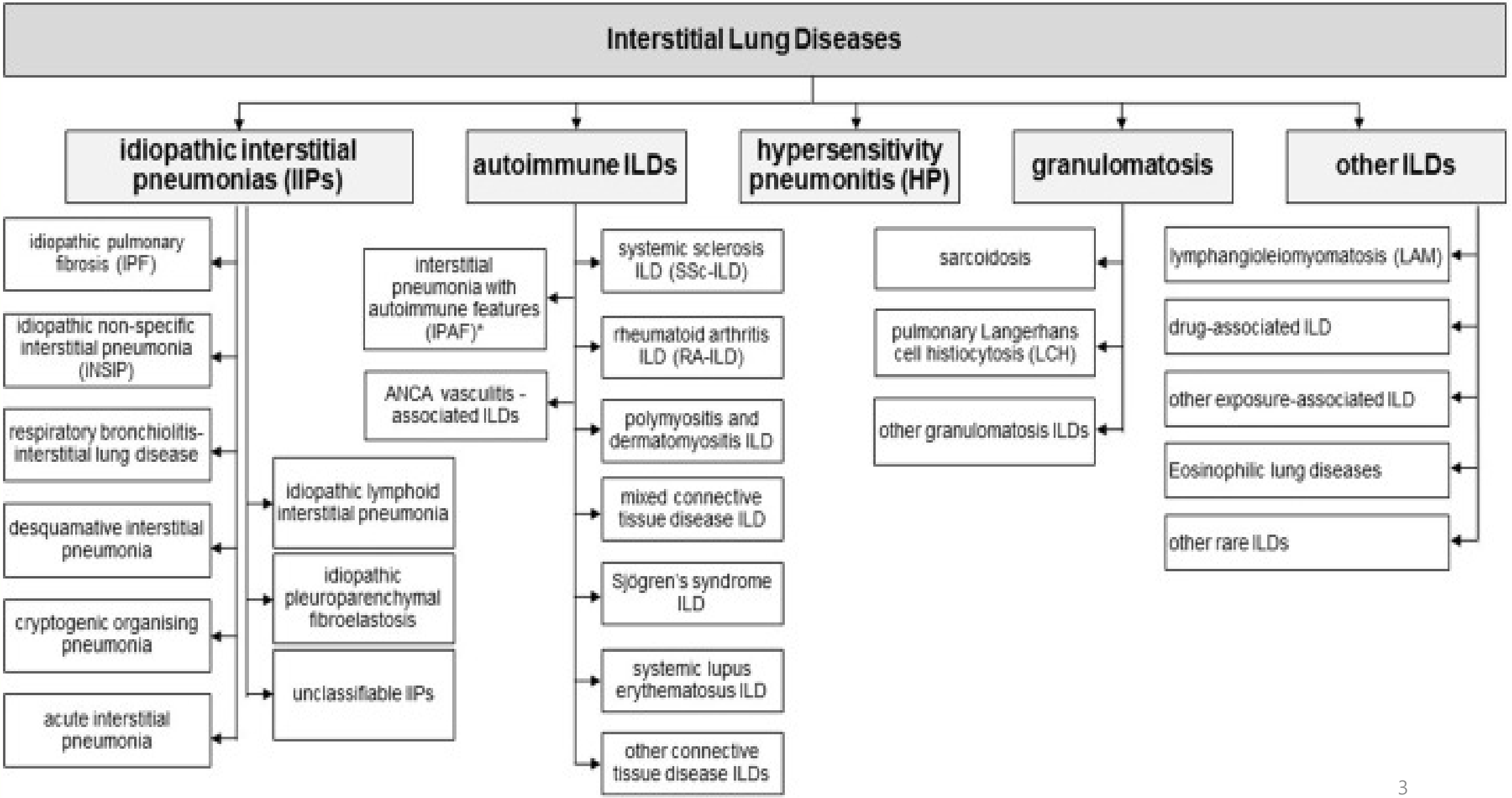
2023 신입 호흡기 임상강사 워크숍
* 일 시 : 2023년 3월 18일(토) 12 : 30 ~ 18 : 00
* 장 소 : 양재 aT센터 4층 창조룸 Ⅰ
14 : 50 ~ 15 : 20

간질성 폐질환 환자 진료하기

최혜숙 (경희대병원 내과)

발표내용

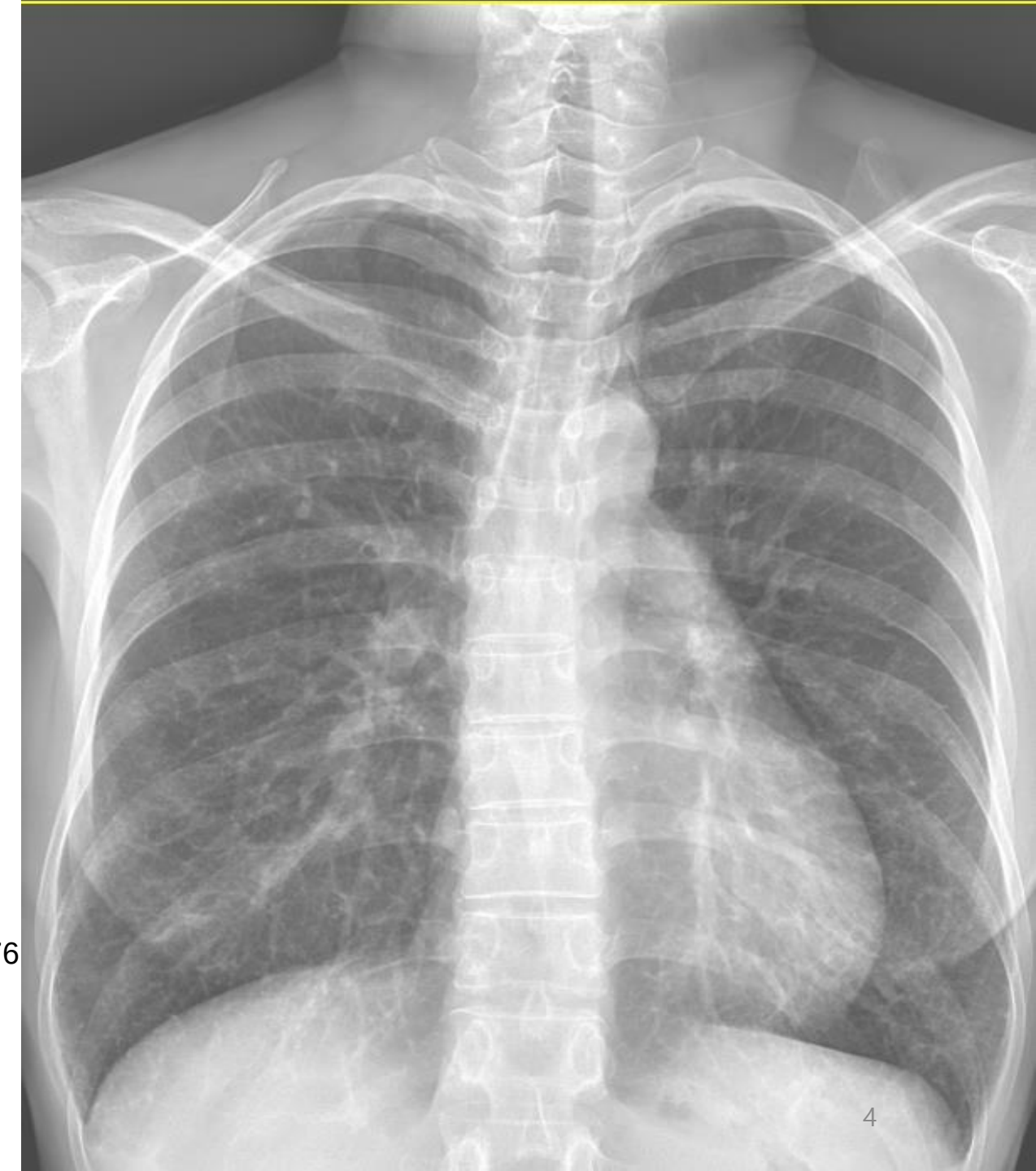
- IPF
- ILD other than IPF
- ILD 연구회


Interstitial Lung Diseases
idiopathic interstitial pneumonias (IIPs)
autoimmune ILDs
hypersensitivity pneumonitis (HP)
granulomatosis
other ILDs
idiopathic pulmonary fibrosis (IPF)
idiopathic non-specific interstitial pneumonia (INSIP)
respiratory bronchiolitis-interstitial lung disease
desquamative interstitial pneumonia
cryptogenic organising pneumonia
acute interstitial pneumonia
idiopathic lymphoid interstitial pneumonia
idiopathic pleuroparenchymal fibroelastosis
unclassifiable IIPs
interstitial pneumonia with autoimmune features (IPAF)*
ANCA vasculitis - associated ILDs
systemic sclerosis ILD (SSc-ILD)
rheumatoid arthritis ILD (RA-ILD)
polymyositis and dermatomyositis ILD
mixed connective tissue disease ILD
Sjögren's syndrome ILD
systemic lupus erythematosus ILD
other connective tissue disease ILDs
sarcoidosis
pulmonary Langerhans cell histiocytosis (LCH)
other granulomatosis ILDs
lymphangioleiomyomatosis (LAM)
drug-associated ILD
other exposure-associated ILD
Eosinophilic lung diseases
other rare ILDs

