disease behavior

Reversible and self-limited	RB-ILD
Reversible with risk of progression	cNSIP, some fNSIP, DIP, COP
Stable with residual disease	Some fNSIP
Progressive, irreversible, with potential stabilization	Some fNSIP
Progressive, irreversible despite therapy	IPF, some fNSIP



Am J Respir Crit Care Med 2013, 88, 733-748
Curr Med Res Opin 2019 Nov;35(11):2015-2024

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Serial CT findings – Samsung Medical Center

Parameter	Initial CT		Follow-Up CT	
	No. (%) of Patients	Average Extent (%)	No. (%) of Patients	Average Extent (%)
Pattern				
Consolidation	17 (77)	27	1 (5)	20
Ground-glass opacification	19 (86)	33	16 (72)	21
Nodule	7 (32)	10	1 (5)	10
Reticulation	4 (18)	10	11 (50)	12
Honeycombing	0	0	2 (9)	8
Distribution				
Lower lung predominance	12 (55)	NA	10 (45)	NA
Subpleural	9 (41)	NA	8 (36)	NA
Peribronchovascular	5 (23)	NA	4 (18)	NA

- Complete disappear: 6
- Decreased in extent: 15
- Not changed: 1

AJR 2010; 195:916 – 92 2

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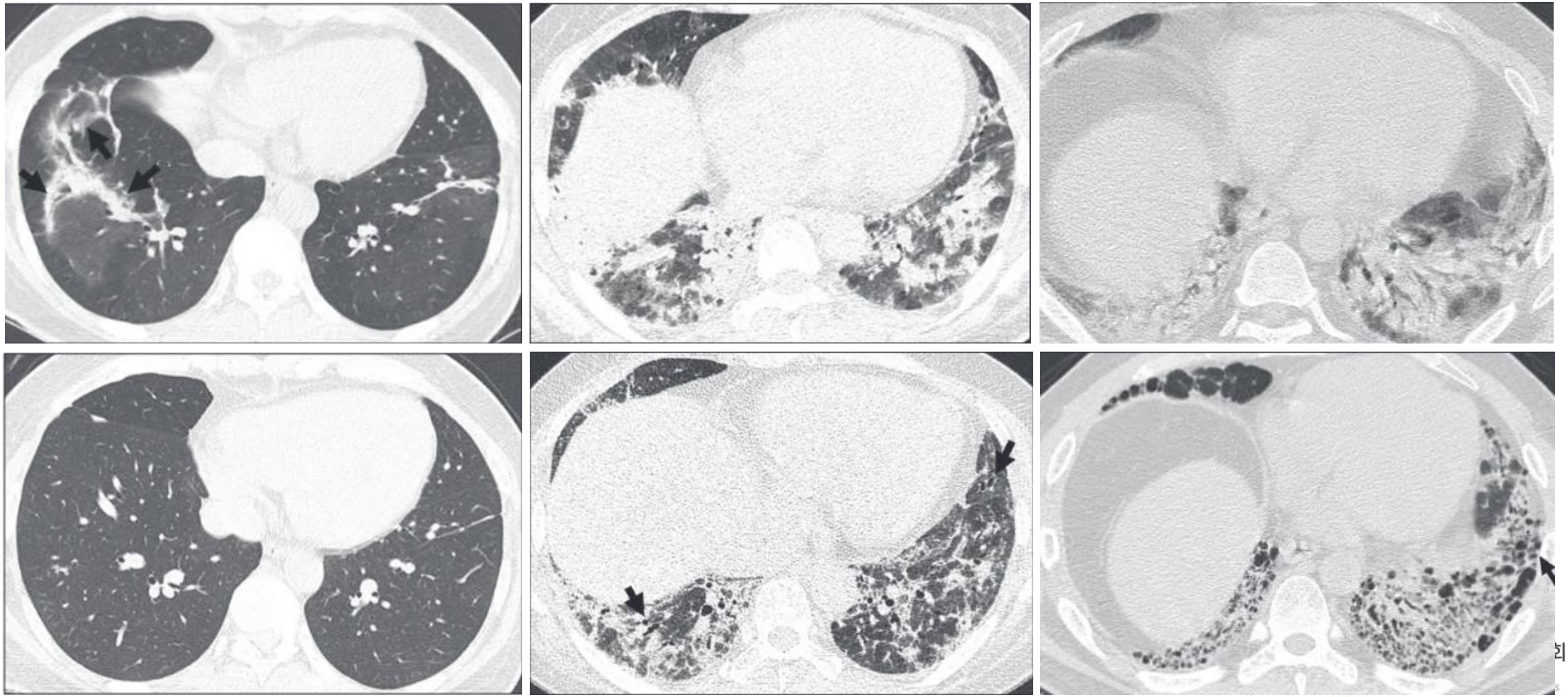
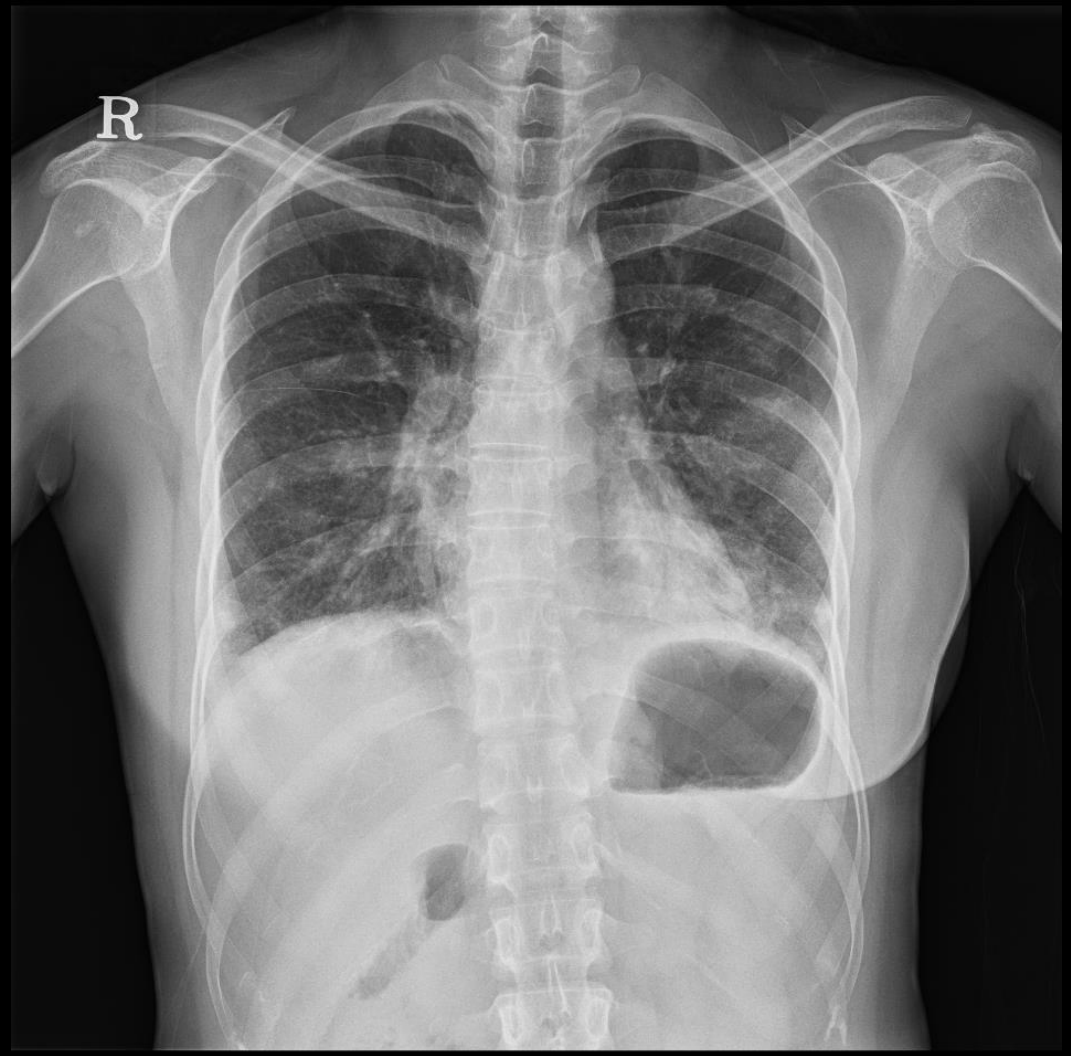
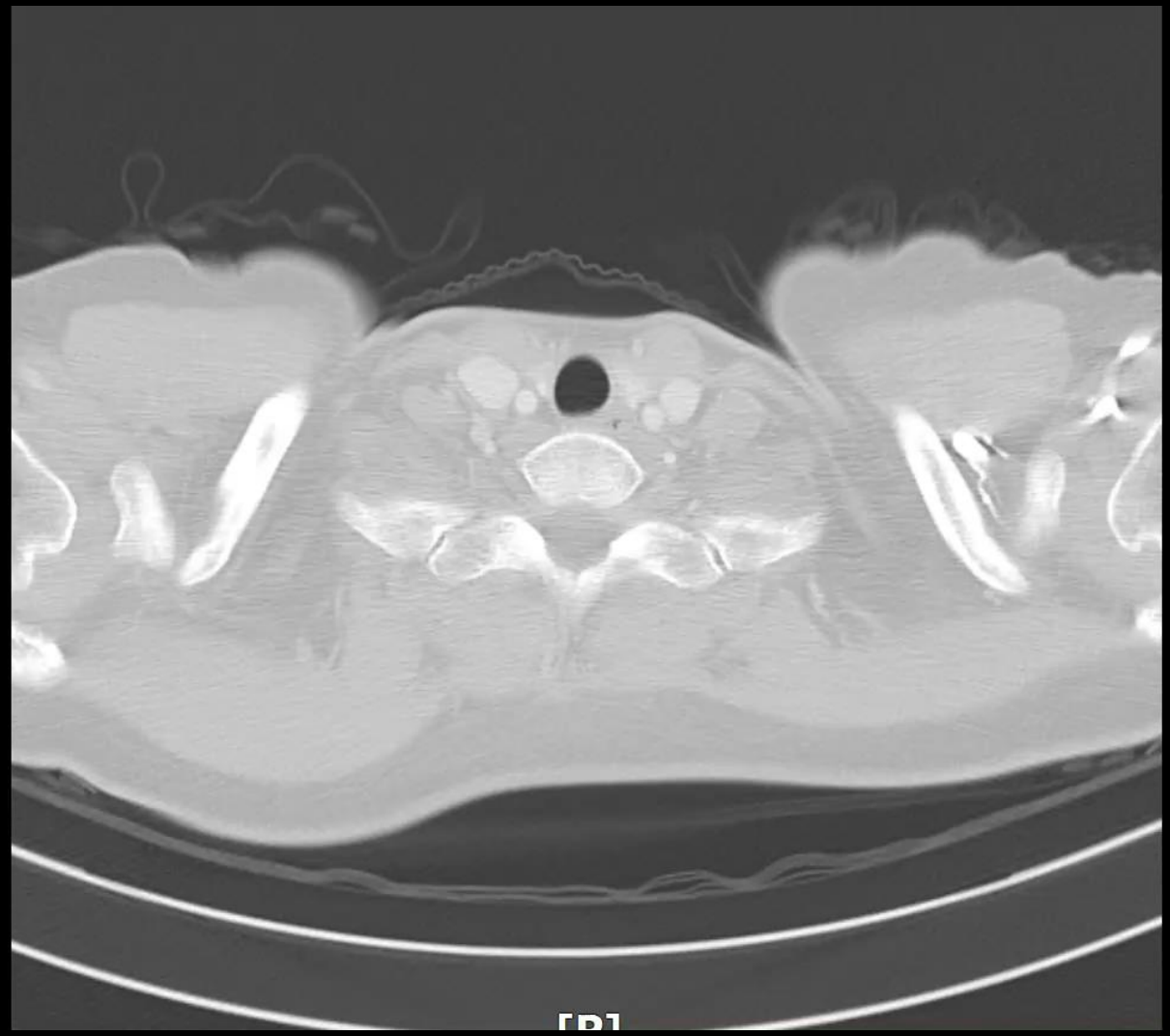
Serial CT findings – Samsung Medical Center

