

PID Actualités

Marie-Pierre Debray, Hôpital Bichat, Paris

Congrès du Club Thorax, Toulouse, 17-19 septembre 2021

ILAs anomalies interstitielles de découverte incidente

Position Paper



Interstitial lung abnormalities detected incidentally on CT: a Position Paper from the Fleischner Society

Hiroto Hatabu, Gary M Hunninghake, Luca Richeldi, Kevin K Brown, Athol U Wells, Martine Remy-Jardin, Johnny Verschakelen, Andrew G Nicholson, Mary B Beasley, David C Christiani, Raúl San José Estépar, Joon Beom Seo, Takeshi Johkoh, Nicola Sverzellati, Christopher J Ryerson, R Graham Barr, Jin Mo Goo, John H M Austin, Charles A Powell, Kyung Soo Lee, Yoshikazu Inoue, David A Lynch†*

Lancet Resp Med 2020

Panel 1: Definitions and subcategories of interstitial lung abnormalities

What are interstitial lung abnormalities (ILAs)?

- Incidental identification of non-dependent abnormalities, including ground-glass or reticular abnormalities, lung distortion, traction bronchiectasis, honeycombing, and non-emphysematous cysts
- Involving at least 5% of a lung zone (upper, middle, and lower lung zones are demarcated by the levels of the inferior aortic arch and right inferior pulmonary vein)
- In individuals in whom interstitial lung disease is not suspected

What are not ILAs?

Imaging findings restricted to:

- Dependent lung atelectasis
- Focal paraspinal fibrosis in close contact with thoracic spine osteophytes (figure 2A)
- Smoking-related centrilobular nodularity in the absence of other findings (figure 2B)
- Mild focal or unilateral abnormality (figure 2C)
- Interstitial oedema (eg, in heart failure)
- Findings of aspiration (patchy ground-glass, tree in bud; figure 2C)

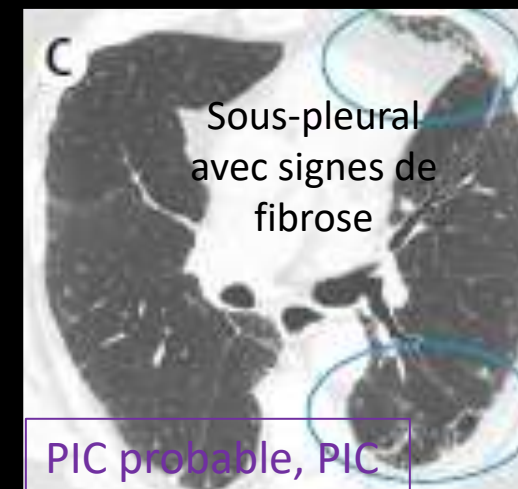
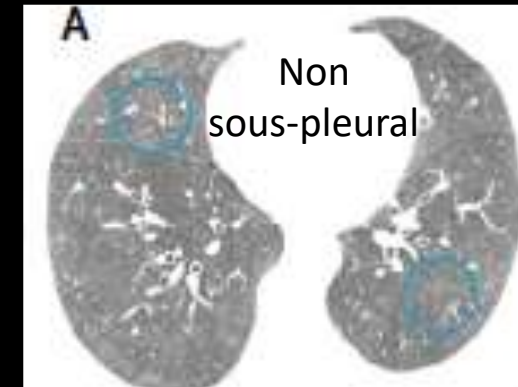
Preclinical and clinical identification:

- Preclinical interstitial abnormalities identified during screening of high-risk individuals (eg, those with rheumatoid arthritis, scleroderma, occupational exposure, familial interstitial lung disease)
- Findings in patients with known clinical interstitial lung disease

Subcategories of ILAs

- Non-subpleural: ILAs without predominant subpleural localisation (figure 1A)
- Subpleural non-fibrotic: ILAs with a predominant subpleural localisation and without evidence of fibrosis* (figure 1B)
- Subpleural fibrotic: ILAs with a predominant subpleural localisation and with evidence of pulmonary fibrosis* (figure 1C)

*Fibrosis is characterised by the presence of architectural distortion with traction bronchiectasis or honeycombing (or both).



Equivoque

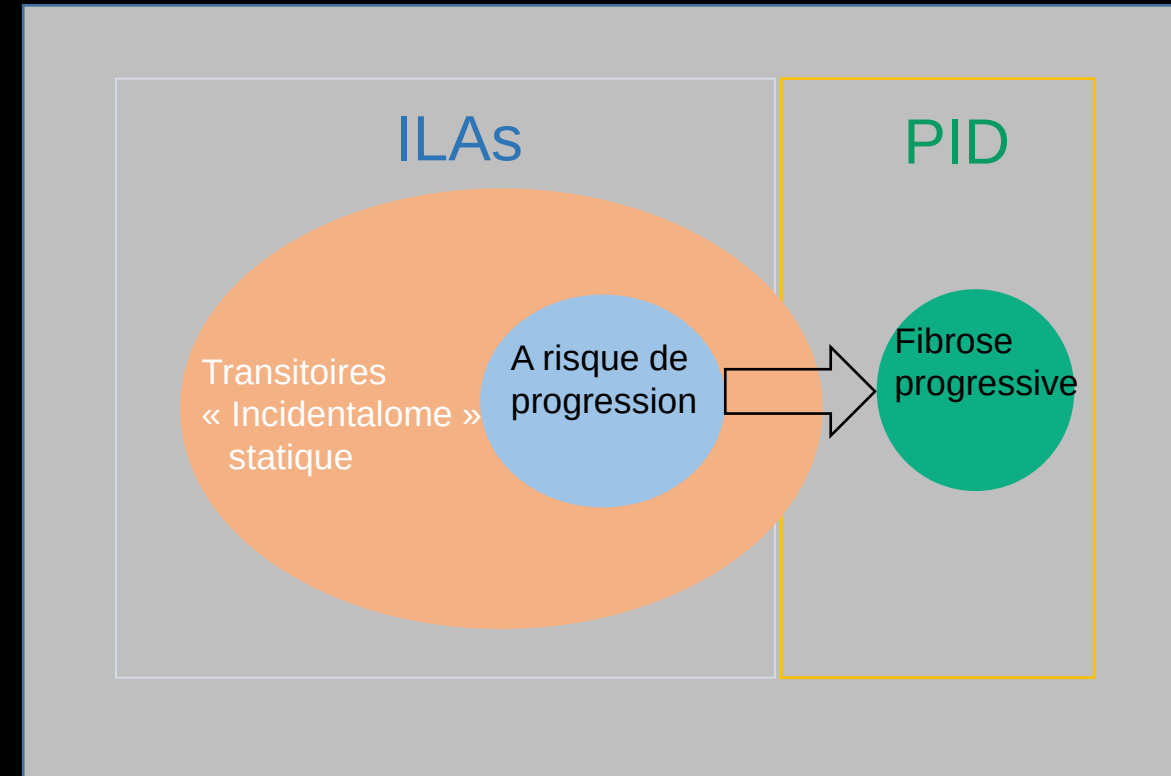
- VD patchy focal ou unilatéral
- En zones déclives et pas de procu

Risque de progression
Mortalité

ILAs : entité scannographique

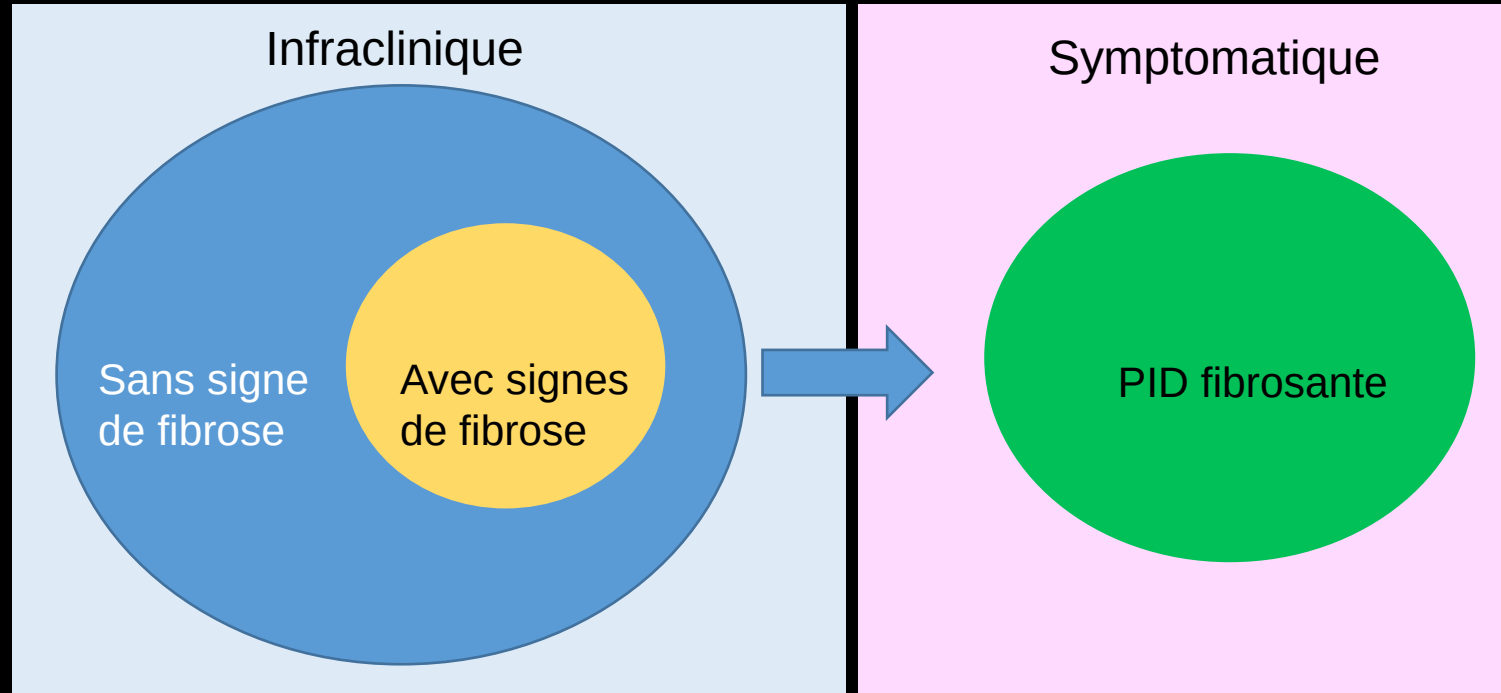
- 4-10% cohortes patients (BPCO, dépistage K bronchique, Framingham, Reykjavik)
- Prévalence ↑ avec l'âge, tabagisme, polymorphisme MUC5B
- ≈ 20% progressent sur 2 ans
≈ 40% progressent su 5 ans
- Correspondent pour partie à fibrose liée au tabac