증례 1

- 52세 여자
- 2018-12
- 건강검진 CXR 이상으로 의뢰됨
- Bilateral inspiratory fine crackles

ILD: HRCT, PFT



European Respiratory Review 2018 27: 180076

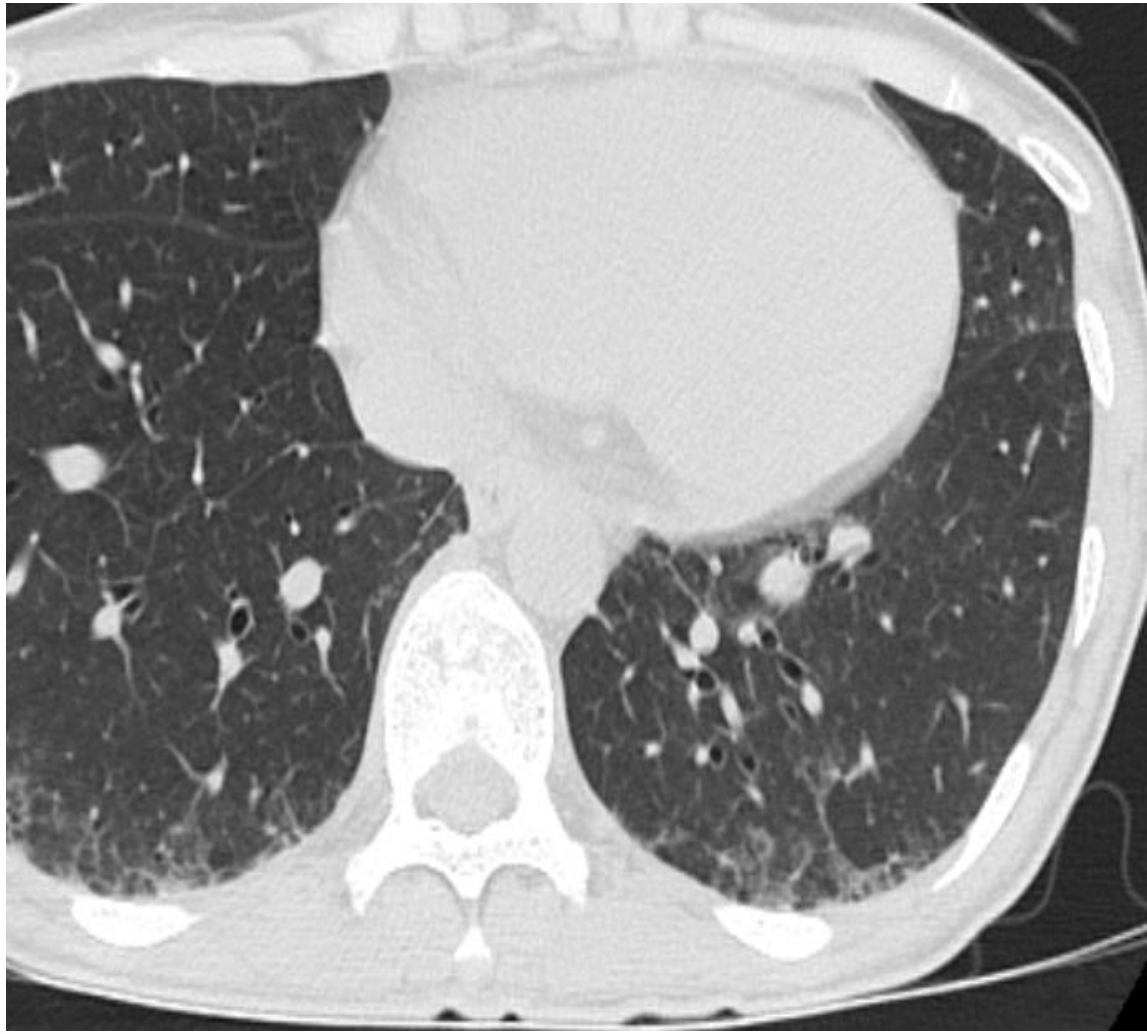
Spirometry

			PRE-RX BEST	%PRED
	(BTPS)	PRED		
FVC	Liters	3.14	2.23	71
FEV1	Liters	2.66	1.84	69
FEV1/FVC	%	81	82	
FEV3	Liters		2.15	
FEV6	Liters			
FEF25-75%	L/sec	2.70	1.96	73
PEF	L/sec	5.65	4.07	72
FIVC	Liters	3.01	0.20	7
PI max	cmH2O	77		
PE max	cmH2O	142		

Lung volume

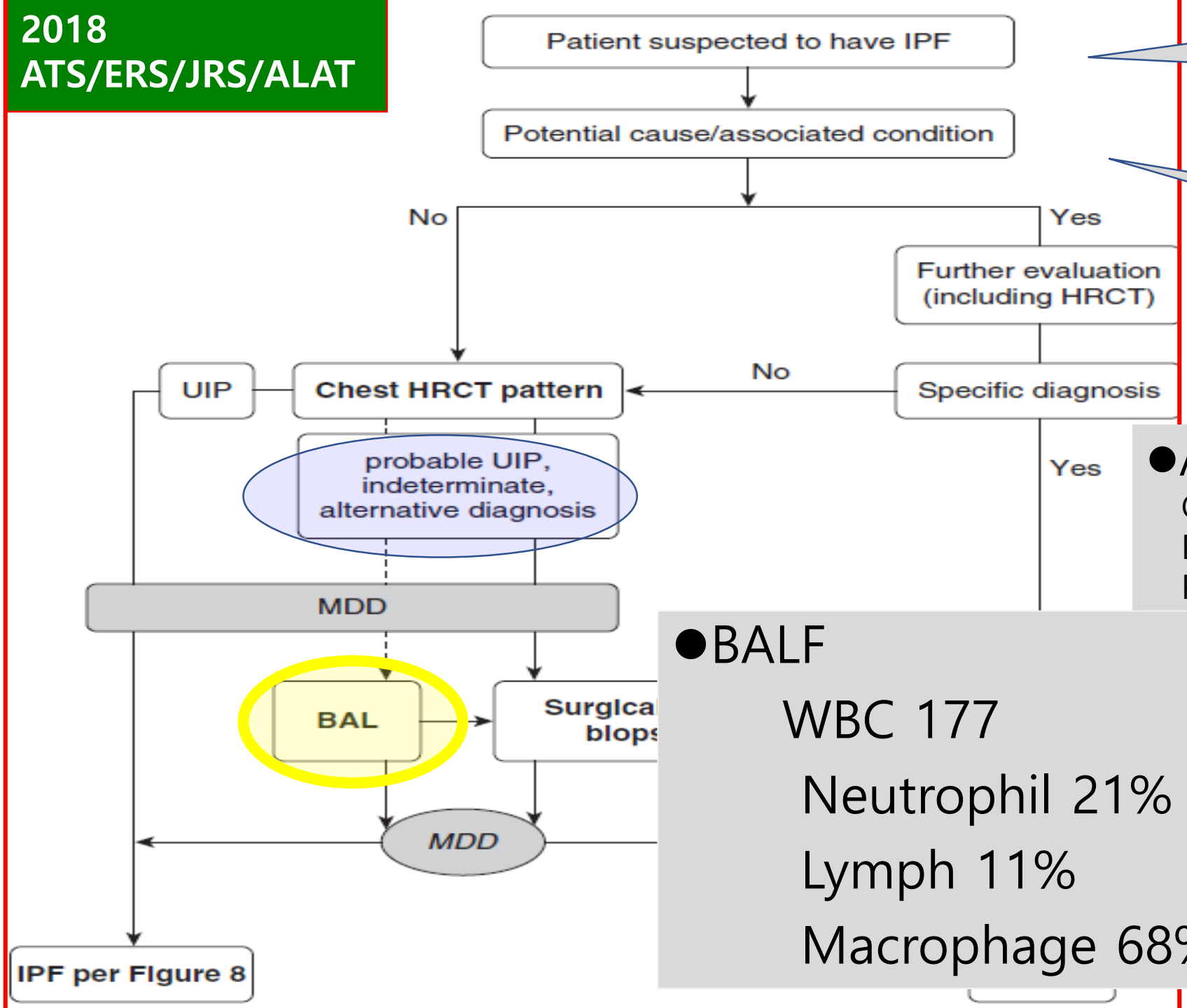
TLC	Liters	4.57	4.11	90
VC	Liters	3.01	2.23	74
FRC PL	Liters	2.57	2.96	115
RV	Liters	1.67	1.87	112
RV/TLC	%	36	46	
IC	Liters	1.98	1.15	58
ERV	Liters	0.99	1.10	111

Flow



Probable UIP

2018 ATS/ERS/JRS/ALAT



- >60 years, Sx+/-
- Bibasilar inspiratory crackles
- Bilateral fibrosis

Serological testing to exclude (CTD)

: CRP, ESR, ANA (by IF), RF, anti–CCP, myositis panel

● Autoantibody

CRP <0.5

ESR 20

RF-

CP-

A 1+

eumatologic consult

gative conversion, others -

● BALF

WBC 177

Neutrophil 21%

Lymph 11%

Macrophage 68%

Am J Respir Crit Care Med 198, 5, e44–e68, Sep 1, 2018

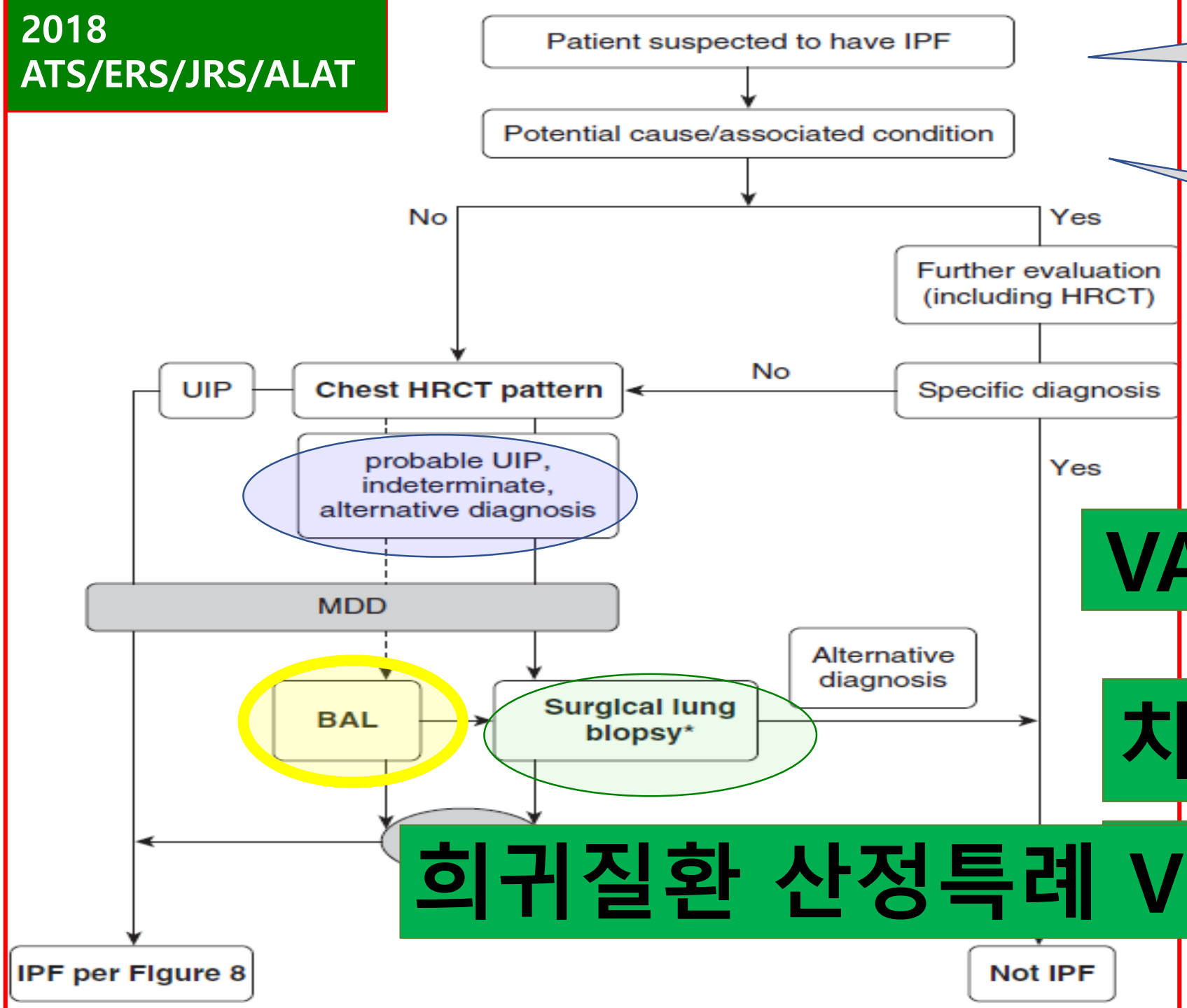
I. Normal Adults (Nonsmokers)	BAL Differential Cell Counts
Alveolar macrophages	>85%
Lymphocytes (CD4+/CD8+ = 0.9–2.5)	10–15%
Neutrophils	≤3%
Eosinophils	≤1%
Squamous epithelial*/ciliated columnar epithelial cells†	≤5%