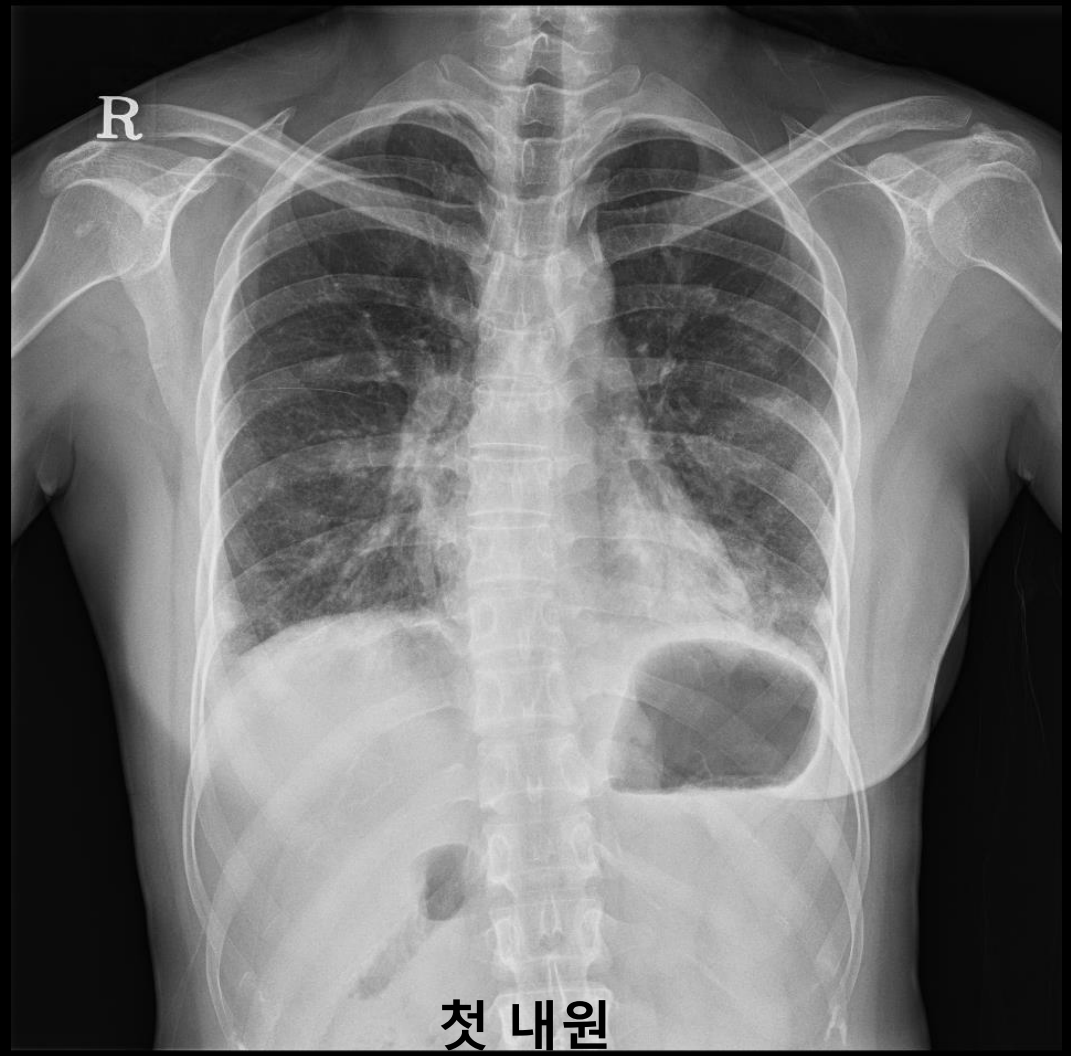


43/Female

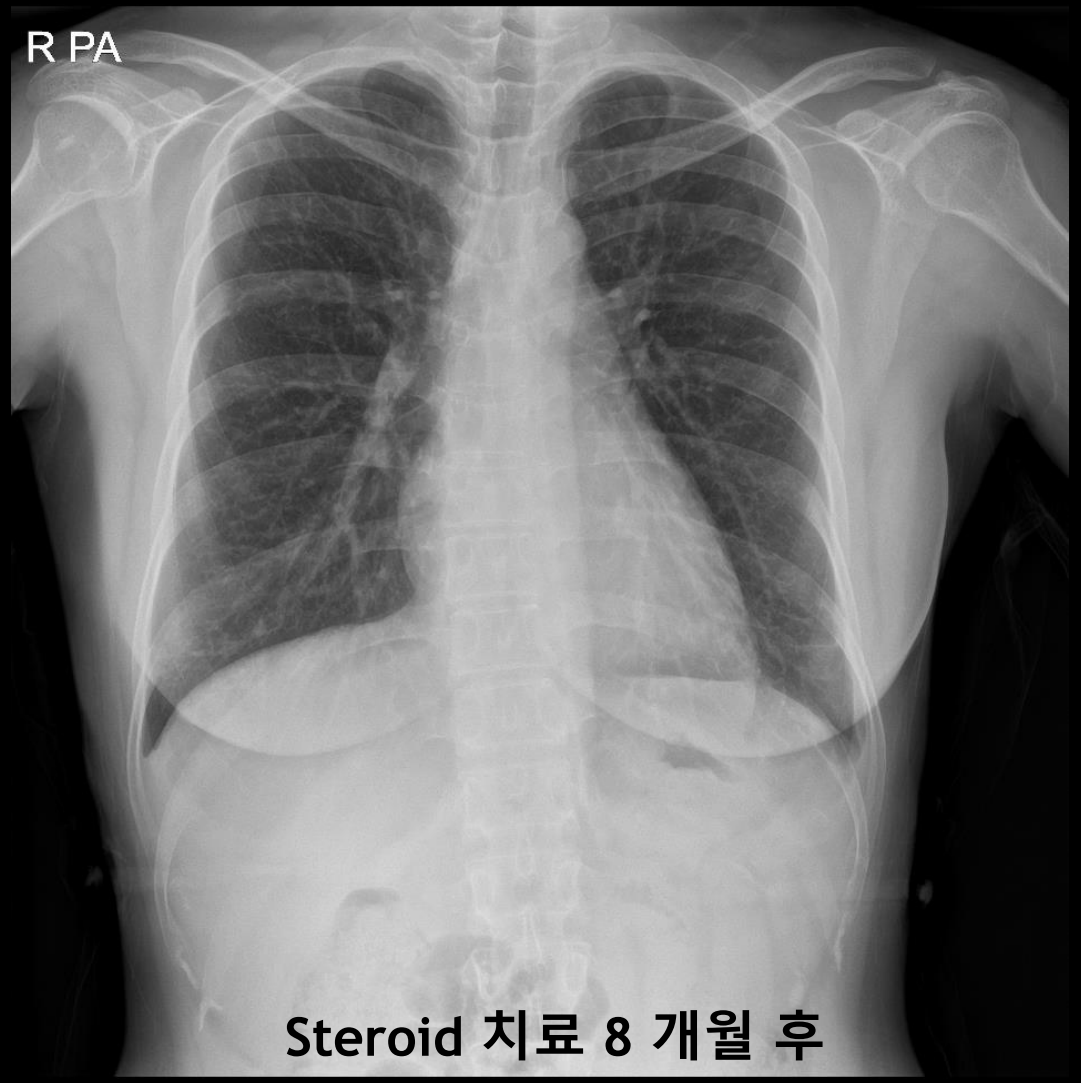
- 2달간 기침, 가래, mMRC grade 1 호흡곤란으로 연고지병원 내원, BAL & TBLB 시행 후 내원함.
- 외부자료
  - BAL – lymphocytes 93%
  - Lung, "left lower lobe", transbronchial lung biopsy :
    Non-neoplastic lung parenchyma
    with 1) chronic inflammation
    2) interstitial fibrosis
    3) fibroblastic plugs
    4) no granuloma and no fungal organism
    consistent with Organizing pneumonia