Déclin plus lent que celui de FPI



Anomalies interstitielles dépistées dans populations à risque

Connectivites, PID familiales, exposition amiante

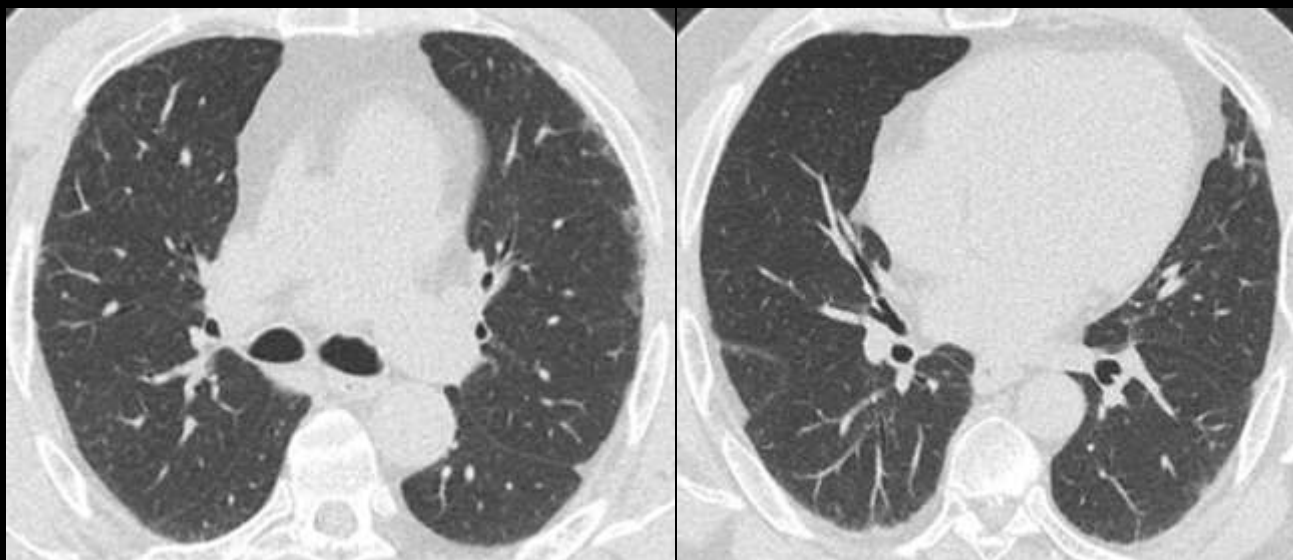


Lésions sous-pleurales discrètes « sans signe de fibrose »

Anomalies interstitielles de
découverte fortuite « ILAs »

vs

Pneumopathie interstitielle
débutante



Asymptomatique
Fonction respiratoire normale



Toux depuis 1 an
Altération fonctionnelle discrète

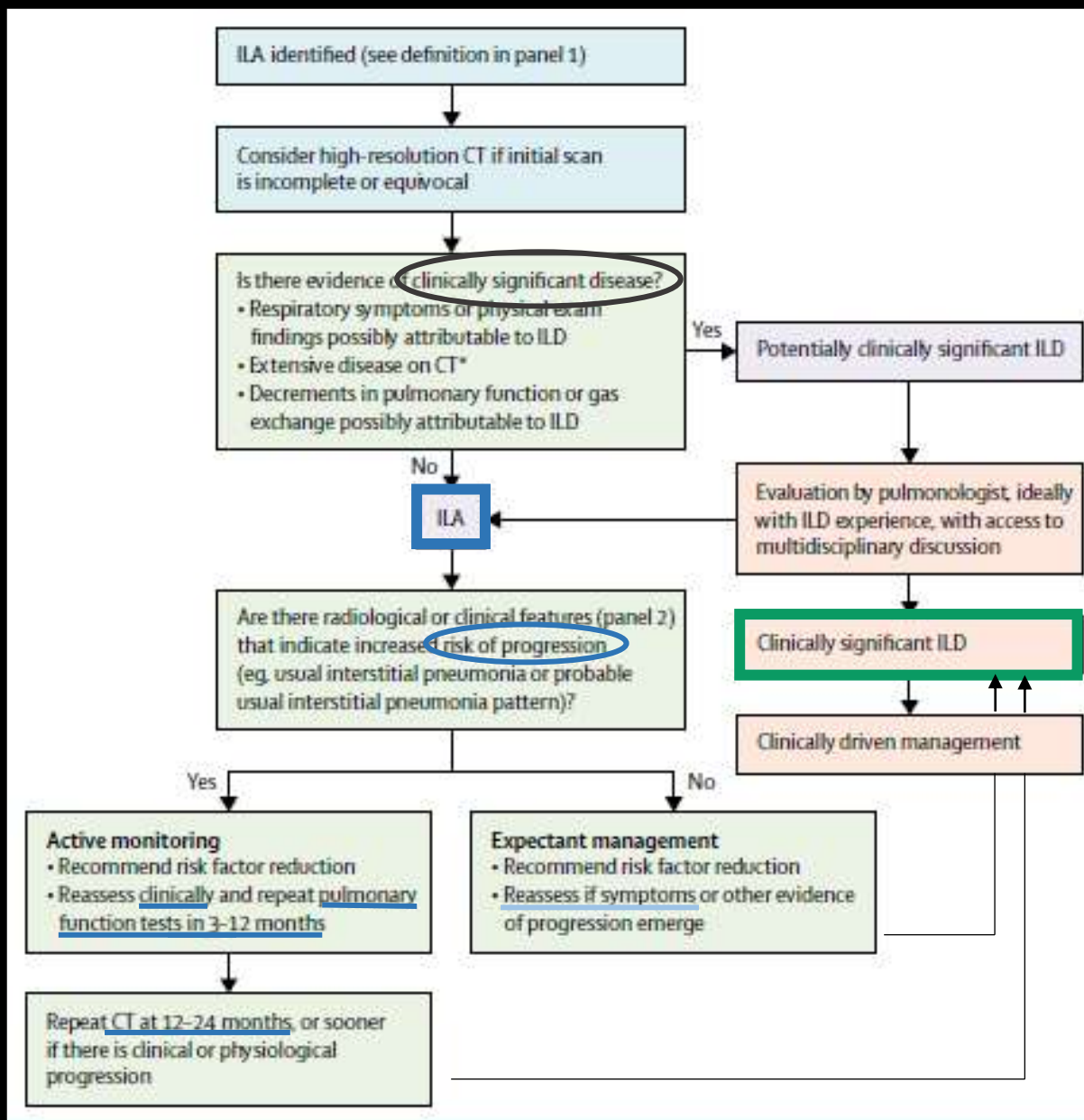
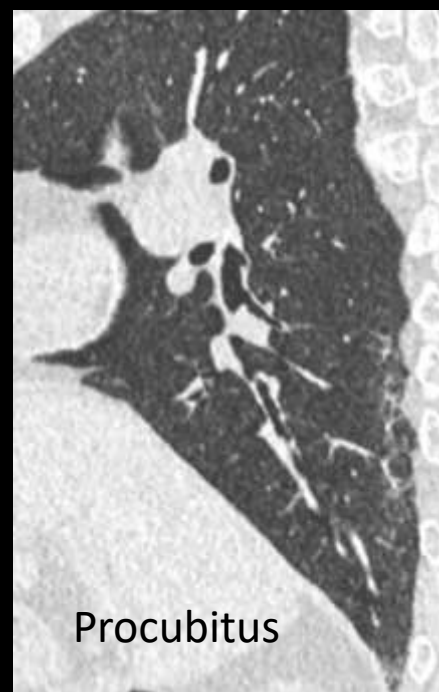
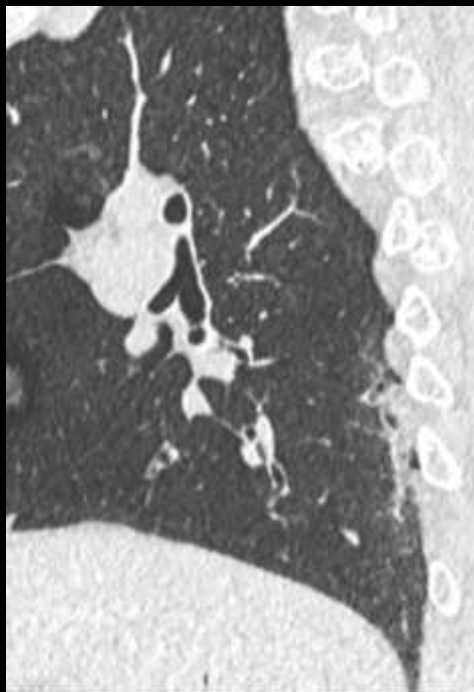
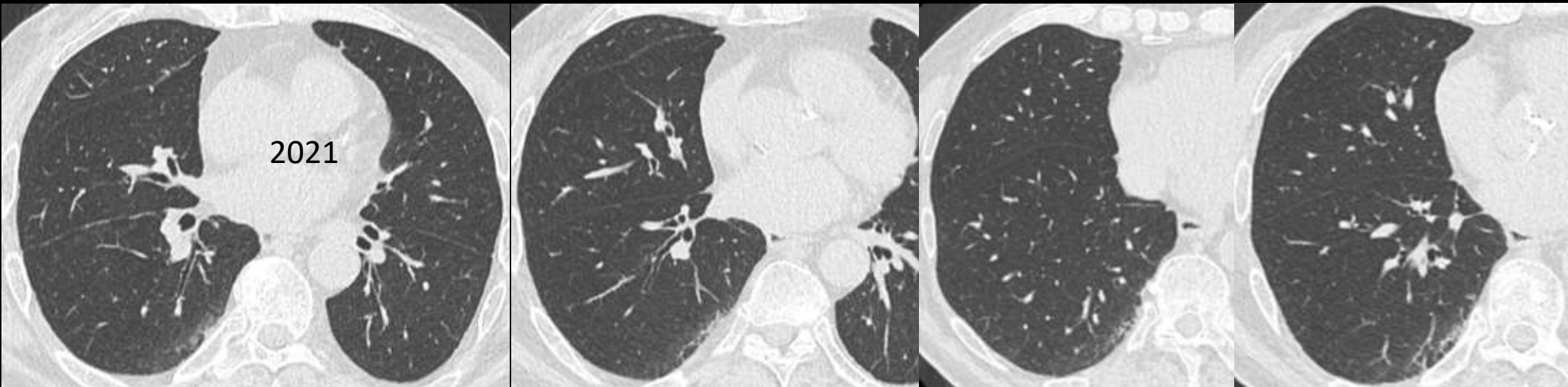