II. Interstitial lung diseases

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)

2018 ATS/ERS/JRS/ALAT



- >60 years, Sx+/-
- Bibasilar inspiratory crackles
- Bilateral fibrosis

Serological testing to exclude (CTD)

: CRP, ESR, ANA (by IF), RF, anti–CCP, myositis panel

VATS → **UIP**

IPF → **치료**

희귀질환 산정특례 V236

Am J Respir Crit Care Med 198, 5, e44–e68, Sep 1, 2018

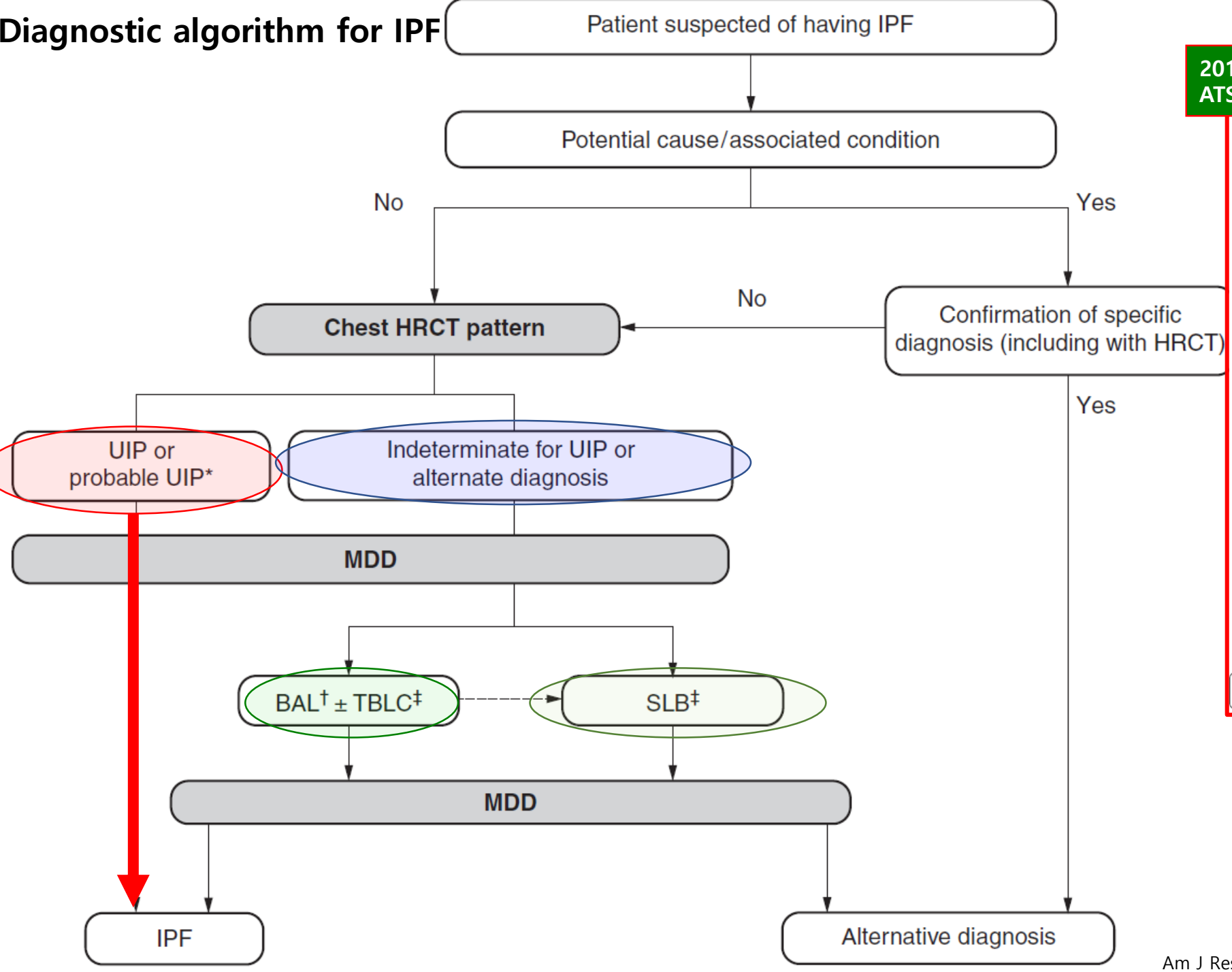
AMERICAN THORACIC SOCIETY DOCUMENTS

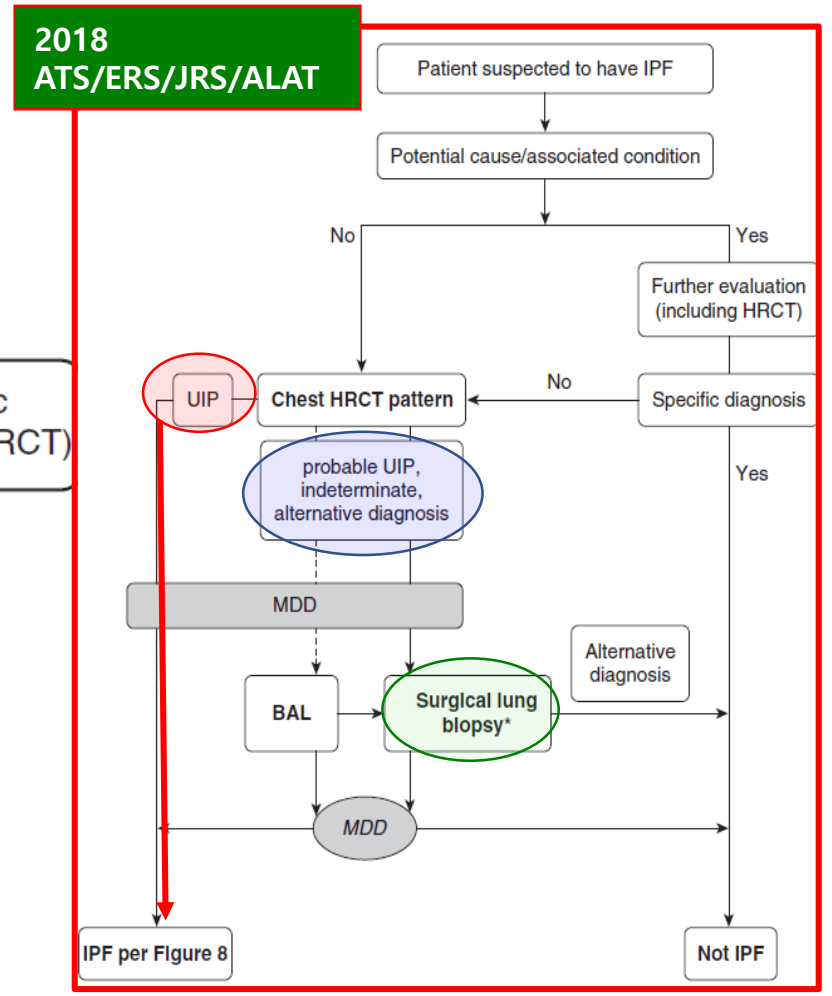
Idiopathic Pulmonary Fibrosis (an Update) and Progressive Pulmonary Fibrosis in Adults

An Official ATS/ERS/JRS/ALAT Clinical Practice Guideline

Am J Respir Crit Care Med Vol 205, Iss 9, pp e18–e47, May 1, **2022**

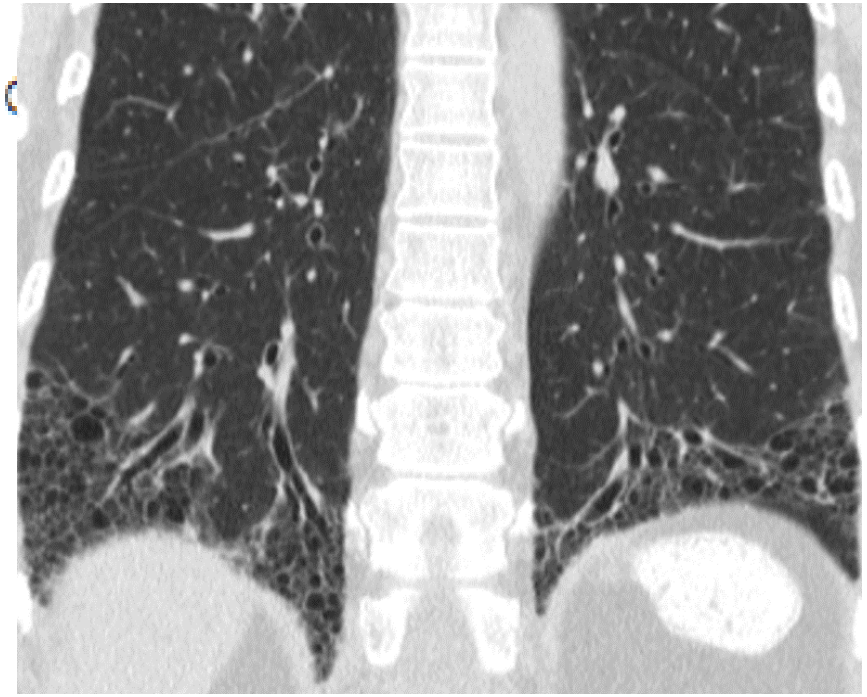
Diagnostic algorithm for IPF

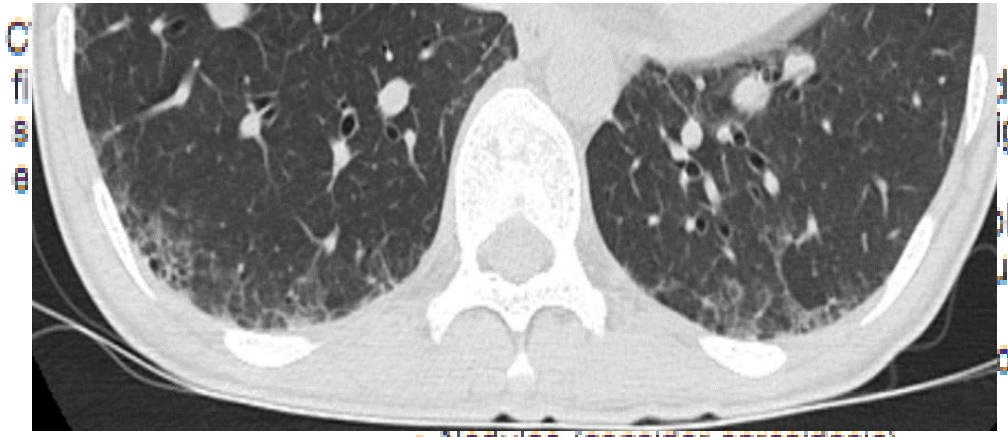




Am J Respir Crit Care Med Vol 205, Iss 9, pp e18–e47, May 1, 2022

	HRCT Pattern			
	UIP Pattern	Probable UIP Pattern	Indeterminate for UIP	CT Findings Suggestive of an Alternative Diagnosis
Level of confidence for UIP histology	Confident (>90%)	Provisional high confidence (70–89%)	Provisional low confidence (51–69%)	Low to very low confidence (≤50%)
Distribution	• Subpleural and basal predominant • Often heterogeneous (areas of normal lung interspersed with fibrosis) • Occasionally diffuse • May be asymmetric	• Subpleural and basal predominant • Often heterogeneous (areas of normal lung interspersed with reticulation and traction bronchiectasis/ bronchiolectasis)	• Diffuse distribution without subpleural predominance	• Peribronchovascular predominant with subpleural sparing (consider NSIP) • Perilymphatic distribution (consider sarcoidosis) • Upper or mid lung (consider fibrotic HP, CTD-ILD, and sarcoidosis) • Subpleural sparing (consider NSIP or smoking-related IP)
		• Reticular pattern with traction bronchiectasis/ bronchiolectasis • May have mild GGO • Absence of subpleural sparing		





- Nodules (consider sarcoidosis)
- Consolidation (consider organizing pneumonia, etc.)