R





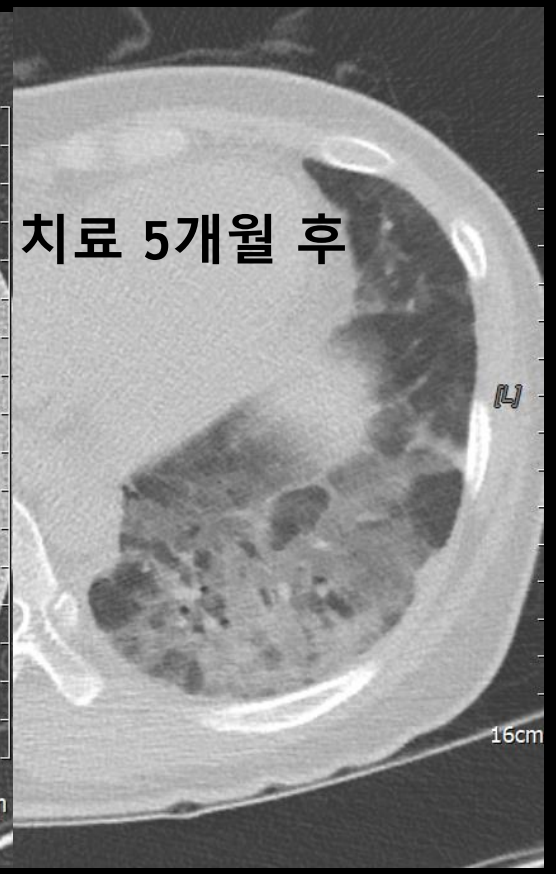
첫 내원



Steroid 치료 8 개월 후

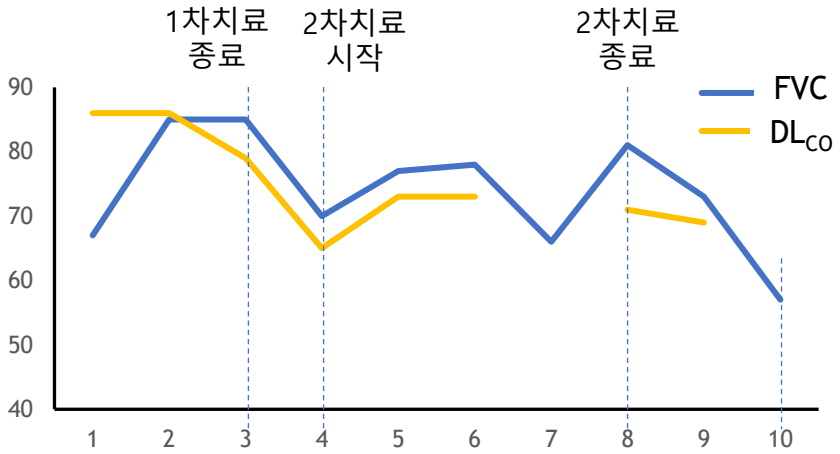
1st relapse

치료 중단 5 개월 후



43/Female

- 재발에 대해 1년간 스테로이드 투약 종료 후 관절통, mechanic's hands 발생
  - RF / Anti – ccp: negative
  - FANA Titer (1:40): Positive, Multiple nuclear dots



→ 류마티스내과: DM specific skin, muscle involvement 는 뚜렷하지 않아 undifferentiated 로 추이 관찰하며 workup 여부 결정

Secondary op vs. COP

Variable	OP	COP	Secondary OP
Chest radiograph			
Consolidation	50 (82.0)	33 (82.5)	17 (81.0)
Bilateral	35 (68.6)	24 (72.7)	11 (61.1)
Diffuse reticular	7 (11.5)	4 (10.0)	3 (14.3)
Masslike lesion	5 (8.2)	4 (10.0)	1 (4.8)
Pleural effusion	7 (11.5)	3 (7.5)	4 (19.0)
Cavitation	1 (1.6)	1 (2.5)	0 (0)
Migratory lesions	7 (11.5)	7 (17.5)	0 (0)
CT scan			
Consolidation	49 (80.3)	31 (77.5)	18 (85.7)
Bilateral	36 (73.5)	25 (80.6)	11 (61.1)
Diffuse reticular	6 (9.8)	4 (10)	2 (9.5)
Masslike lesion	5 (8.2)	4 (10)	1 (4.8)
Pleural effusion	7 (11.5)	3 (7.5)	4 (19.0)
Cavitation	1 (1.6)	1 (2.5)	0 (0)
Migratory lesions	7 (11.5)	7 (17.5)	0 (0)

Variable (No. COP/Secondary OP)	OP ± SD	COP ± SD	Secondary OP ± SD	*P* Value
Macrophages (27/5)	43.94 ± 14.28	44.30 ± 14.28	42.00 ± 15.81	NS
Lymphocytes (27/5)	18.84 ± 12.19	16.07 ± 9.025	33.80 ± 17.06	.002
Neutrophils (27/5)	26.09 ± 16.63	27.52 ± 16.36	18.40 ± 17.78	NS
Eosinophils (27/5)	10.19 ± 9.50	11.22 ± 9.79	4.60 ± 5.50	NS
Mast cells (27/5)	2.28 ± 2.59	2.52 ± 2.68	1.00 ± 1.73	NS
Lymphocytes > 20%	14 (43.8)	10 (37)	4 (80)	NS

Chest. 2011 Apr;139(4):893-900

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Secondary op vs. COP

Treatment	OP	COP	Secondary OP
Corticosteroids	41 (77.4)	30 (81.1)	11 (68.8)
Macrolides	3 (5.7)	2 (5.4)	1 (6.3)
No treatment	9 (17)	5 (13.5)	4 (25.0)
Relapse	17 (37.8)	13 (38.2)	4 (36.4)
1-y mortality	5 (9.4)	2 (5.3)	3 (20)
In-hospital mortality	3 (5.7)	1 (2.6)	2 (13.3)

Chest. 2011 Apr;139(4):893-900

COP vs. CTD-related OP

Outcomes	CTD-OP	COP	*P*-value
Improvement	20 (83.3)	69 (90.8)	0.309
Complete recovery	5 (20.8)	35 (46.1)	0.028
Recurrence[a]	8 (40.0)	14 (20.3)	0.072
Progression	3 (12.5)	5 (6.6)	0.394
Rapid progression	1 (4.2)	5 (6.6)	1.000
Stable	1 (4.2)	2 (2.6)	0.565
Overall death	3 (12.5)	20 (26.3)	0.265
Disease-related death	3 (12.5)	11 (14.5)	0.253
Survival, mean (95% CI), months	117.1 (95.6–138.6)	97.6 (82.9–112.4)	0.214
Mortality			
1 year	2 (8.7)	6 (8.1)	0.214
3 years	2 (8.7)	8 (11.6)	
5 years	3 (18.9)	11 (19.3)	

Rheumatology 2011;50:932938

COP vs. CTD-related OP

	Total	Type	
		COP	CTD-OP
Patients	166	131 (78.9)	35 (21.1)
Age	57.2 ± 10.9	57.1 ± 10.9	58.9 ± 9.4
Sex			
Male	55 (33.1)	41 (35.9)	10 (28.6)
Female	111 (66.9)	84 (64.1)	25 (71.4)
Treatment response			
CR	40 (24.1)	37 (28.2)	3 (8.5)
PR	39 (23.5)	36 (27.4)	3 (8.5)
Stable	15 (9.1)	14 (10.7)	1 (2.8)
Progression	19 (11.4)	10 (7.6)	9 (25.7)
Relapse	53 (31.9)	34 (26.1)	19 (54.3)