Figure 5: Proposed schema for management of interstitial lung abnormalities detected on chest CT

Contrôle d'anomalies pulmonaires de découverte fortuite



Fibroses progressives

The NEW ENGLAND JOURNAL of MEDICINE

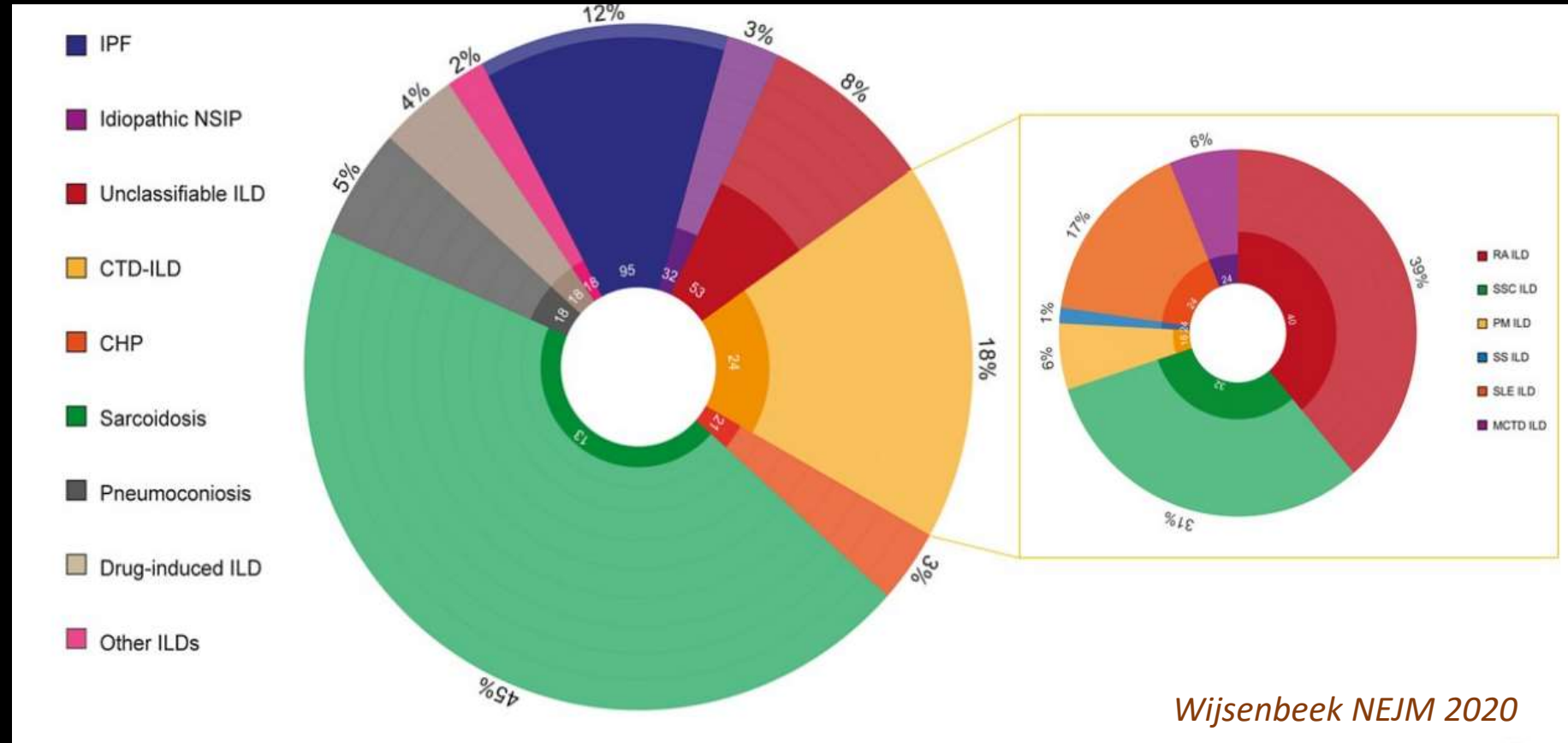
REVIEW ARTICLE

Jeffrey M. Drazen, M.D., *Editor*

Spectrum of Fibrotic Lung Diseases

Marlies Wijsenbeek, M.D., and Vincent Cottin, M.D.