• Mediastinal findings
- Pleural plaques (consider asbestosis)

증례 2

- 66세 남자
- 검진이상
- DOE MMRC I
- Bibasilar inspiratory fine crackles
- 과거흡연 ※ 1년전 중단 1.5갑/45년=90갑년

ow Long: Quit: No St

PREI

Spirometry

FVC	Liters	4.1
FEV1	Liters	3.(
FEV1/FVC	%	7
FEF25-75%	L/sec	2.6
FEV6	Liters	
FEV3	Liters	
PEF	L/sec	7.1
FET100%	Sec	
FIVC	Liters	3.7
PIF	L/sec	

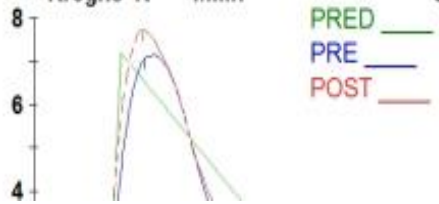
Lung Volume

VC	Liters	3.1
TLC	Liters	6.(
FRC PL	Liters	3.1
RV	Liters	2.1
RV/TLC	%	1
IC	Liters	2.1
ERV	Liters	1.1

Diffusion

DLCO	mL/min/mmHg	20
DLCO/VA	mL/min/mHg/L	3.1
DL/VA Adj	mL/min/mHg/L	
VA	Liters	
BHT	Sec	
IVC	Liters	
Kroghs K	1/min	3.1

Flow



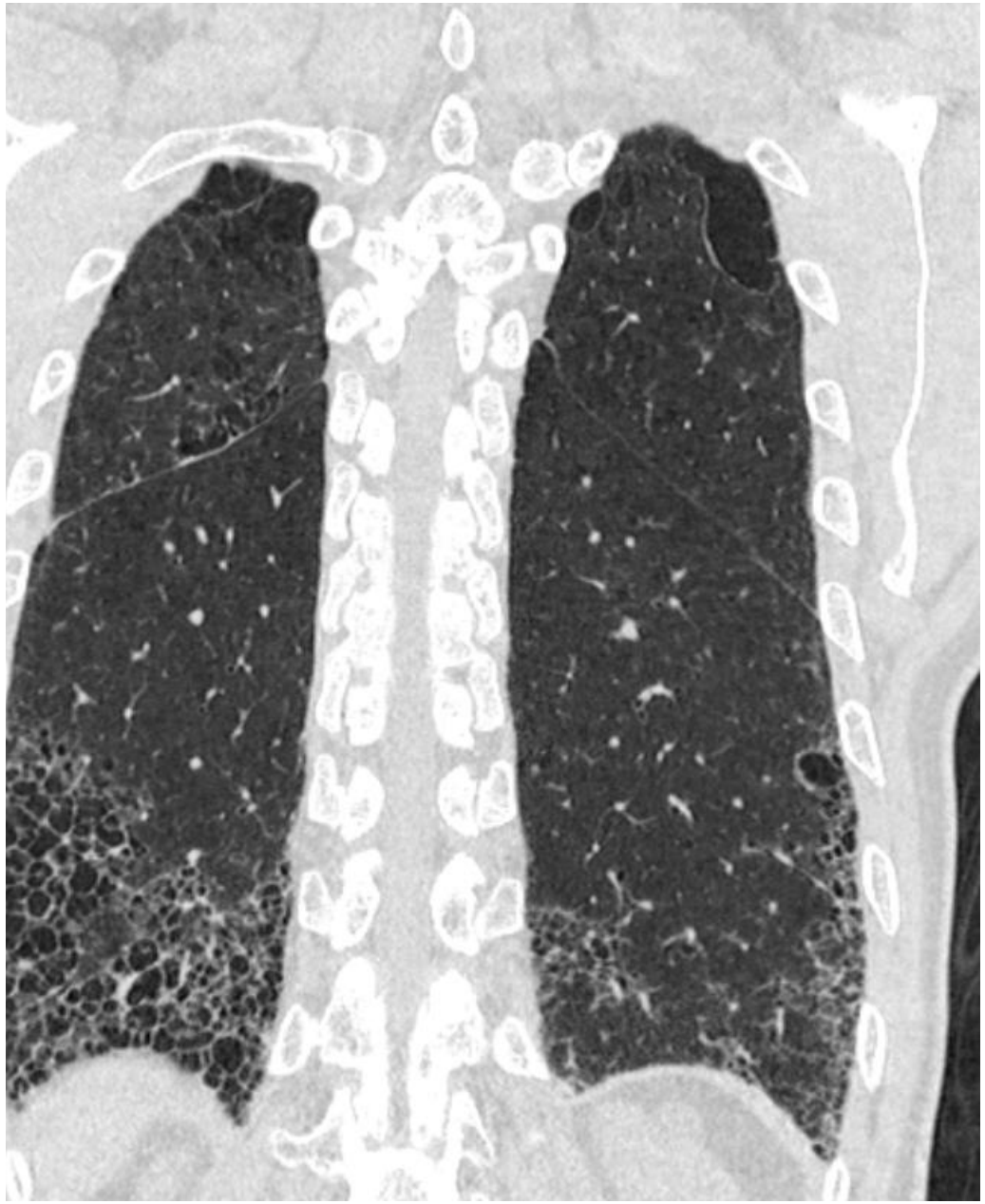
6-minute walking distance test

Time	SpO2 %	Heart Rate	Borg scale
0'00"	96	83	
0'30"	95	90	
1'00"	94	93	
1'30"	93	97	
2'00"	94	97	
2'30"	94	97	
3'00"	94	99	
3'30"	94	99	
4'00"	93	100	
4'30"	94	102	
5'00"	94	102	
5'30"	94	100	
6'00"	94	102	
7'00"	95	97	Post