	Univariate		Multivariate			
	HR	*p*	95% CI	HR	*p*	95% CI
RD						
Bronchiectasis	4.38	< 0.001	2.1–94.	3.59	0.002	1.6–7.9
Con > 10%	2.46	0.015	1.2–5.1	2.27	0.04	1.0–4.9
CTD-OP	4.19	0.024	1.2–14.5	4.31	0.027	1.1–15.7
Relapse						
Con > 10%	2.86	0.008	1.3–6.2	2.54	0.028	1.1–5.9
Total > 25%	2.77	0.015	1.2–6.3			
CTD-OP	6.79	< 0.001	2.5–18.6	6.42	< 0.001	2.3–18.1

European Radiology 2020;30;2722-30

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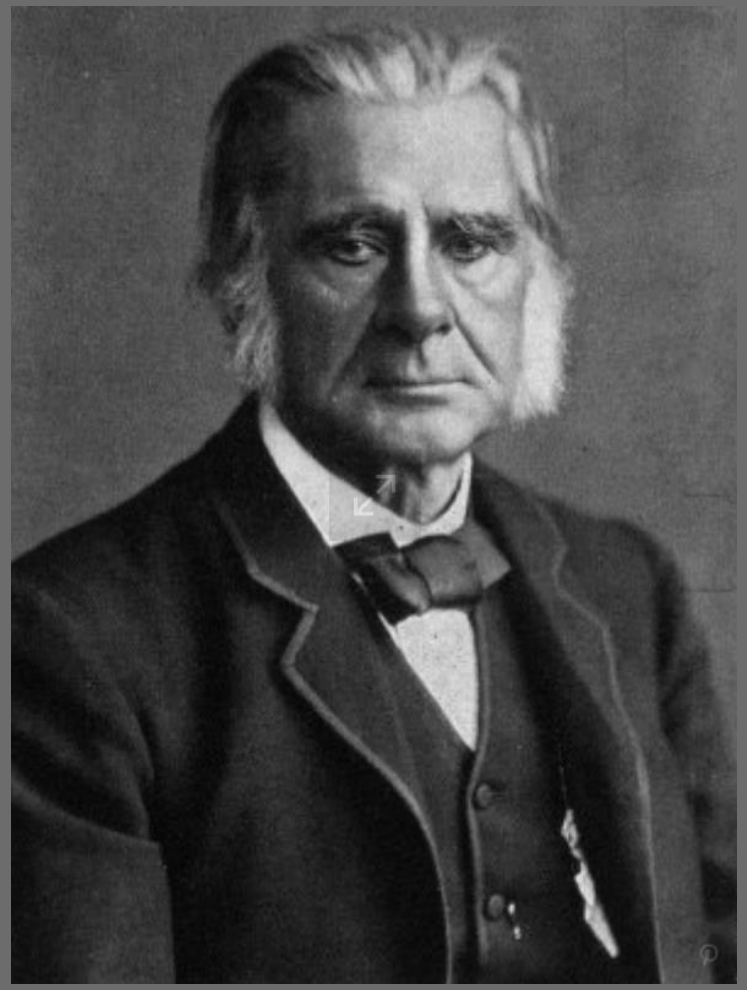
Take home message

- Organizing is a **process of lung repair** after injury.
- Symptoms (dry cough, dyspnea) are **subacute or chronic**.
- On HRCT, **bilateral consolidation with perilobular / perivascular distribution** is the most common finding.
- Proliferation of **granulation tissue buds** is the key histopathologic feature.
- Although no RCTs have been performed, **systemic glucocorticoid** is the preferred treatment.
- **A significant number of patients have relapses**, although these will show a favorable response to corticosteroid therapy.
- In addition, a small number of patients **may develop recurrent/progressive disease**; therefore, a thorough evaluation to detect secondary OP, especially CTD-ILDs, is required.



Thomas Henry Huxley

“We are nothing more than a small island floating in the middle of an endless sea of ignorance that cannot be explained.

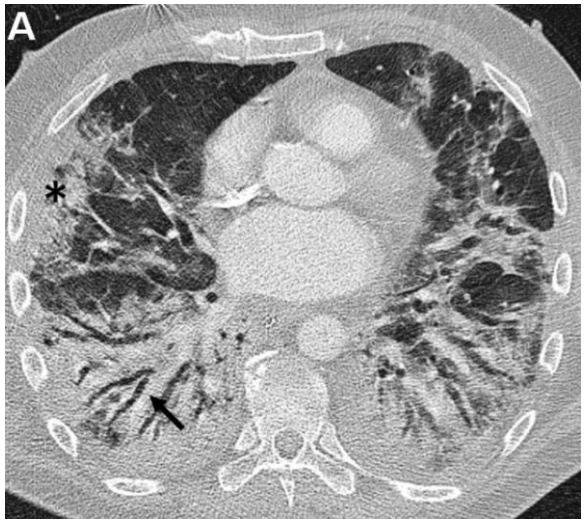
It is the human duty to expand the island little by little with each generation”

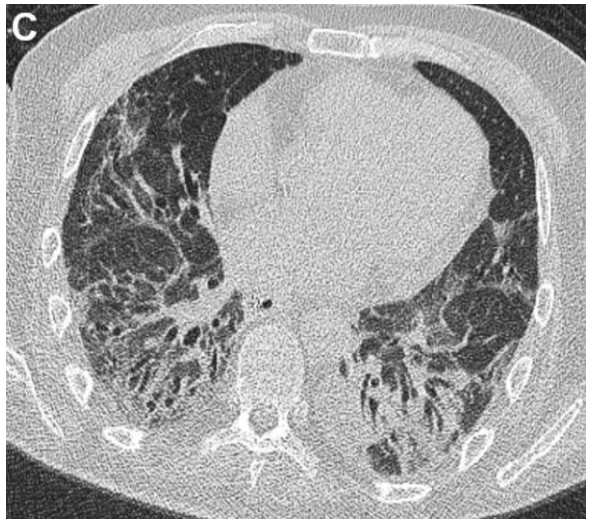
Thank you for your attention

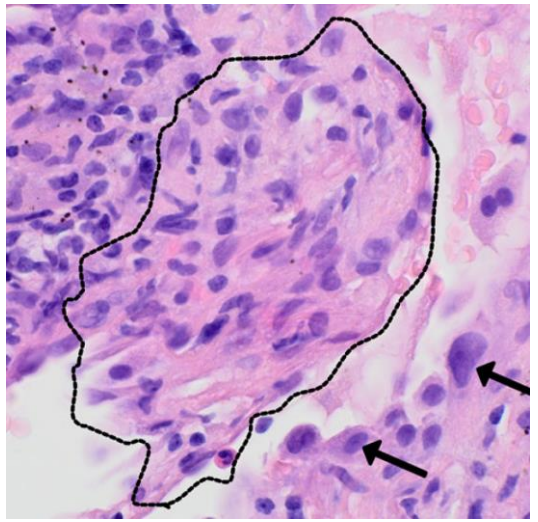
Email: bskwon82@snubh.org

Backup #1

- March ~ May, 2020, university Giessen, Germany
- SARS-CoV-2 positivity: 38 patients
- ICU admission: 24 patients
- Development of OP: 3 patients (12.5%)