Wijsenbeek NEJM 2020



13-40% des PID fibrosantes non FPI ont phénotype progressif

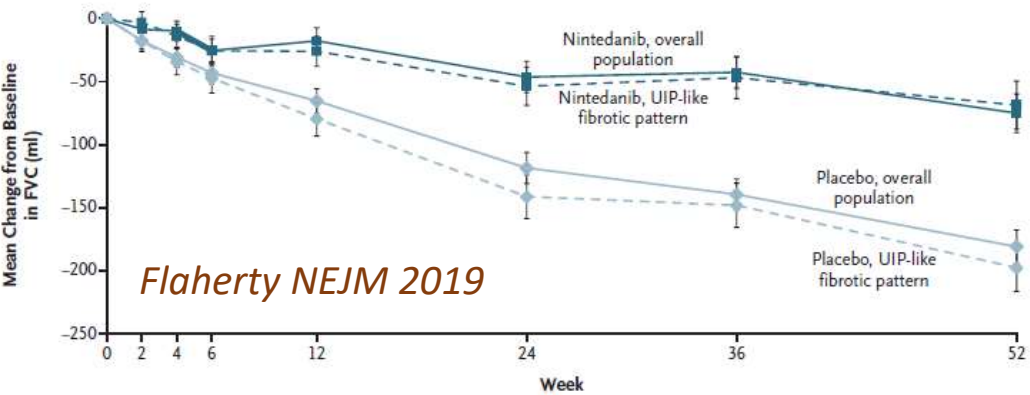
Efficacité des antifibrosants dans fibroses progressives non FPI

Critères de progression 24 mois

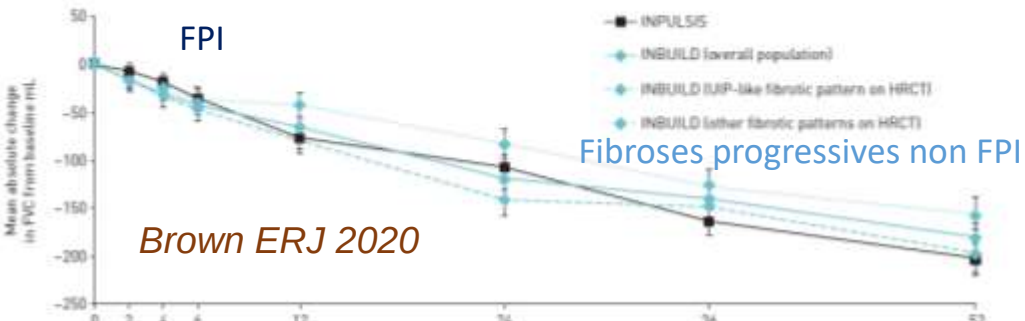
↑ CVF ≥ 10%

↑ CVF 5-10% + ↑ symptômes
/ ↑ étendue fibrose TDM

↑ symptômes + ↑ étendue fibrose TDM



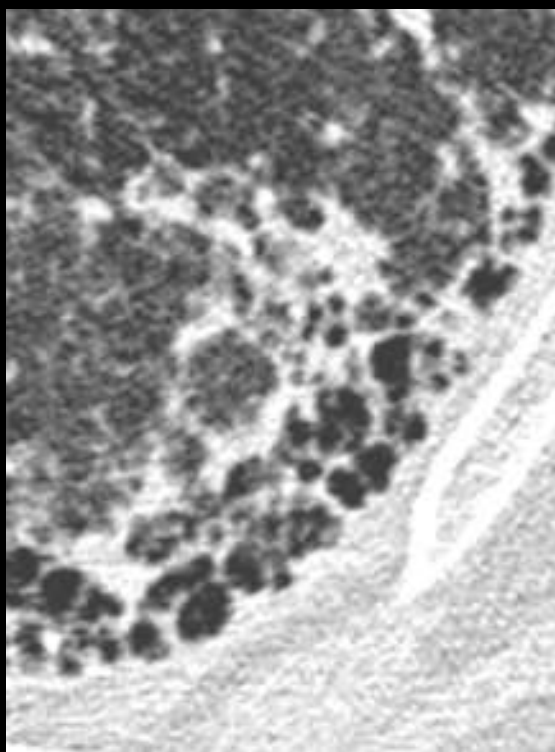
No. of Patients								
Overall population								
Nintedanib	332	326	320	322	314	298	285	265
Placebo	331	325	326	325	320	311	296	274
Patients with UIP-like fibrotic pattern								
Nintedanib	206	203	200	199	193	180	171	160
Placebo	206	202	202	201	197	190	176	162



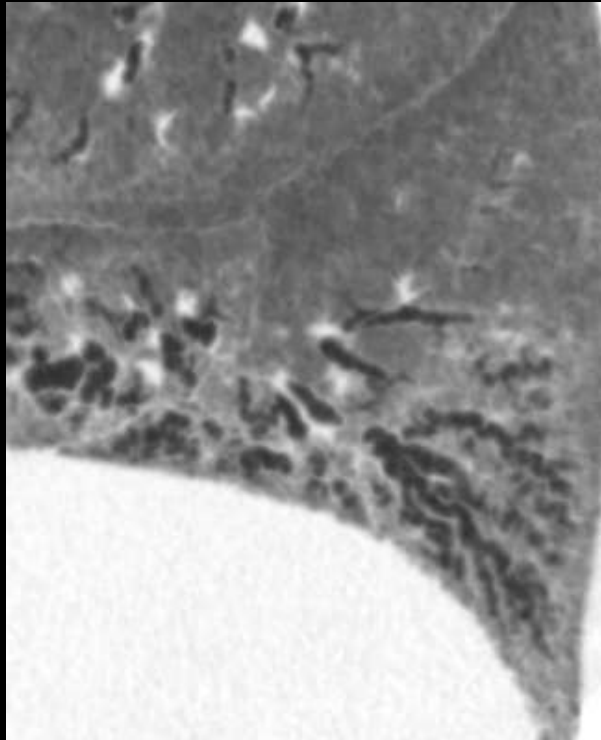
Number of subjects								
INPULSIS								
	417	408	407	403	395	383	345	
INBUILD (overall population)								
	325	324	325	320	311	296	274	
INBUILD (UIP-like fibrotic pattern)								
	202	202	201	197	190	176	162	
INBUILD (other fibrotic patterns)								
	123	124	124	123	121	120	112	

FIGURE 2 Observed change in forced vital capacity (FVC) from baseline (mean [SE]) over 52 weeks in the placebo groups of the INPULSIS and INBUILD trials. HRCT: high-resolution computed tomography; UIP: usual interstitial pneumonia.