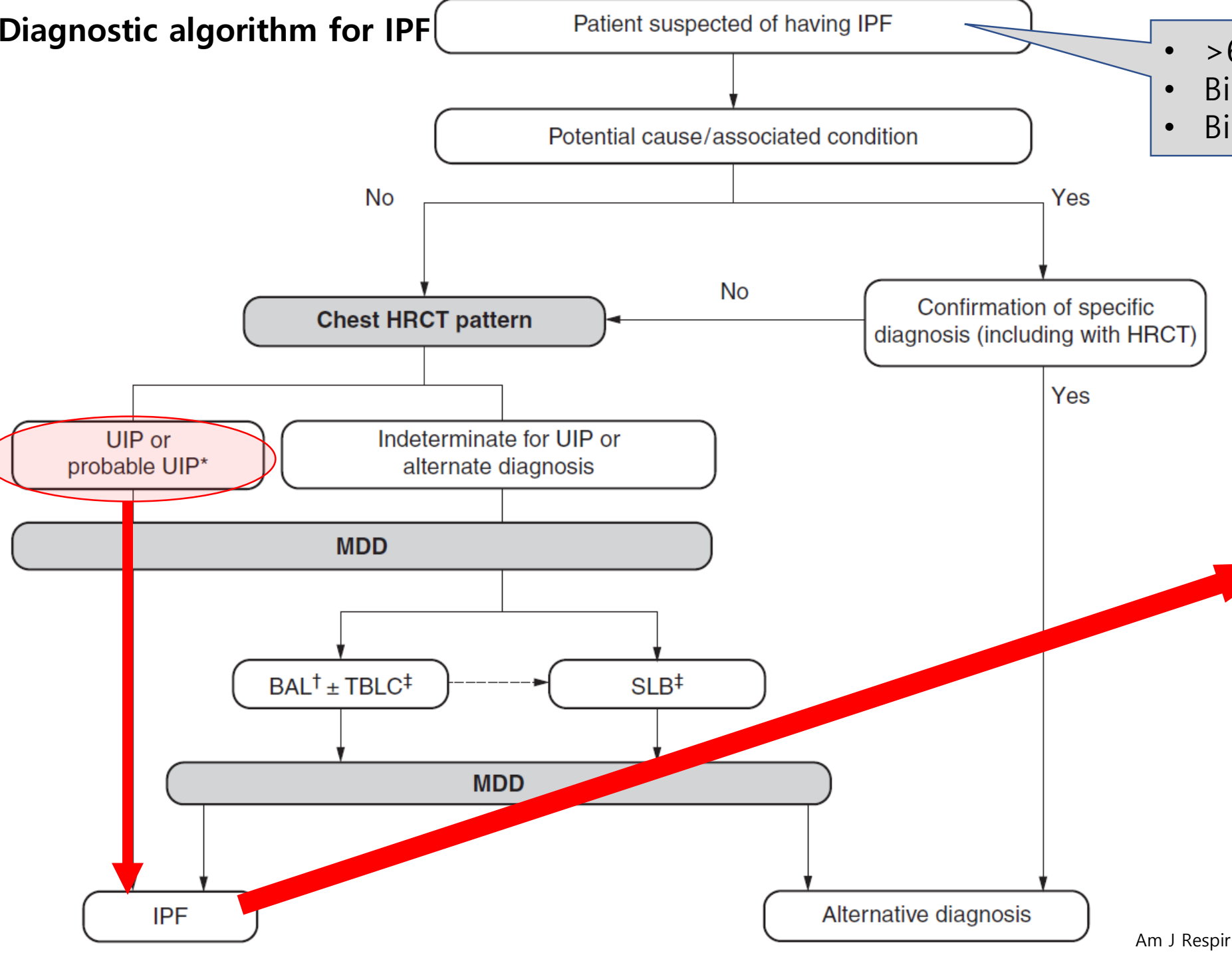
최소 SpO2: 96 %

6 Minutes walking distance : 393 M

Borg scale : 2



Diagnostic algorithm for IPF



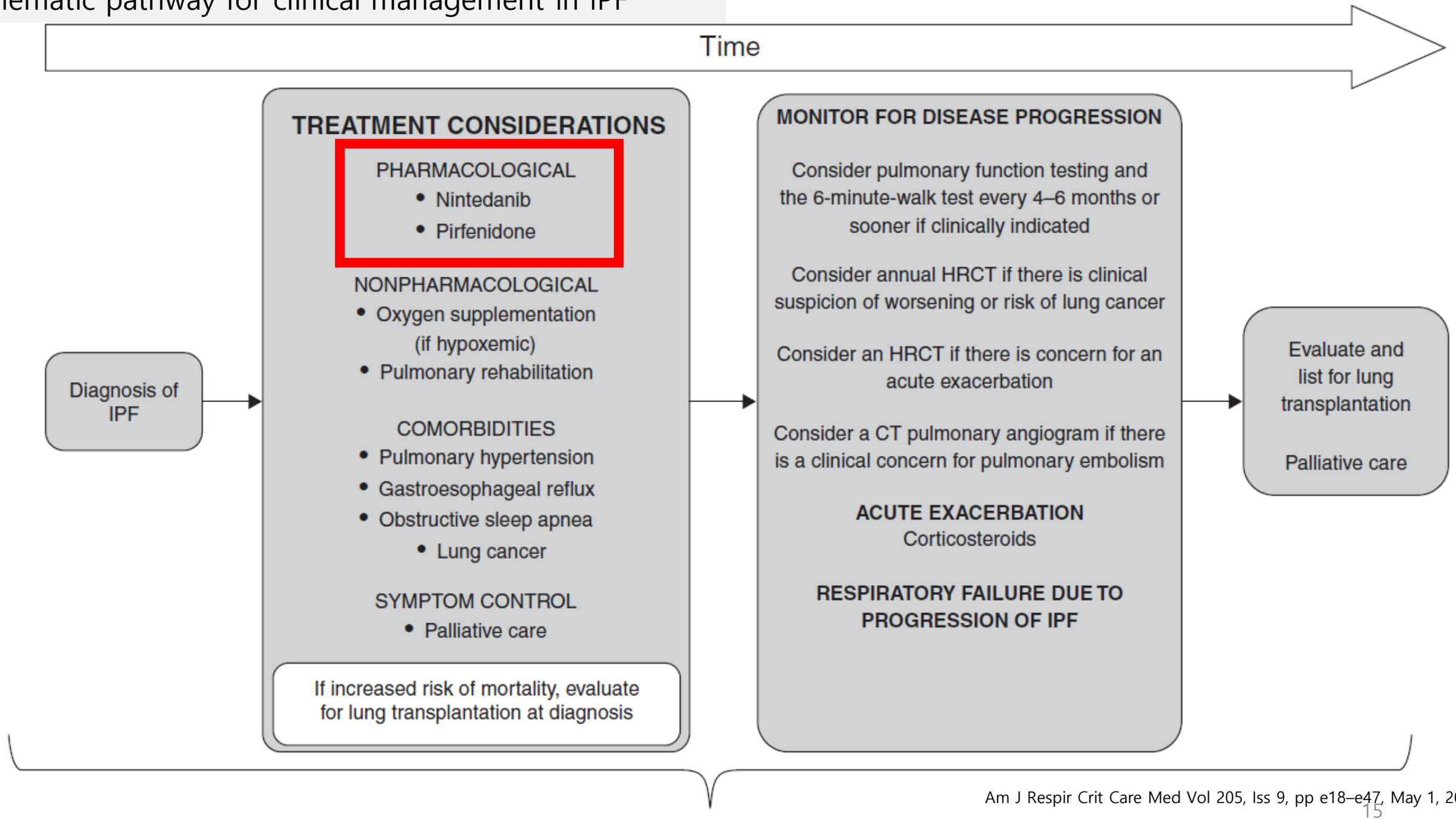
- >60 years, Sx+/-
- Bibasilar inspiratory crackles
- Bilateral fibrosis

● Autoantibody-
ESR 15
CRP<0.5
KL-6 859

희귀질환 산정특례

Am J Respir Crit Care Med Vol 205, Iss 9, pp e18–e47, May 1, 2022

Schematic pathway for clinical management in IPF



Am J Respir Crit Care Med Vol 205, Iss 9, pp e18–e47, May 1, 2022

○ **Pirfenidone** 급여대상: HRCT와/또는 SLB로 확진된 IPF환자로, 치료를 시작하기 전 다음 조건을 만족시켜야 함.

단, 교원성 질환 또는 다른 원인으로 설명되는 간질성 폐질환은 제외함.

- 다 음 -

1) **Pred. FVC≤ 90 % 이거나, predicted DLco ≤80% predicted 이하**

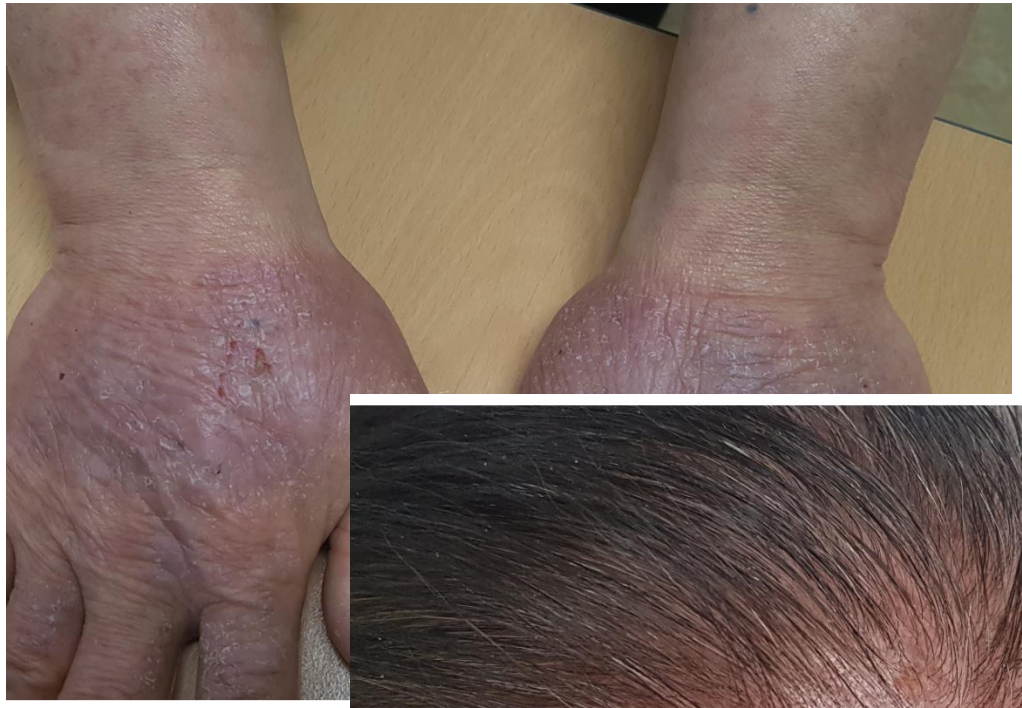
2) Pred. FVC > 90 % 및 predicted DLco >80% 환자 중 아래 중 두 가지 이상에 해당하는 경우

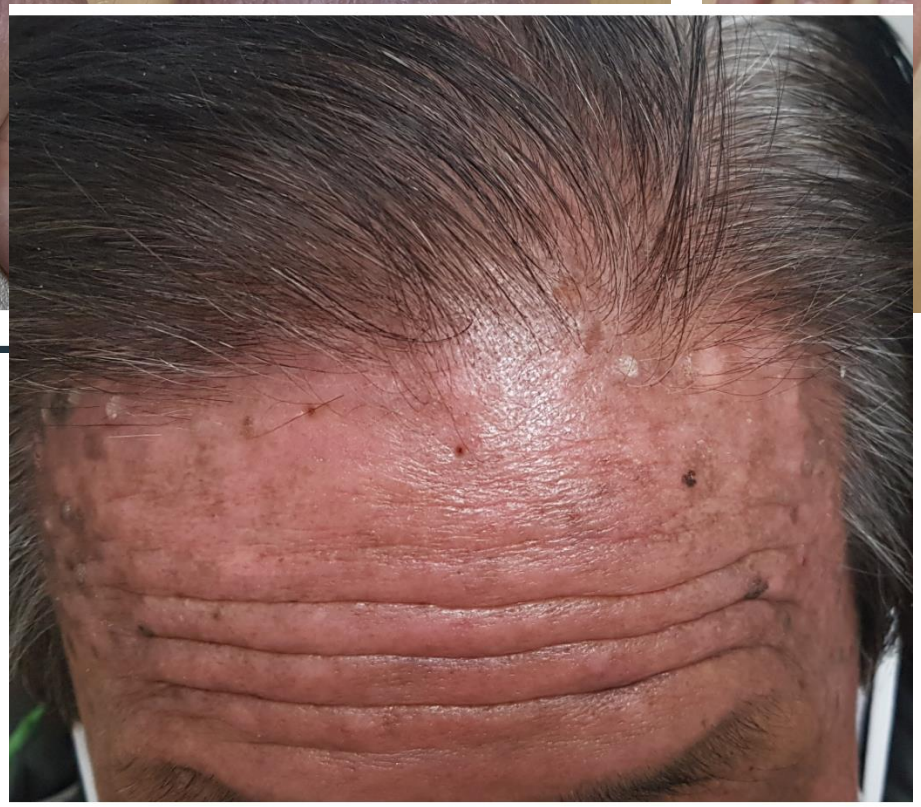
- 아 래 -

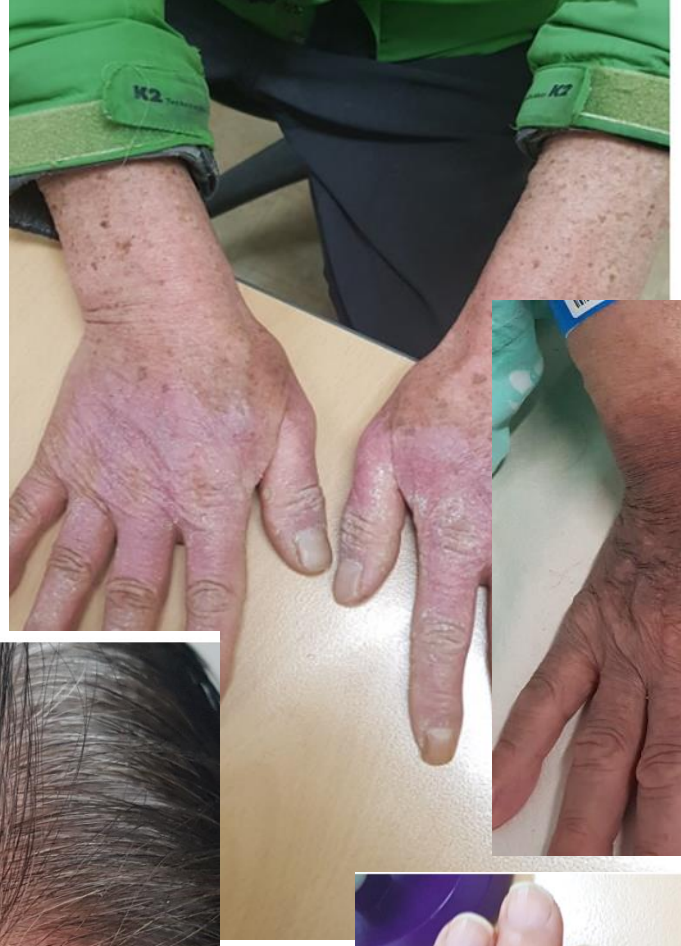
가) 폐기능 저하: 연간 FVC감소량의 10% predicted 이상이거나,
연간 FVC 200ml 이상 감소