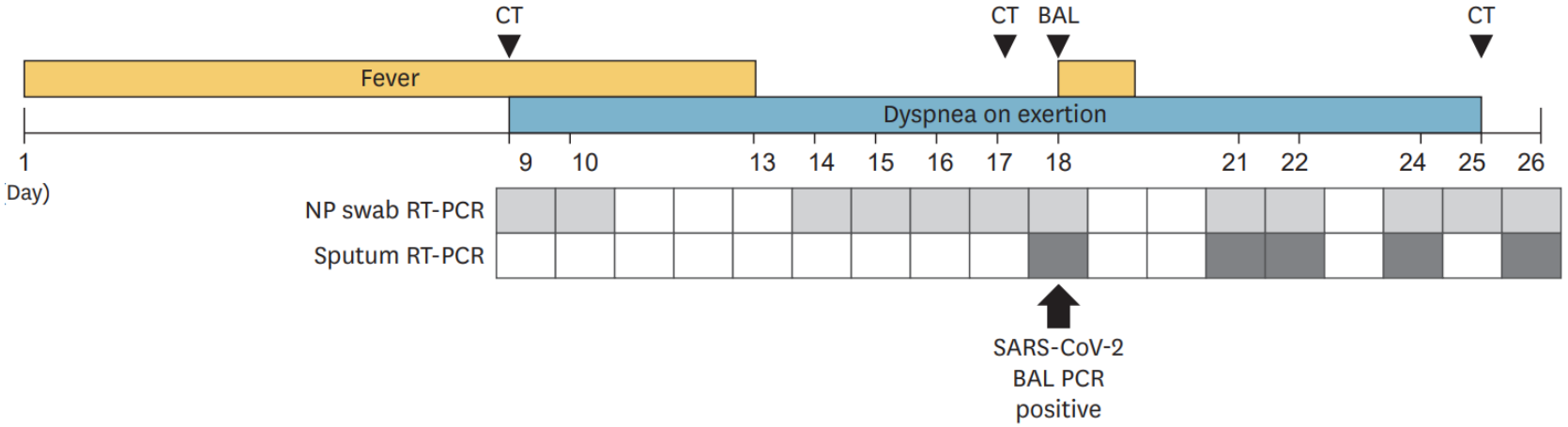


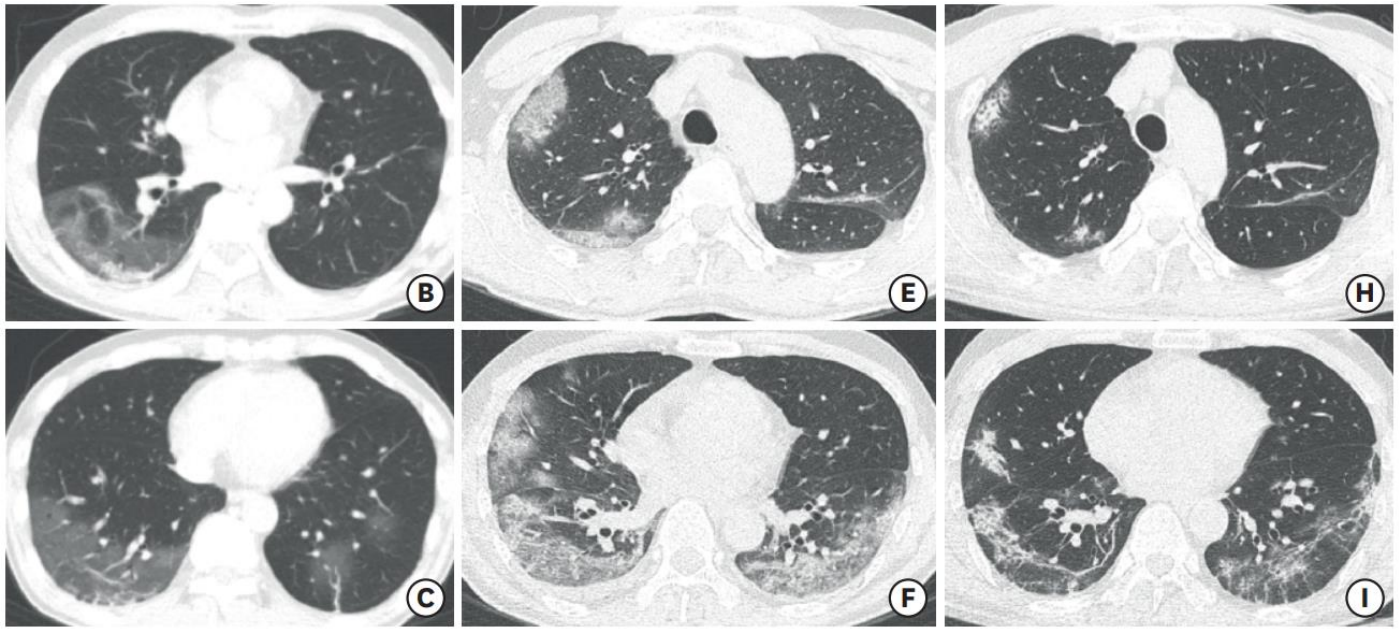




Thorax 2020;0:1-4

Backup #2





Infect Chemother. 2022 Mar;54(1):208-212

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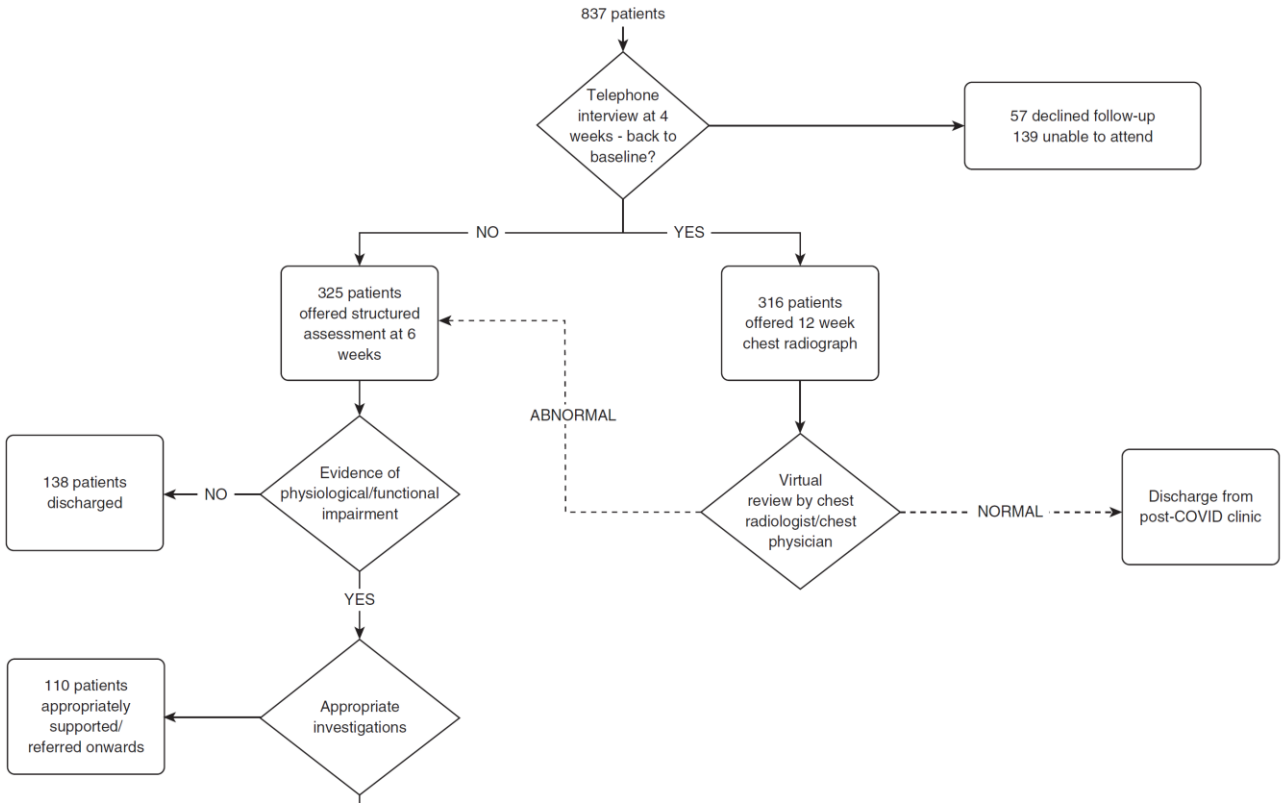
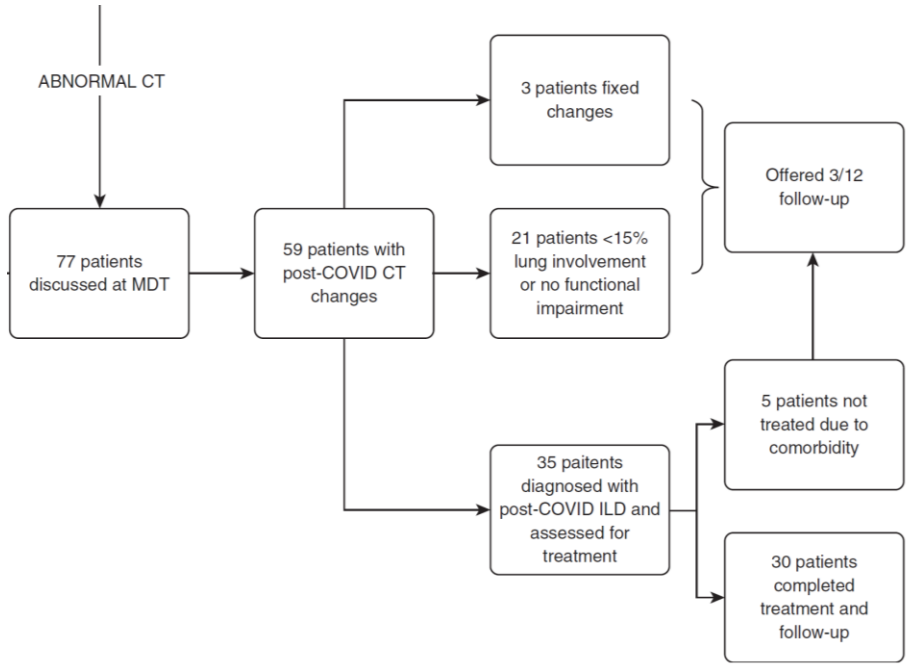
Backup #3