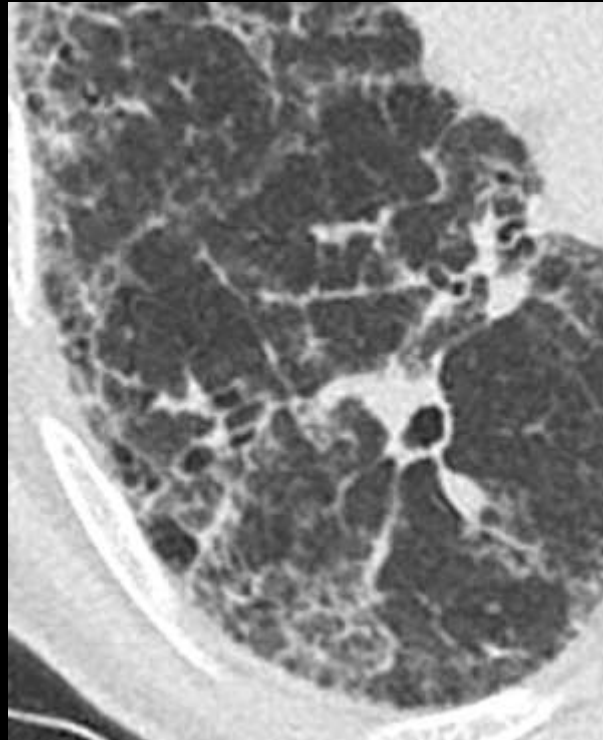
Signes de fibrose au scanner



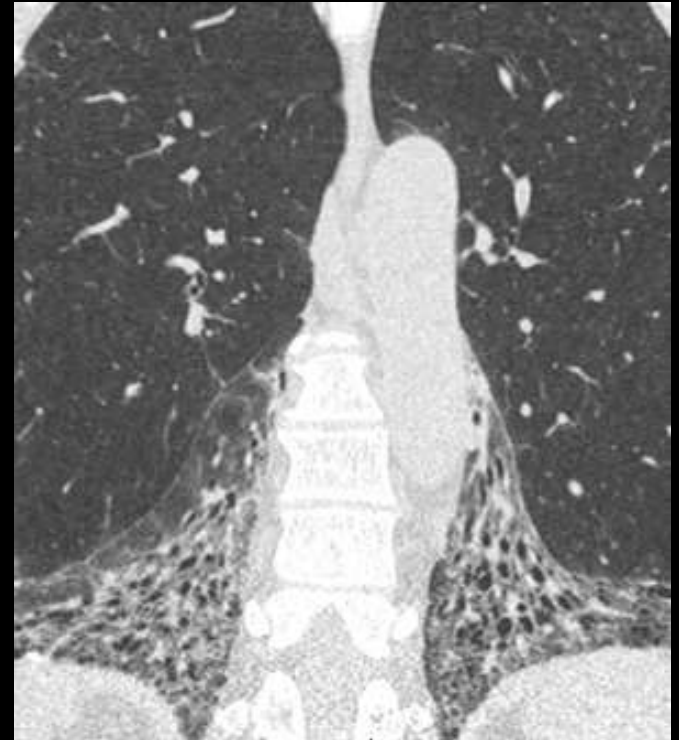
Rayon de miel



Bronchectasies de traction



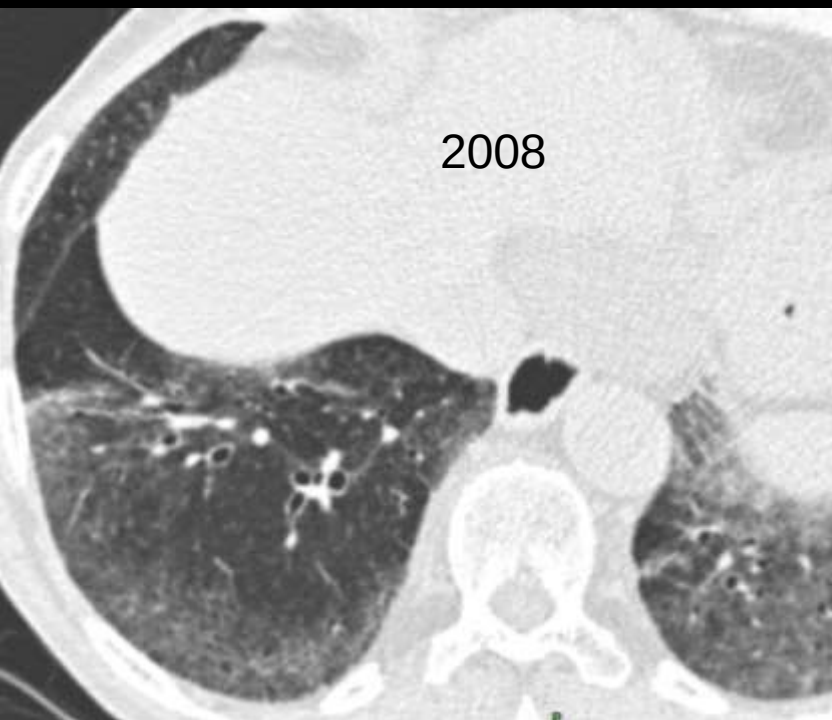
Réticulations, lignes irrégulières



Perte de volume

Progression de la fibrose en scanner

- Etendue lésionnelle
 - Côte à côte
 - Semi-quantitative visuelle / 10 % par tiers de chaque poumon
 - Quantitative par logiciel
- Texture
 - Apparition rayon de miel
 - Aggravation bronchectasies de traction
 - « Coarsness » de la fibrose



2008



2015



2020

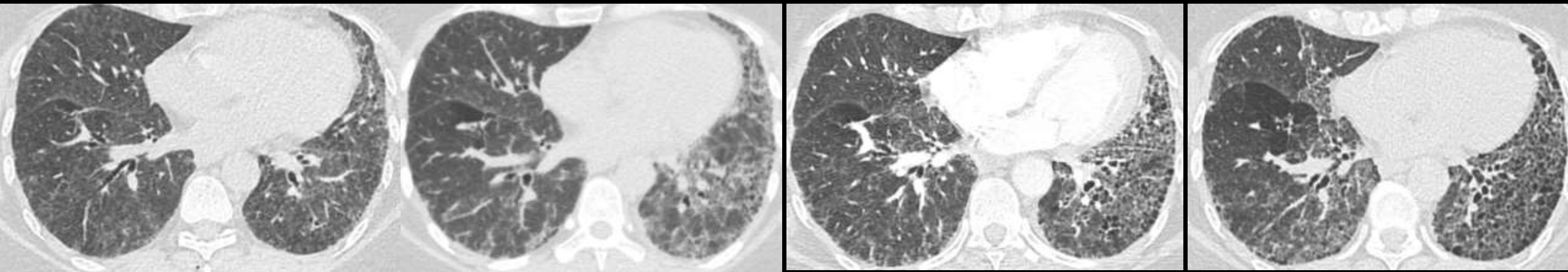
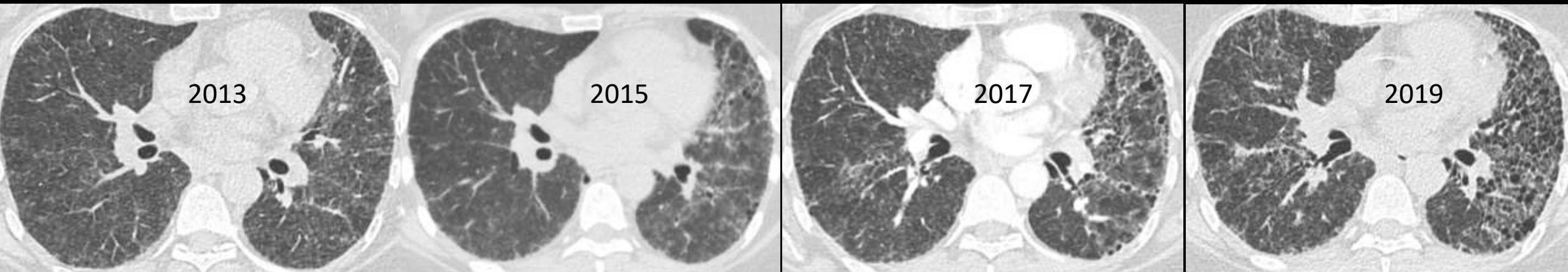
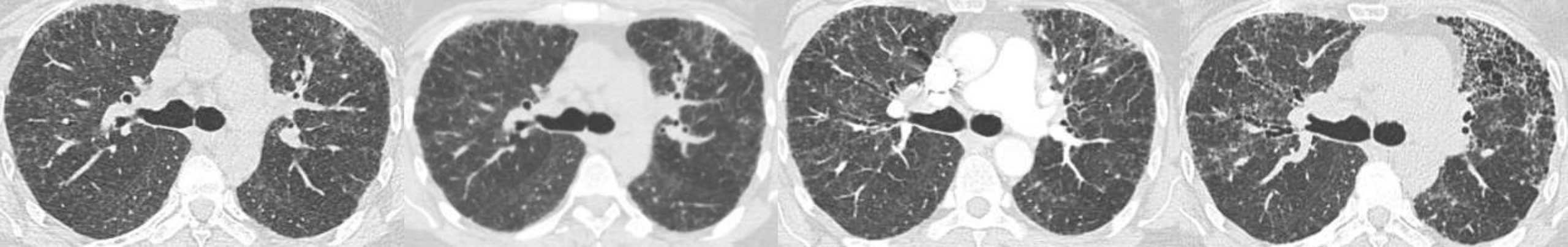
Verre dépoli

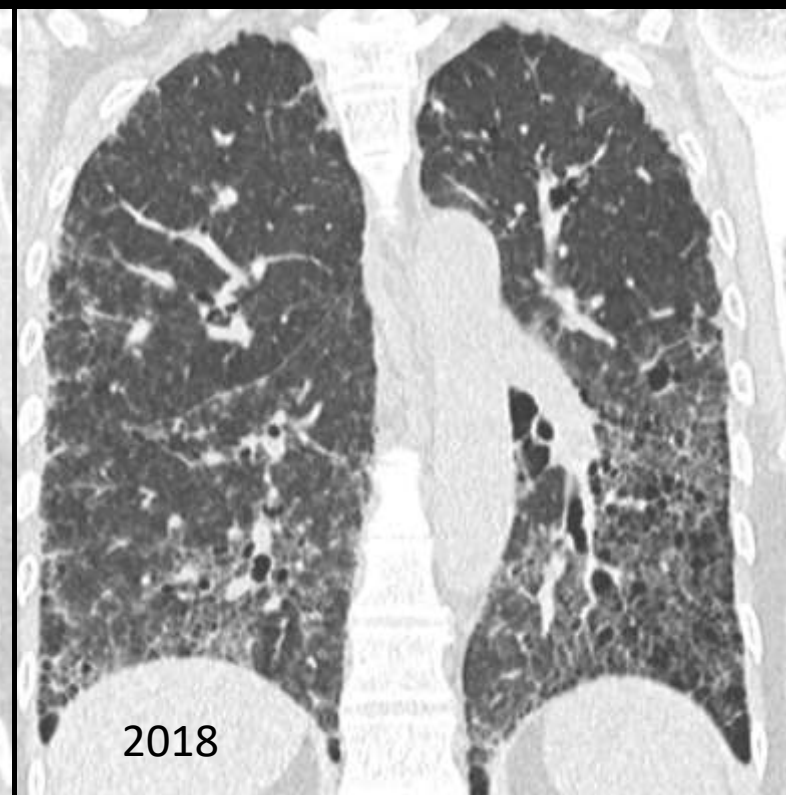
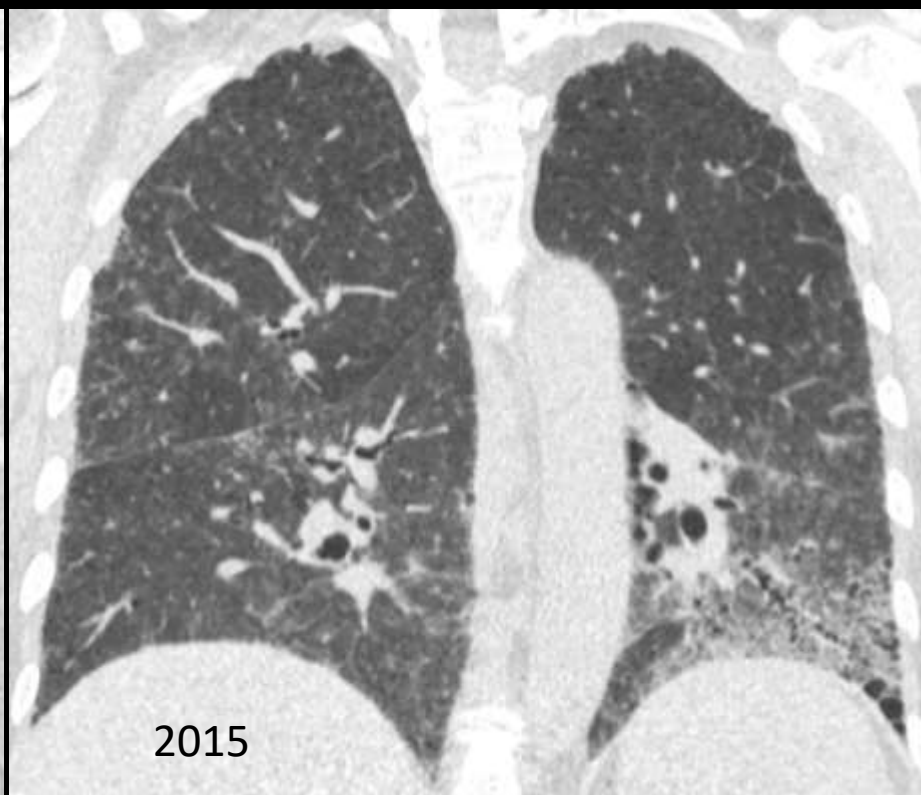