나) 임상증상 악화, 다) 흉부영상 악화 소견

항섬유화제 부작용







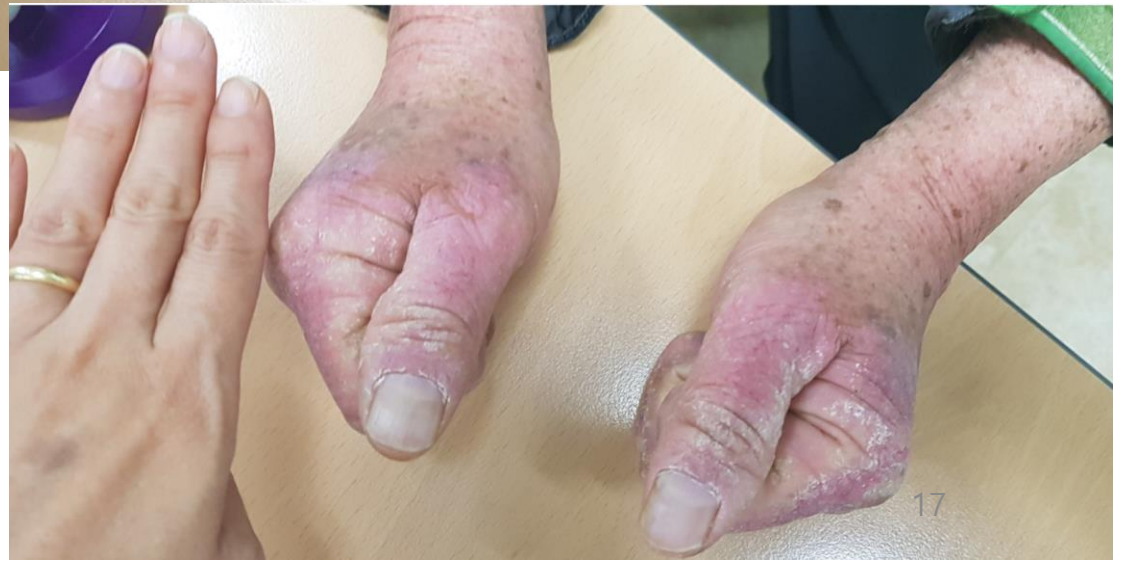


TABLE 1 Clinical and real-world s

Patients n
Duration of treatment years[+]
Cumulative total exposure PEY
AE type
TEAEs or ADRs per 100 PEY[§]
Total
Nausea
Rash
Diarrhoea
Fatigue
Dyspepsia
Anorexia
Dizziness
Gastro-oesophageal reflux disease
Decreased appetite
Decreased weight
ADR/TEAE resulting in death
ADR/TEAE leading to discontinuatio

Adverse event of **Nintedanib**

N (%)	Nintedanib 150 mg bid (n=723)	Placebo (n=508)
Any adverse event(s)	689 (95.3)	456 (89.8)
Most frequent adverse events*		
Diarrhoea	445 (61.5)	91 (17.9)
Nausea	176 (24.3)	36 (7.1)
Nasopharyngitis	93 (12.9)	79 (15.6)
Cough	93 (12.9)	75 (14.8)
Progression of IPF†	68 (9.4)	72 (14.2)
Serious adverse events(s)	217 (30.0)	153 (30.1)
Fatal adverse event(s)	38 (5.3)	43 (8.5)
Adverse event(s) leading to treatment discontinuation‡	149 (20.6)	76 (15.0)
Diarrhoea	38 (5.3)	1 (0.2)
Nausea	17 (2.4)	0 (0.0)
Progression of IPF†	15 (2.1)	27 (5.3)
Decreased appetite	11 (1.5)	1 (0.2)

*Adverse events reported by ≥12% of patients in either treatment group. †Corresponds to the MedDRA term 'IPF', which included disease worsening and IPF exacerbations. ‡Adverse events leading to treatment discontinuation in ≥1.5% of patients in either treatment group by MedDRA preferred term.

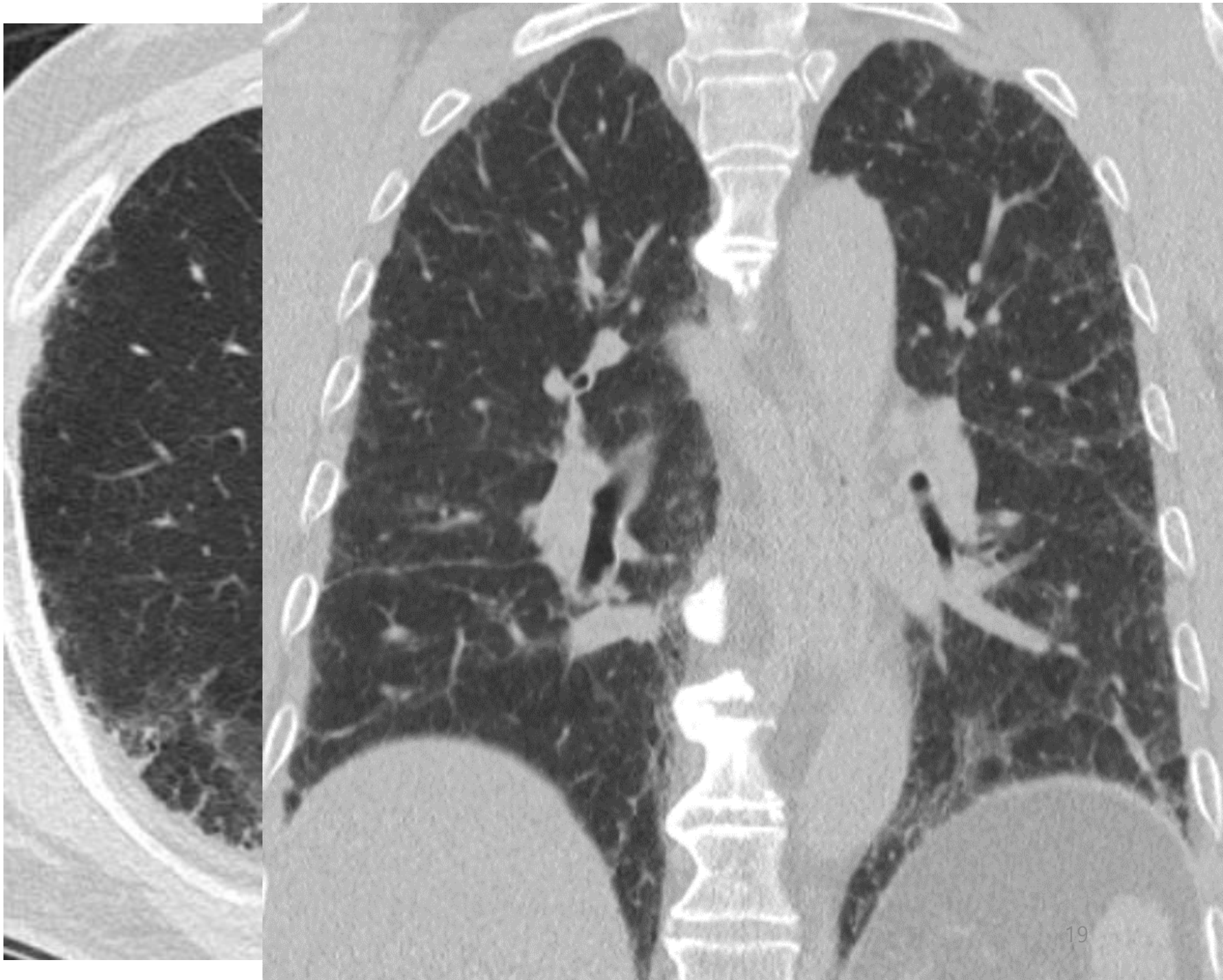
Richeldi L et. al. Respiratory Medicine (2016)

in the TOMORROW and INPULSIS® trials

증례 3

- 60세 남자
- ILD로 내원
- 지하철 근무
- DOE MMRC III

대장암 10년전
DM 경구약 조절중 (동네병원)



6-minute walking distance test

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0'30"	94	79	
1'00"	93	85	
1'30"	92	90	
2'00"	91	90	
2'30"	91	91	
3'00"	92	92	
3'30"	92	91	
4'00"			
4'30"			
5'00"			
5'30"			
6'00"			
7'00"			

최소 Sp

Minutes walking distance : 456 M

PRE-RX

	BEST	%PRED	
8	2.47	49	-1
3	2.06	54	-1
4	83		
3	2.41	77	2
	2.45		-2
	2.33		-3
8	9.78	114	-13
	7.93		9
0	1.78	39	27
	5.26		4.39 -17
0	2.47		
6	3.51		
1	15.0	57	

- BAL lymph 28%
- Autoantibody-
- ESR 49
- CRP<0.5
- KL-6 1100

VATS

iNSIP fibrosing type

치료: -oral corticosteroids (prednisone)
-Immune-suppressing drugs (azathioprine, mycophenolate, cyclophosphamide)
-Antifibrotics

극희귀질환 산정특례 등록질환 (2023. 1. 1. 시행)
V900 (조직확진 필요, 해당의사 진단가능)