Ann Am Thorac Soc Vol 18, No 5, pp 799-806

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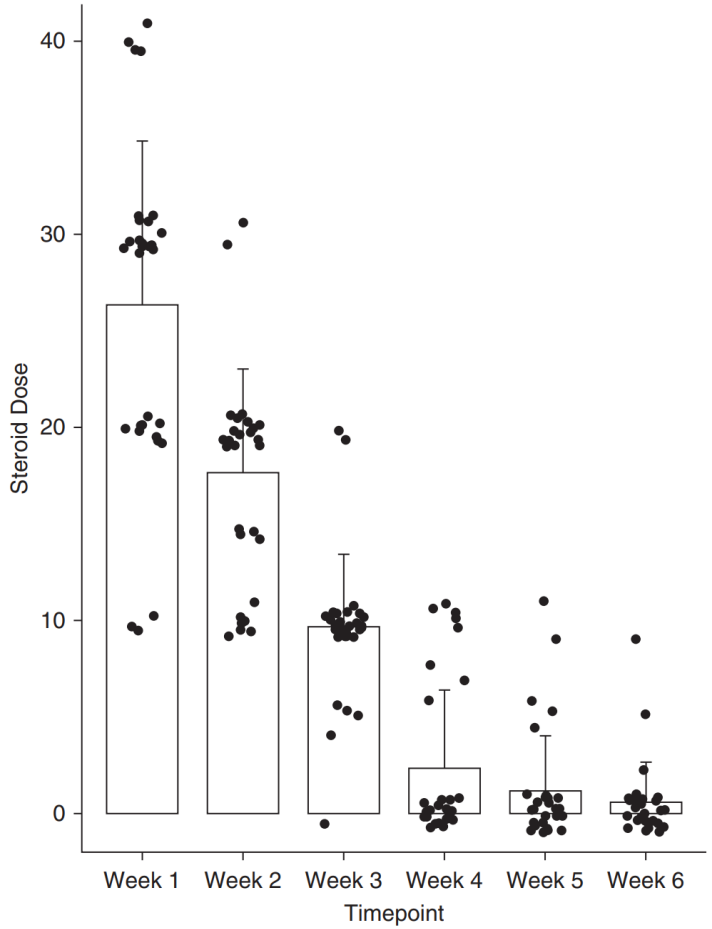
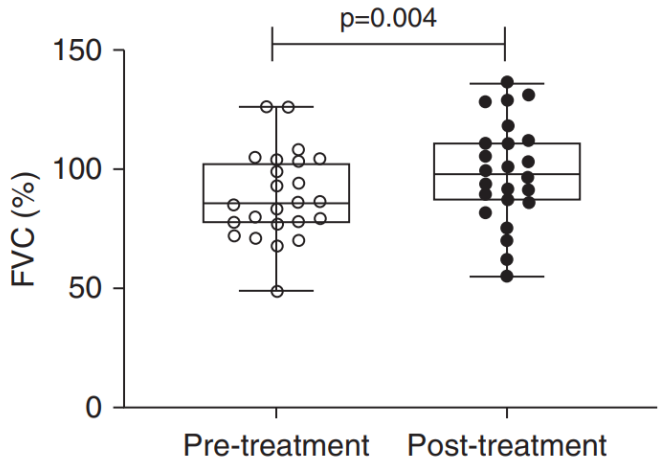
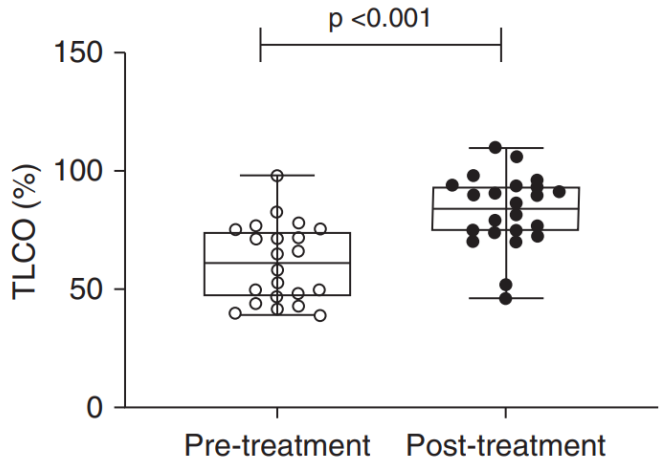
Backup #3







Lung Function	Before Treatment	After Treatment	Mean Difference (95% CI)	*P* Value
FVC, L	3.07 ± 1.12	3.36 ± 1.11	0.42 (0.28–0.56)	0.014
FVC, %	86.8 ± 18.5	99.2 ± 19.1	9.63 (4.49–14.7)	0.004
T_{LCO}, SI	5.56 ± 2.56	7.05 ± 2.42	1.72 (1.18–2.25	<0.001
T_{LCO}, %	59.7 ± 21.1	82.6 ± 15.7	22.3 (14.1–32.5)	<0.001
KCO, T_{LCO}/L	1.25 ± 0.34	1.83 ± 0.36	0.27 (0.16–0.37)	0.025
KCO, %	82.9 ± 28.8	104.3 ± 24.0	19.9 (9.72–30.1)	0.002

Ann Am Thorac Soc Vol 18, No 5, pp 799-806

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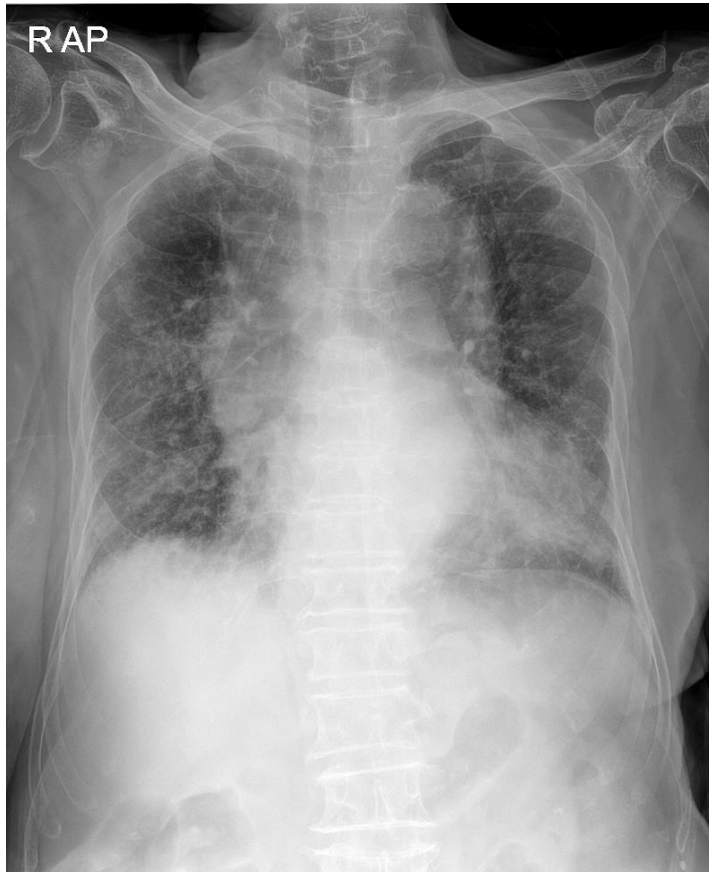
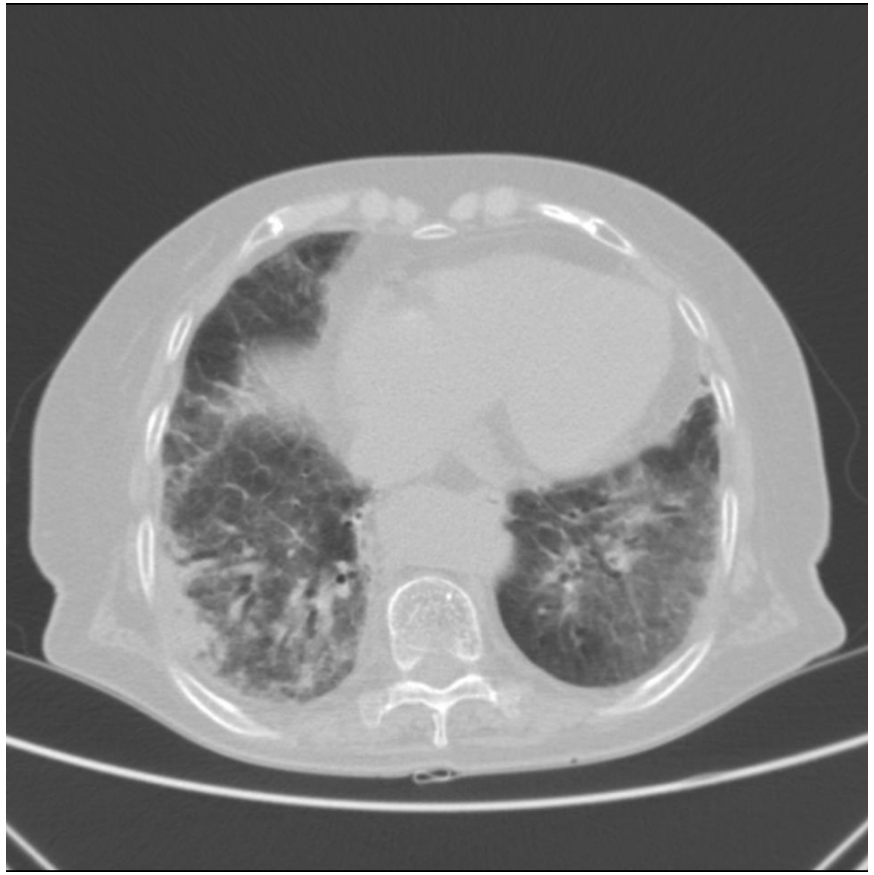
80/Female

- 주소: 호흡곤란
- 현병력: 3주 전 COVID-19 확진되어 무증상, 자가 격리. 1주 전 부터 전신 기력 저하 및 poor oral intake, 1일전 호흡곤란으로 응급실 내원
- 과거력: follicular lymphoma (- 2021.10) -> mCR
- Initial laboratory tests
  - CBC: 3210 – 10.0 – 158K
  - CRP: 21.12