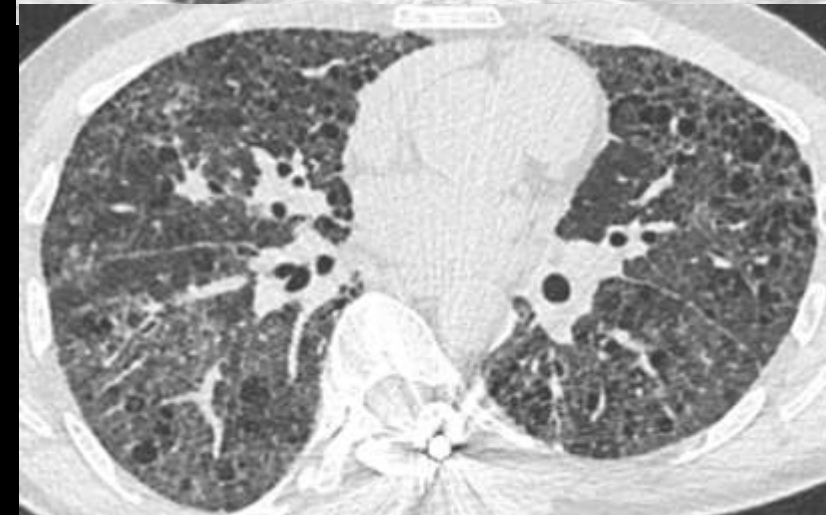
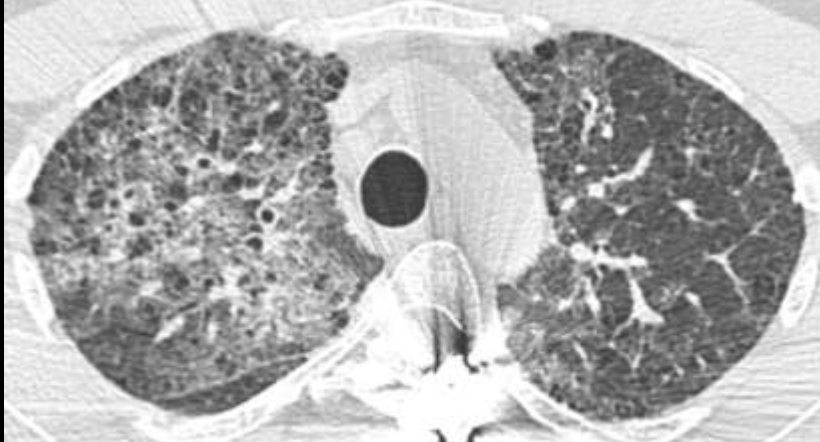
Réticulations intralobulaires
Bronchectasies de traction



Rayon de miel







PID post Covid

 **Respiratory Medicine**
journal homepage: <http://www.elsevier.com/locate/rmed>

Original Research

Integrative respiratory follow-up of severe COVID-19 reveals common functional and lung imaging sequelae

Antoine Frodure^{a,b,*}, Amin Mahzouli^{a,b}, Giuseppe Liistro^{a,b}, Julien De Greef^{c,d}, Leila Belkhir^{a,b}, Ludovic Gérard^{a,b}, Aurélie Bertrand^a, Sandra Koenig^a, Lucie Pothen^{a,b}, Halil Yıldız^{c,d}, Benny Mvengue^{a,b}, Frank Aboubakar^{a,b}, Sophie Gohy^{a,b}, Charles Pilette^{a,b}, Gregory Reyehier^{a,b}, Emmanuel Coche^{b,e}, Jean-Cyr Yombi^{c,f}, Benoit Ghaye^{b,g}

 **Respiratory Medicine**
journal homepage: www.elsevier.com/locate/rmed

Original Research

Residual ground glass opacities three months after Covid-19 pneumonia correlate to alteration of respiratory function: The post Covid M3 study

Justine Fria-Masson^{a,b,c}, Marie-Pierre Debray^{c,d}, Samia Boussouar^{a,b}, Antoine Khalil^{c,d}, Catherine Bazcal^b, Justina Motiejunaite^{a,b}, Maria Alejandra Galarza Jimenez^b, Hélène Benzaquen^b, Dominique Penaud^b, Pierantonio Laveneziana^{e,f}, Roxane Madrin^{a,b}, Alban Redheuil^{a,b}, Victoria Donciu^g, Olivier Lucidarme^{a,b}, Camille Taillé^{c,d}, Antoine Guerdier^{a,b}, Florence Arnoult^h, Emmanuelle Vidal-Petiot^{a,b,i}, Martin Flamant^{b,j,k}, Thomas Similowski^{a,b}, Capucine Morelot-Panzini^{a,b}, Morgane Faure^{a,b}, François-Xavier Lescure^{a,b}, Christian Strass^{b,l}, Marie-Pia d'Ortho^{a,b}, Jésus González-Bermejo^{f,i}

 **EUROPEAN RESPIRATORY journal**
FLAGSHIP SCIENTIFIC JOURNAL OF ERS

Pulmonary function and radiological features four months after COVID-19: first results from the national prospective observational Swiss COVID-19 lung study

Salima A. Güler, Lukas Eber, Catherine Beigelman, Pierre-Olivier Bridevaux, Martin Brutsche, Christiana Clarenbach, Christian Orazon, Thomas K. Geiser, Alexandra Lecoq, Marco Mascinetti, Bruno Naccini, Sebastian R. Ott, Lisa Papilloud, Mauro Prella, Yok-Ai Que, Paula M. Soccol, Christophe von Gunten, Monalisa Preke-Chambore

6-month consequences of COVID-19 in patients discharged from hospital: a cohort study

Chaojin Huang^a, Lixue Huang^a, Yeming Wang^a, Xia Li^a, Lili Ren^a, Xiaoying Gu^a, Liang Kang^a, Li Guo^a, Min Liu^a, Xing Zhou, Jianfeng Luo, Zhenghui Huang, Shengjin Tu, Yue Zhao, Li Chen, Depei Xu, Yanping Li, Caihong Li, Lu Peng, Yang Li, Wuxiang Xie, Dan Gu, Jianhan Shang, Guohui Fan, Jinyang Xu, Geng Wang, Ying Wang, Jingchao Zhang, Chen Wang, Jianwei Wang^b, Dingyu Zhang^c, Lin Cao^d

Research Article

A Follow-Up Study of Lung Function and Chest Computed Tomography at 6 Months after Discharge in Patients with Coronavirus Disease 2019

Qian Wu^{1,2}, Lingshan Zhong^{2,3}, Hongwei Li^{1,2}, Jing Guo^{1,2}, Yajie Li^{1,2}, Xinwei Hou^{1,2}, Fangfei Yang^{1,2}, Yi Xie^{2,4}, Li Li^{1,2} and Zhiheng Xing^{2,3}

¹Department of Respiratory Medicine, Hubei Clinical College of Hubei Medical University, Tongshi, 430070, China

Radiology

Six-Month Follow-up Chest CT findings after Severe COVID-19 Pneumonia

Manuscript type: Original Research

Authors: Xiaoyu Han^{1,2*}, MD, PhD, Yanqing Fan^{3*}, MD, Osamah Alwalid^{1,2}, MD, PhD, Na Li^{1,2}, MD, Xi Jia^{1,2}, MD, Mei Yuan^{1,2}, MD, Yumin Li^{1,2}, MD, PhD, Yukun Cao^{1,2}, MD, Jin Gu^{1,2}, MD, PhD, Hanping Wu⁴, MD, PhD, Heshui Shi^{1,2}, MD, PhD.