Pneumoconiosis

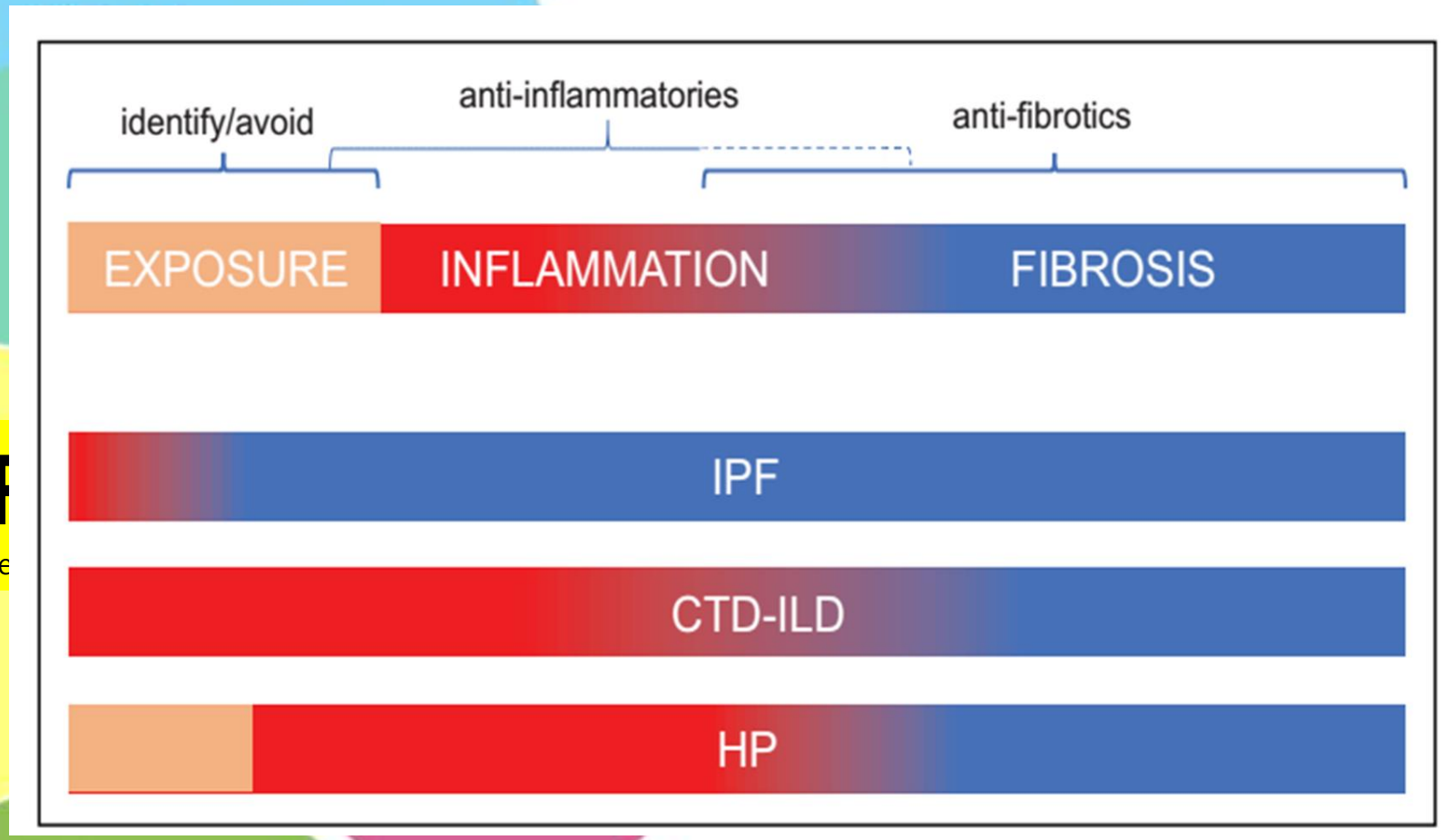
CTD-ILD

PPF

Progressive

ulLDs

Sarcoidosis

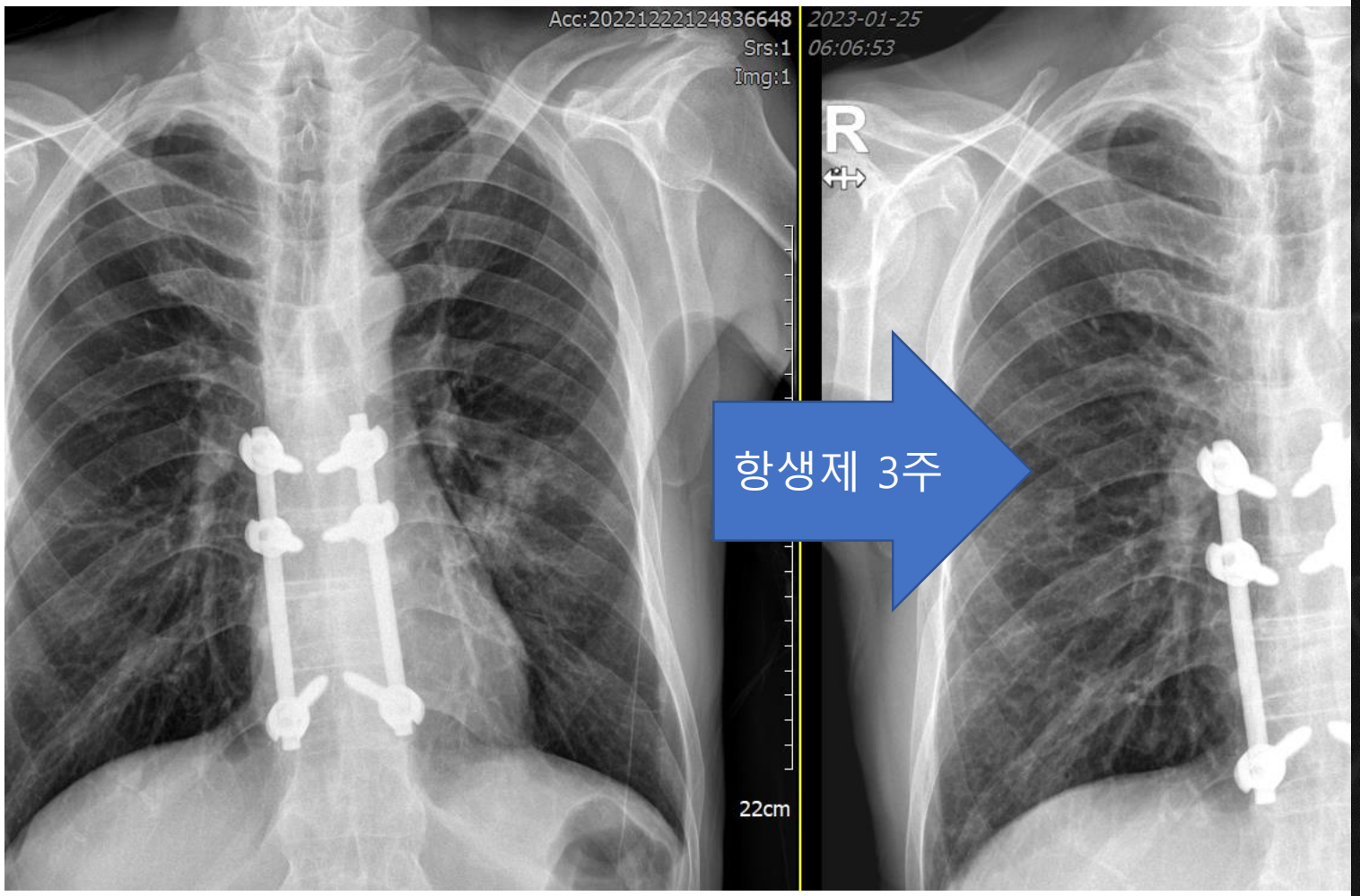


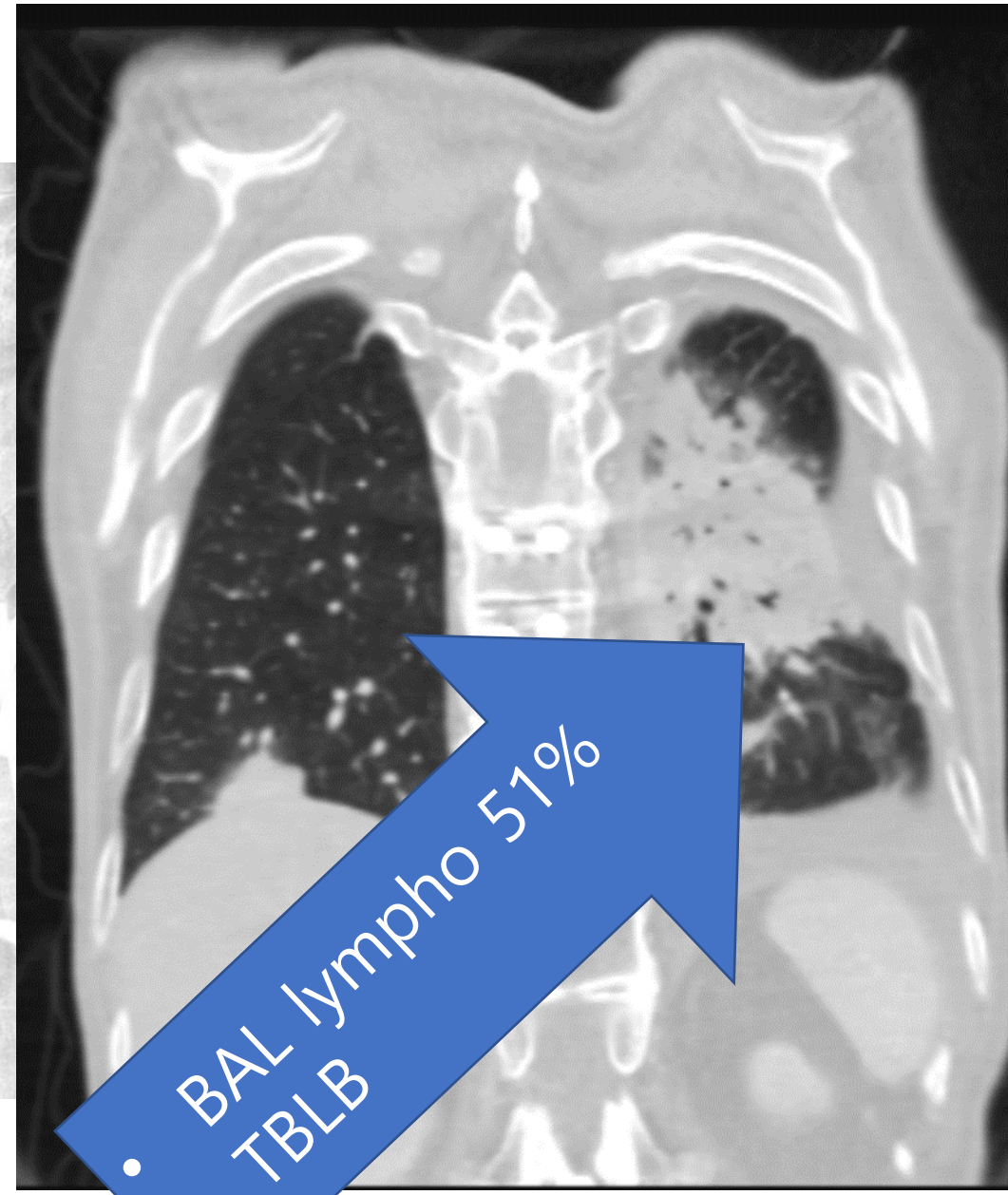
Lung. 2020 Aug;198(4):597-608

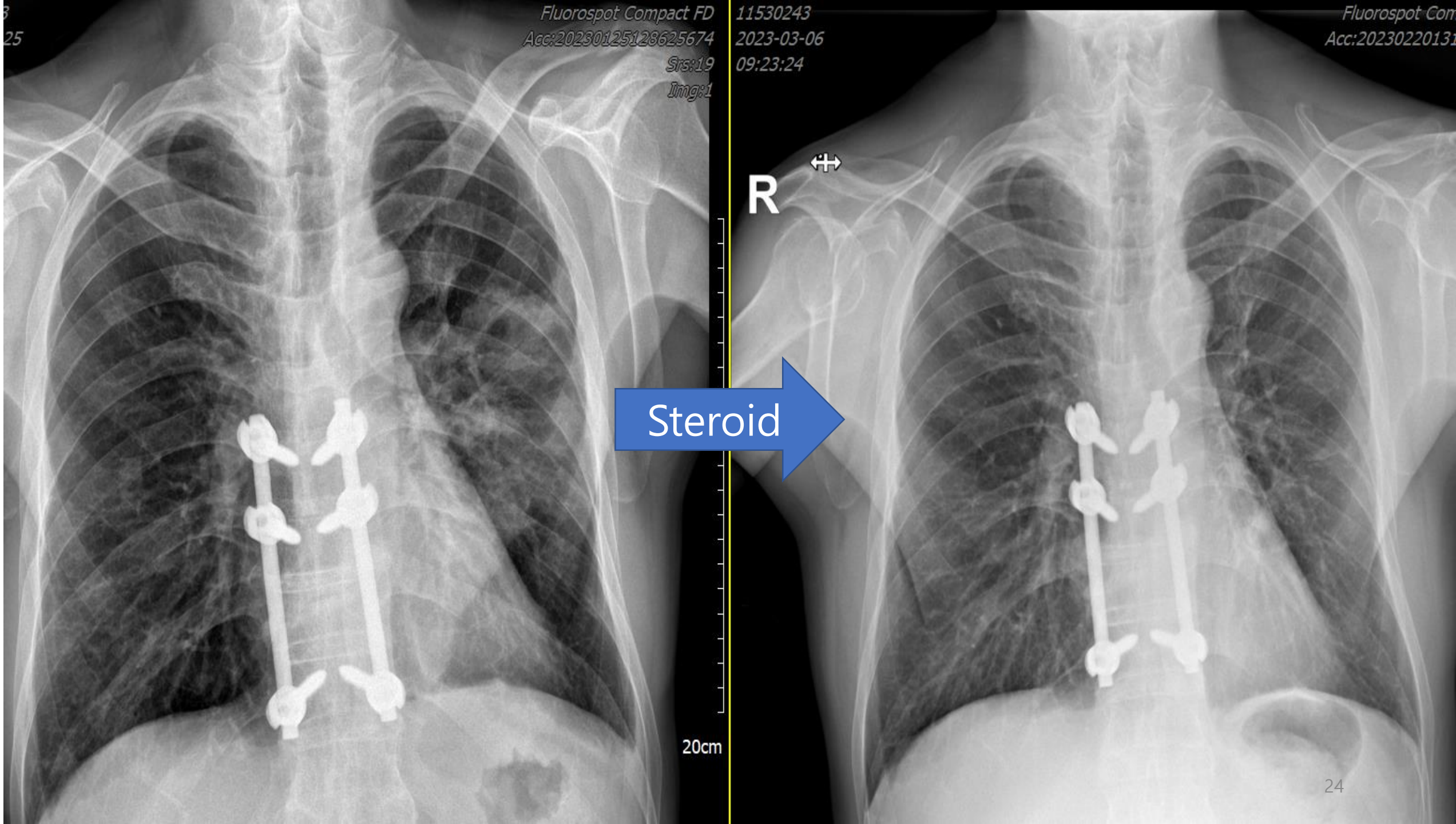
Curr Opin Pulm Med 2020, 26:436–442

증례 5

- 68세 남자
- UC, AS 치료중
- 3주간의 폐렴치료에도 호전되지 않고 심해지는 병변으로 의뢰됨

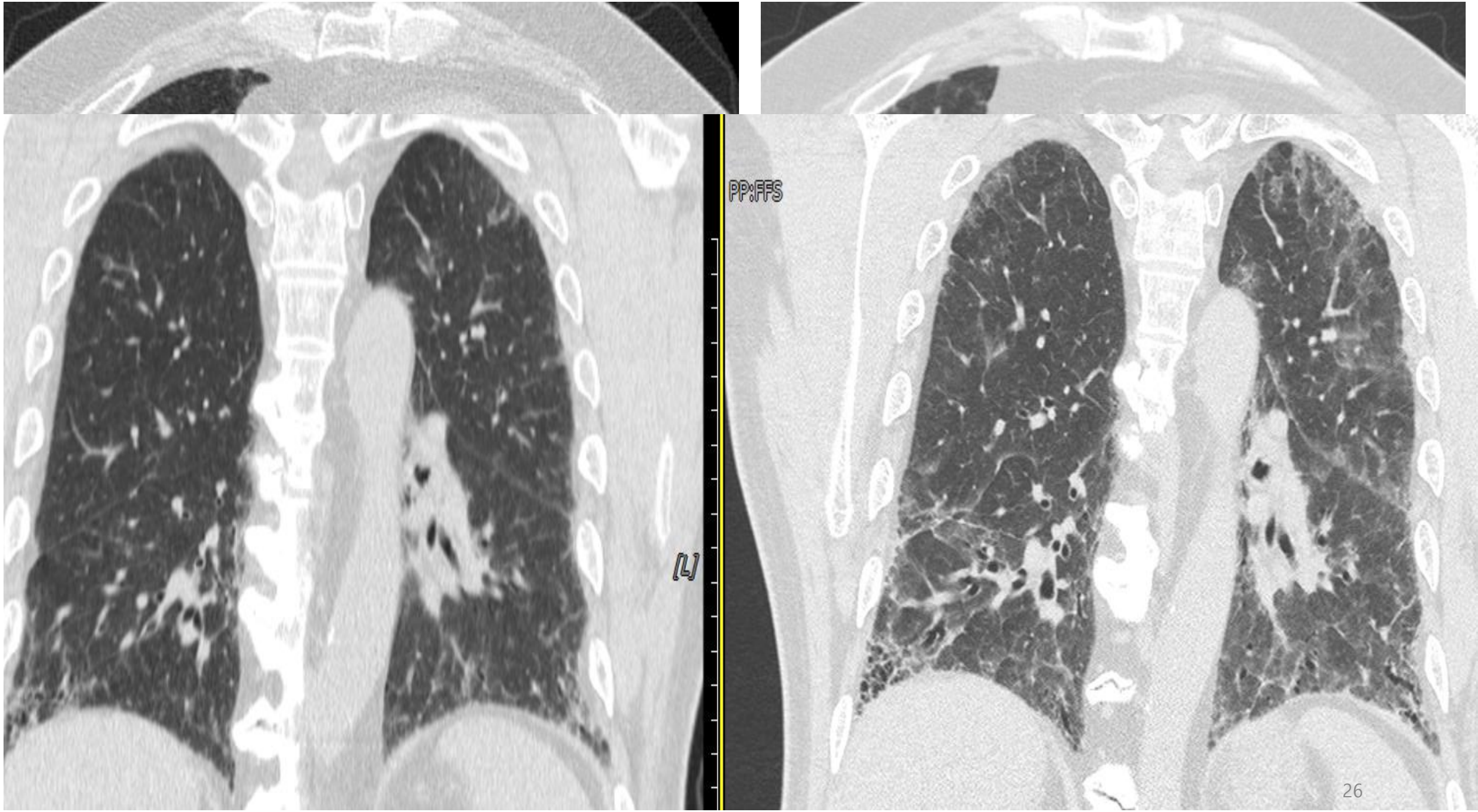

Acc:20221222124836648
Srs:1
Img:1
2023-01-25
06:06:53
R
22cm
항생제 3주


BAL lympho 51%
TBLB

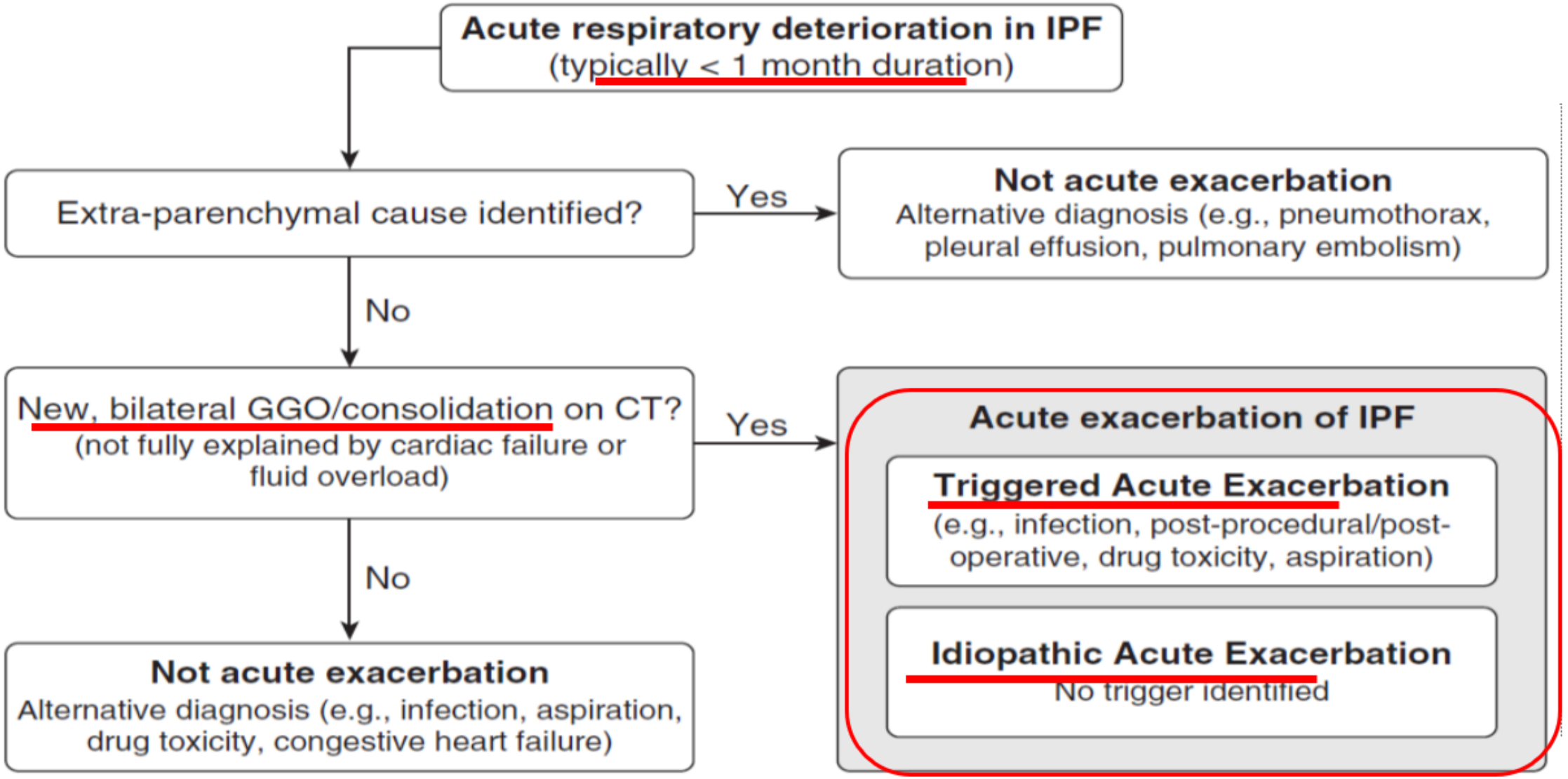

Fluorospot Compact FD
Acc:20230125128625674
Srs:19
Img:1
11530243
2023-03-06
09:23:24
Fluorospot Com
Acc:2023022013
R
Steroid
20cm

증례 6

- 64세 남자
- IPF 항섬유화제 복용중.
- 1주일전부터 호흡곤란악화, 기침악화


PP:FFS
(L)

Diagnostic algorism of acute respiratory deterioration in IPF



AJRCCM 2016;194(3):265-75

Tuberc Respir Dis (Seoul). 2019 Apr; 82(2): 102–117.

맺음말

◆IPF

-HRCT 진단 (UIP, probable UIP)
-다른원인질환 감별 (자가항체…)
-항섬유화제 (급여기준)
-희귀질환 산정특례
-급성악화 (스테로이드, 항생제)

◆ILD other than IPF

- 배제진단
- BAL, Lung biopsy (TBLC, SLB)
- NSIP 극희귀질환 산정특례
- 스테로이드, 면역억제제, 항섬유화제

ILD 연구회