R AP

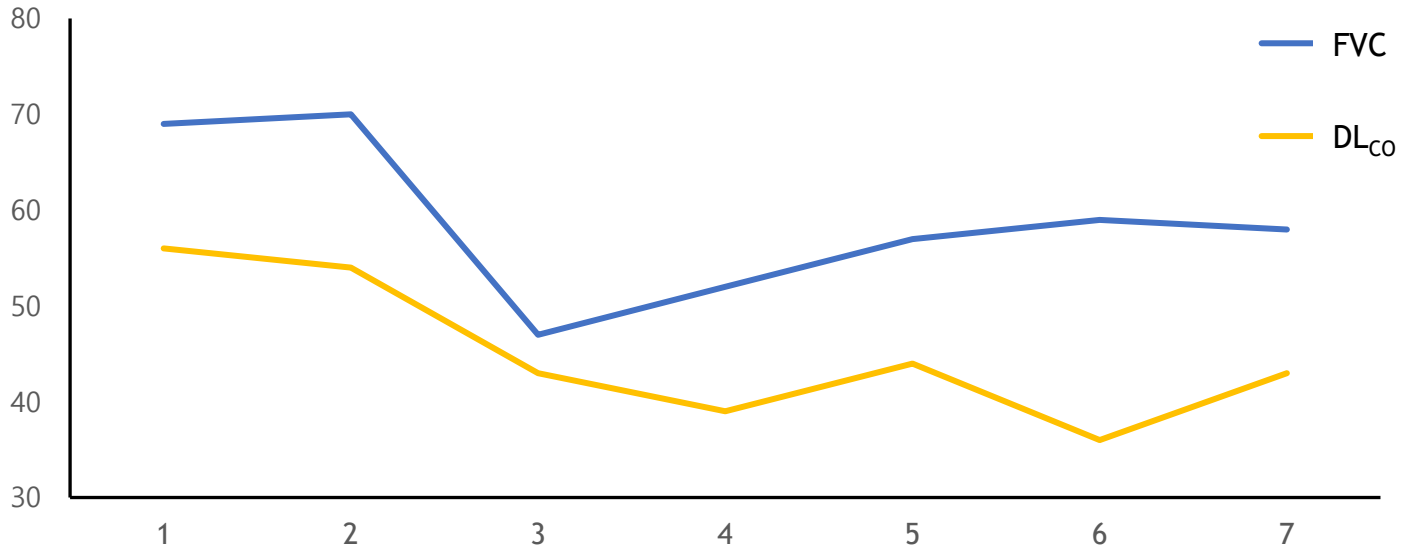


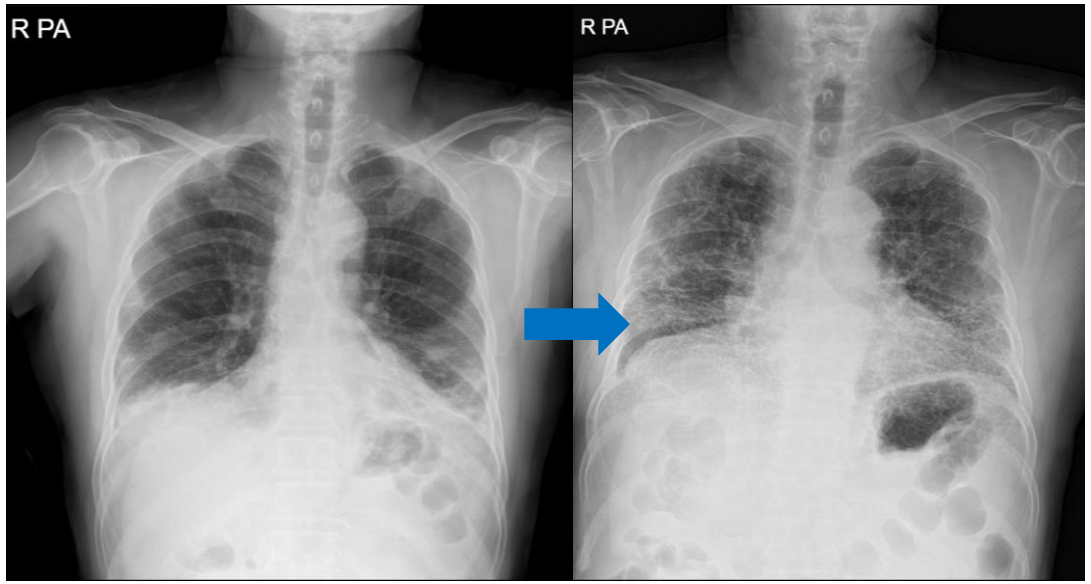

R

64 / Male

Lung, right lower lobe, wedge resection :
Organizing pneumonia ("RLL wedge 1" and "RLL wedge 2")
1) fibroblastic plugs
2) alveolar macrophage collection
3) subpleural fibrosis ("RLL wedge 1")
4) bronchoalveolar metaplasia ("RLL wedge 1")

64 / Male





SNUH

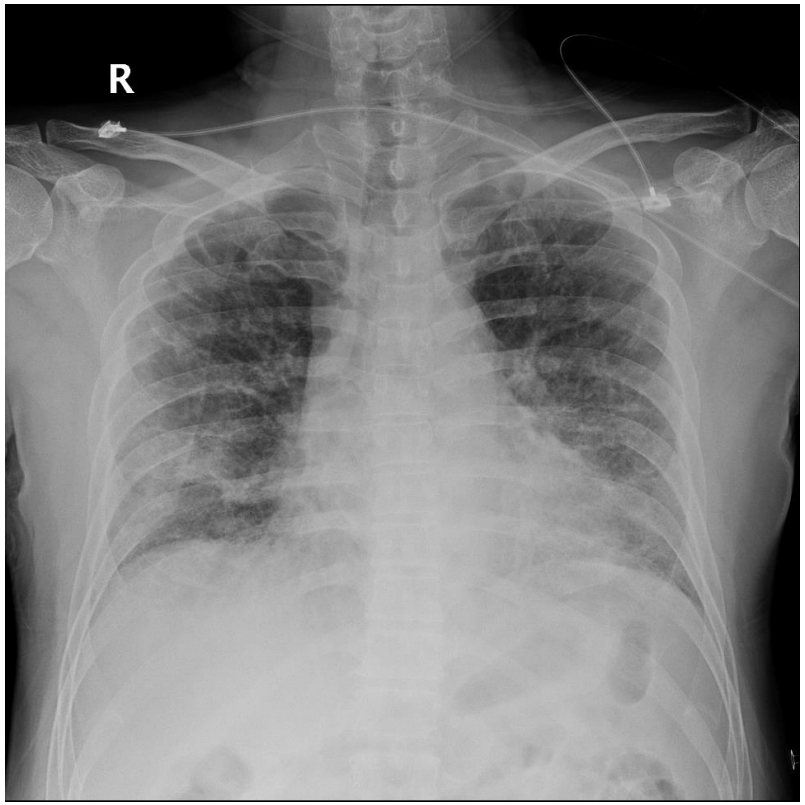
대한결핵 및 호흡기학회
The Korean Academy of Tuberculosis and Respiratory Diseases

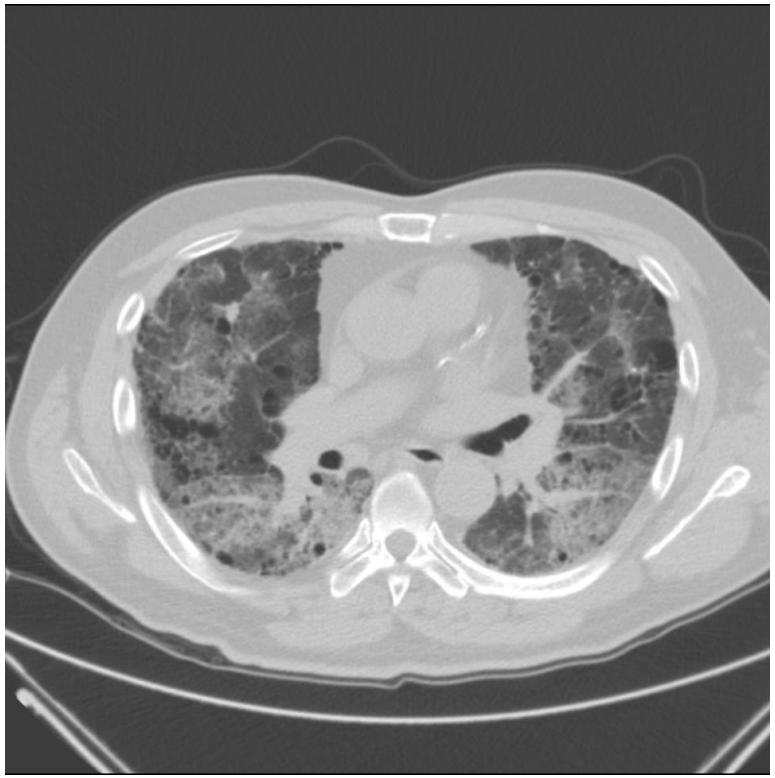
Variants

- Focal organizing pneumonia (<15%)
- Fulminant disease
- Cicatricial organizing pneumonia
- Acute fibrinous organizing pneumonia (AFOP)