1-year outcomes in hospital survivors with COVID-19: a longitudinal cohort study

Lixue Huang^a, Qun Yao^a, Xiaoying Gu^a, Qiongya Wang^a, Lili Ren^a, Yeming Wang^a, Ping Hu^a, Li Guo^a, Min Liu, Jiuyao Yang, Yanqing Fan, Xia Li, Caihong Li, Ting Yu, Jiaan Xia, Ming Wei, Li Chen, Yanping Li, Fan Xiao, Dan Liu, Jianwei Wang^b, Lin Cao^d

M3

- Verre dépoli, réticulations, opacités en bandes, distorsions bronchiques
Trappage expiratoire
Condensations
Rayon de miel rare
- Signes suggestifs de fibrose 12-20%
- Etendue lésionnelle corrélée à sévérité initiale
Froidure et al 107 pts, Covid sévère/critique, 17% ont étendue lésionnelle $\geq 5\%$

M6

- *Han et al* 114 pts, Covid sévère/critique, 62% anomalies résiduelles, 35% fibrotic-like à M6
 - « Fibrotic-like » bronchectasies de traction, bandes parenchymateuses, rayon de miel
 - Plus fréquent si ARDS, VM, étendue lésionnelle initiale importante, patient âgé

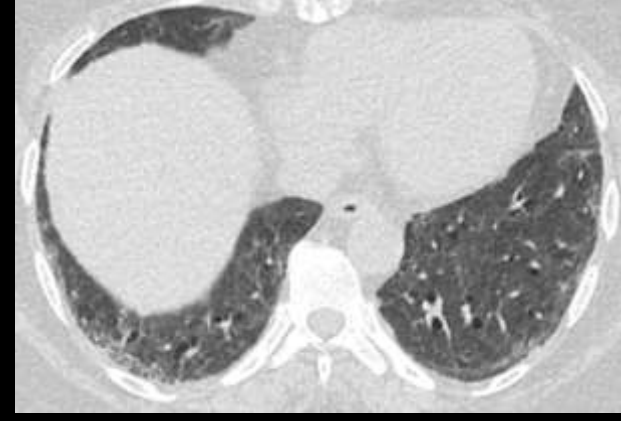
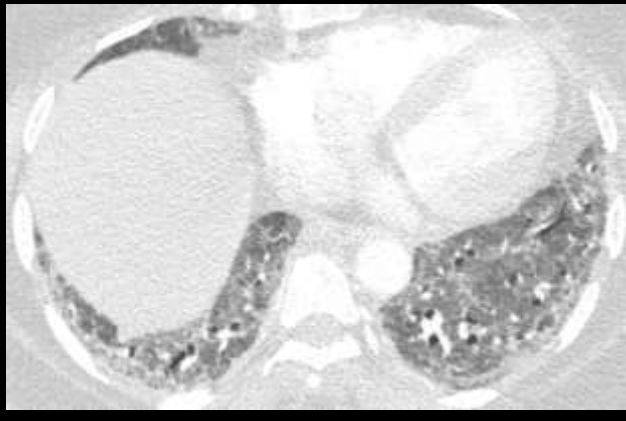
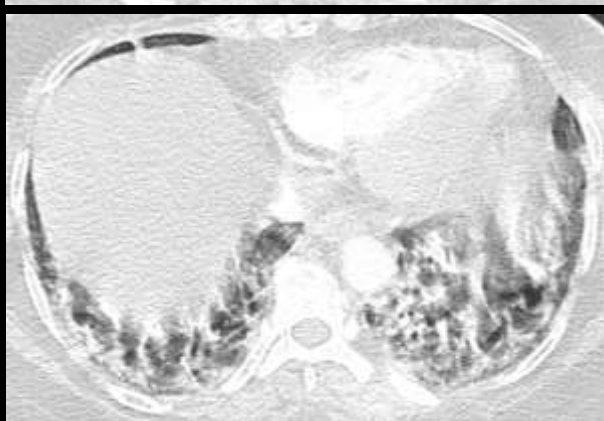
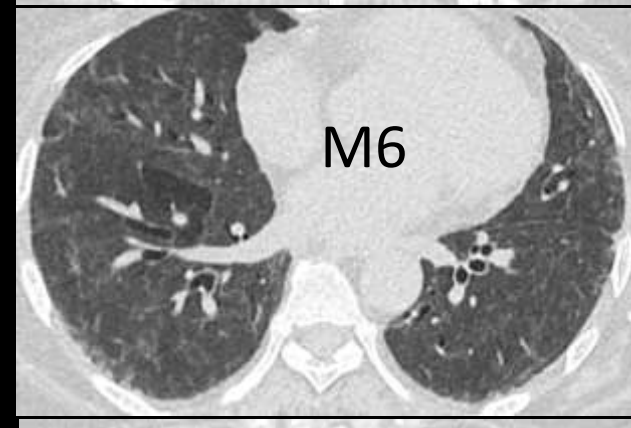
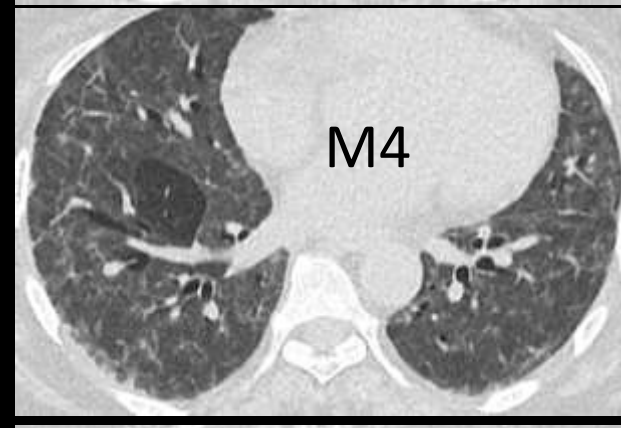
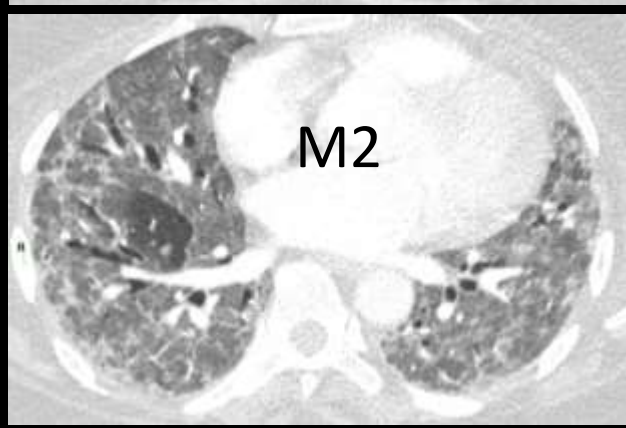
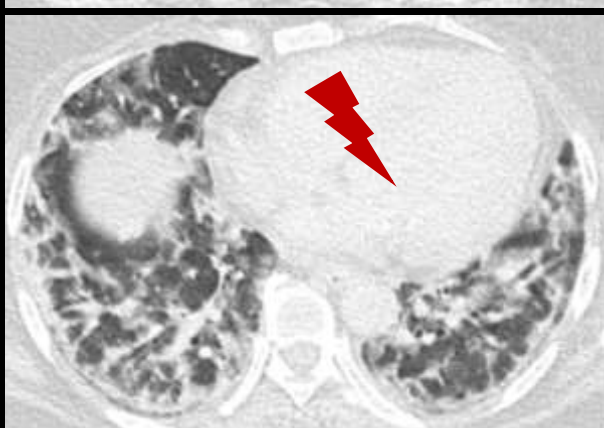
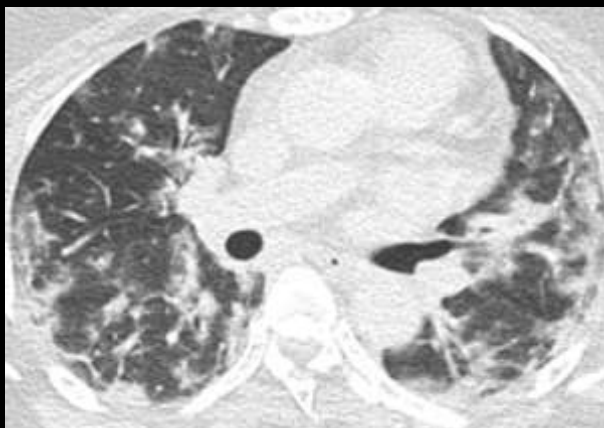
- *Huang et al*