58/Male

- 주소: 호흡곤란
- 현병력: 평소 mMRC grade 1로 유지되던 자로, 내원 4일 전 기침, 호흡곤란 악화 (1 ->3-4), 발열로 응급실 내원, ILD 급성악화로 입원함.
- Initial laboratory tests
  - CBC: 10170 – 13.0 – 256K
  - CRP: 14.00
  - ABGA: 7.466 – 34.8 – 92.1 – 25.1 (nasal prong 3L/min)


R

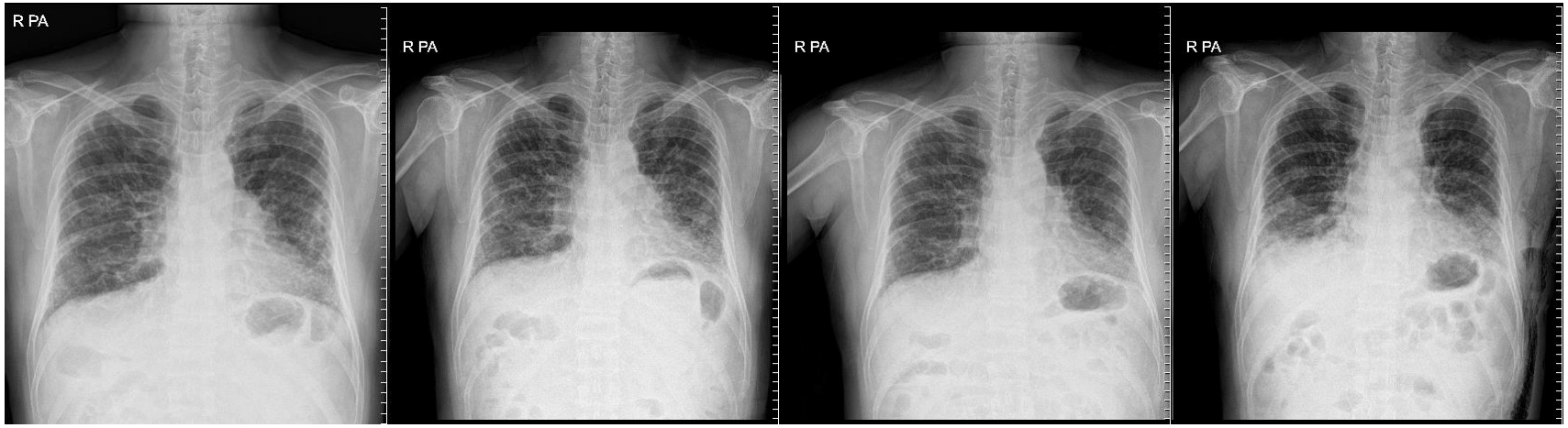


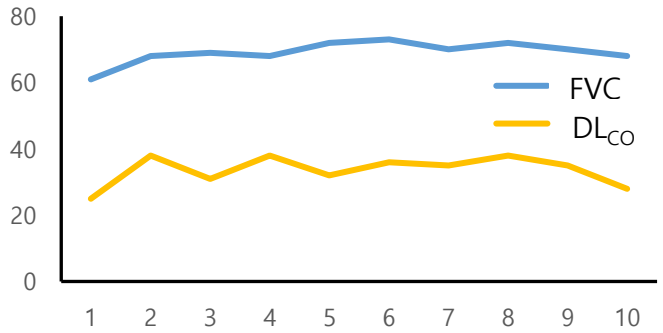
58/Male

- Treatment
  - Steroid pulse #2

  → prednisolone

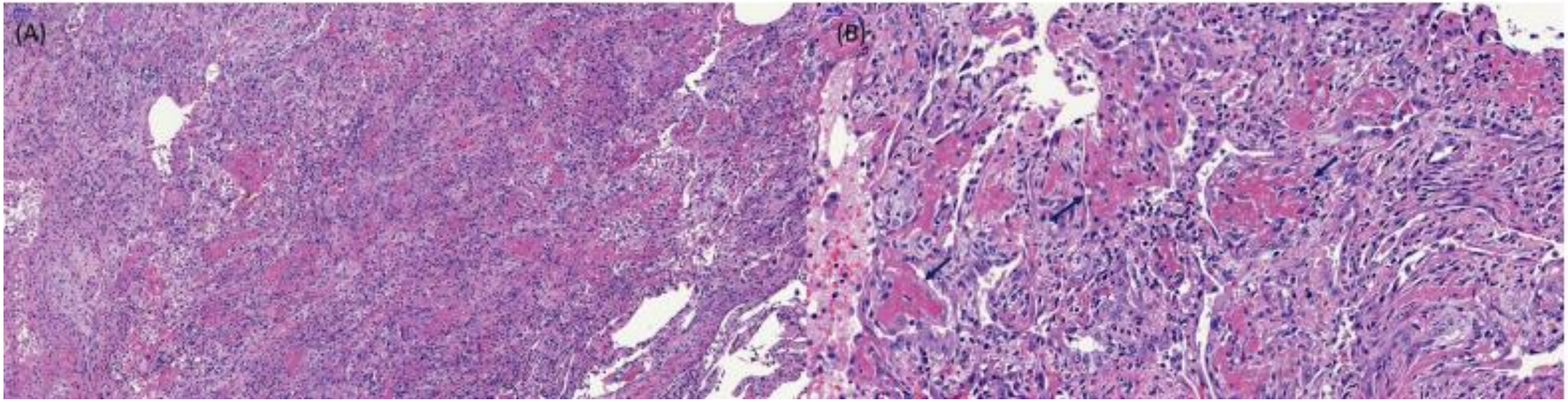
  → On nintedanib





AFOP - SNUBH

- Rare histologic pattern of IIP



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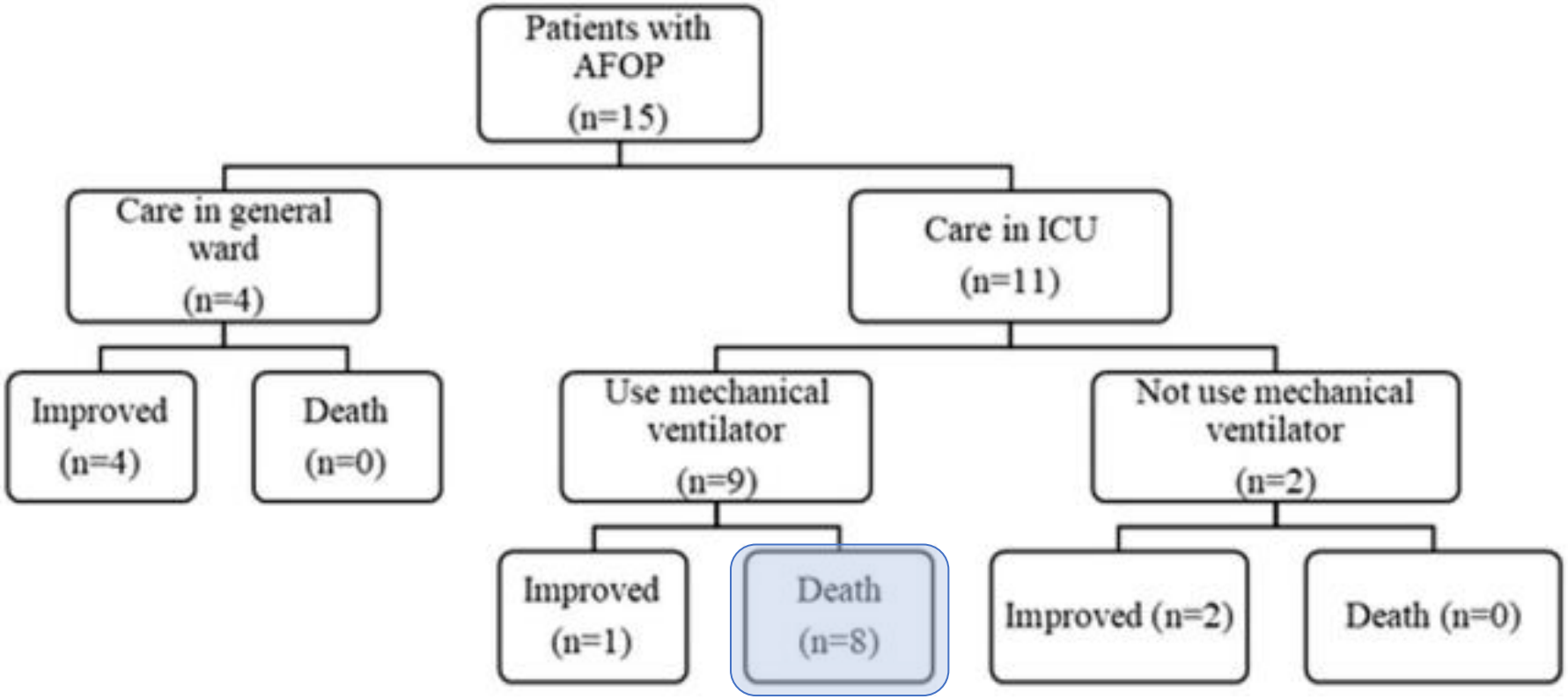
AFOP - SNUBH



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