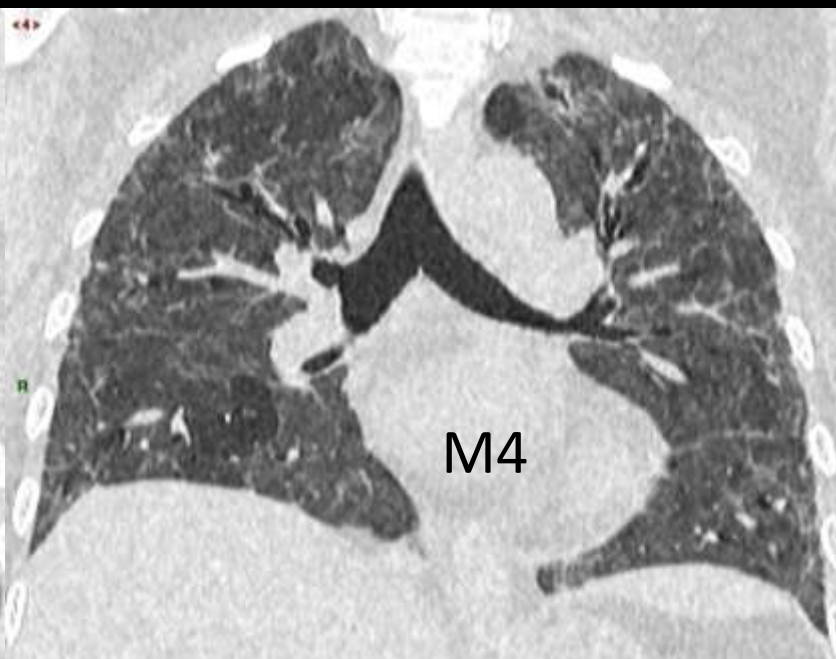
	Seven-category scale		
	Scale 3: not requiring supplemental oxygen	Scale 4: requiring supplemental oxygen	Scale 5-6: requiring HFNC, NIV, or IMV
Number of patients	95	163	95
At least one abnormal CT pattern	49 (52%)	87/161 (54%)	50/92 (54%)
GGO	39 (41%)	78/161 (48%)	41/92 (45%)
Irregular lines	10 (11%)	24/161 (15%)	22/92 (24%)
Consolidation	0	4/161 (2%)	0
Interlobular septal thickening	1 (1%)	2/161 (1%)	0
Subpleural line	6 (6%)	5/161 (3%)	4/92 (4%)
Reticular pattern	0	1/161 (1%)	1/92 (1%)
Volume of lung lesions, cm ⁴	1.6 (0.6 to 5.6)	3.3 (0.8 to 12.4)	29.1 (4.6 to 77.3)
Volume of consolidation, cm ³	0.2 (0.1 to 0.4)	0.3 (0.1 to 1.0)	1.6 (0.2 to 4.4)
Volume of GGO, cm ³	1.4 (0.6 to 4.7)	2.9 (0.7 to 10.0)	26.3 (4.3 to 73.3)
Volume ratio of lung lesion to total lung, %	0.0 (0.0 to 0.1)	0.1 (0.0 to 0.3)	0.7 (0.1 to 2.2)
Volume ratio of consolidation to total lung, %	0.0 (0.0 to 0.0)	0.0 (0.0 to 0.0)	0.0 (0.0 to 0.1)
Volume ratio of GGO to total lung, %	0.0 (0.0 to 0.1)	0.1 (0.0 to 0.2)	0.6 (0.1 to 1.9)
CT score	3.0 (2.0 to 5.0)	4.0 (3.0 to 5.0)	5.0 (4.0 to 6.0)

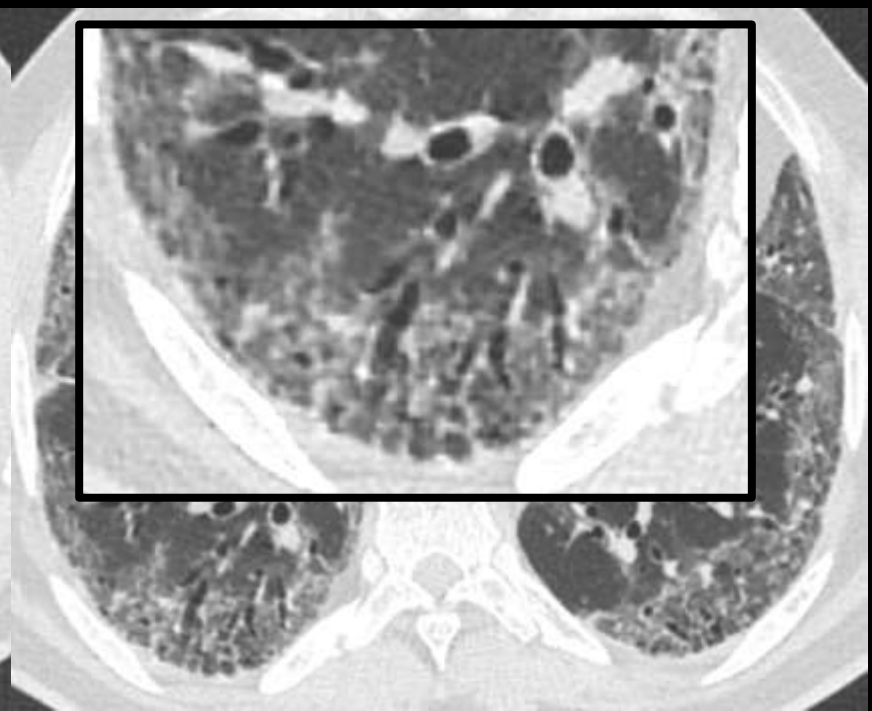
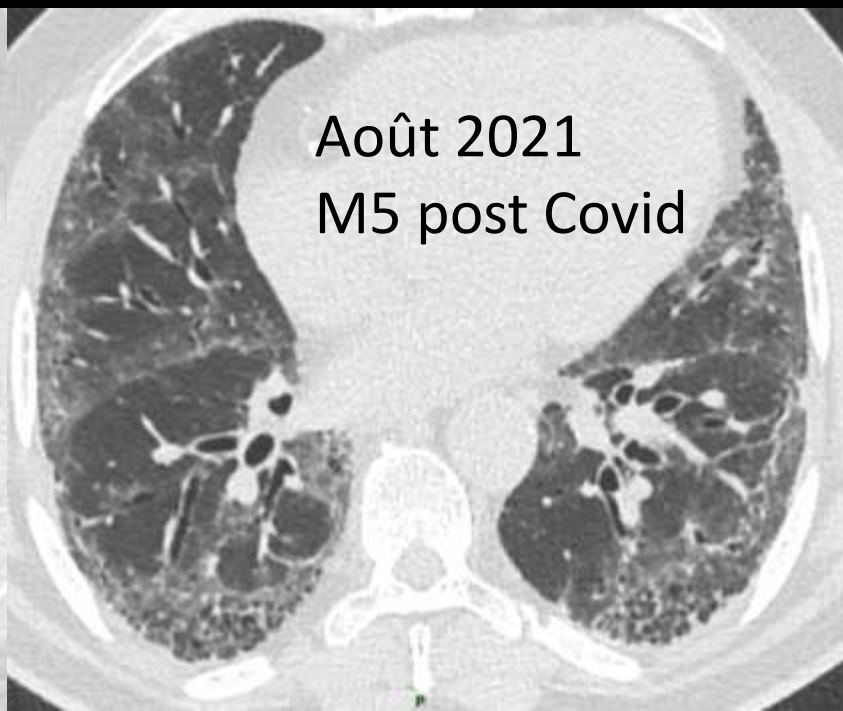
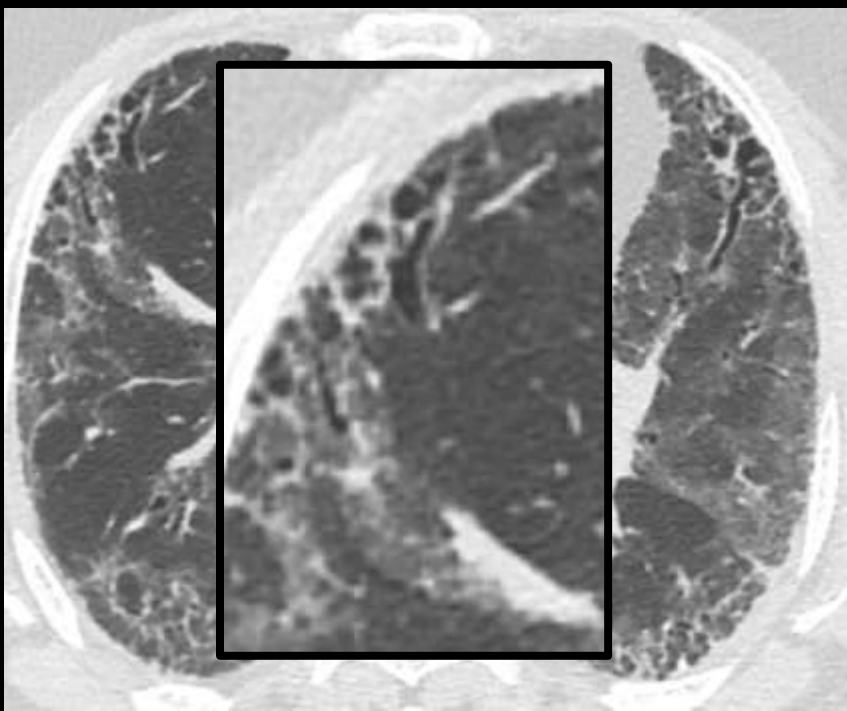
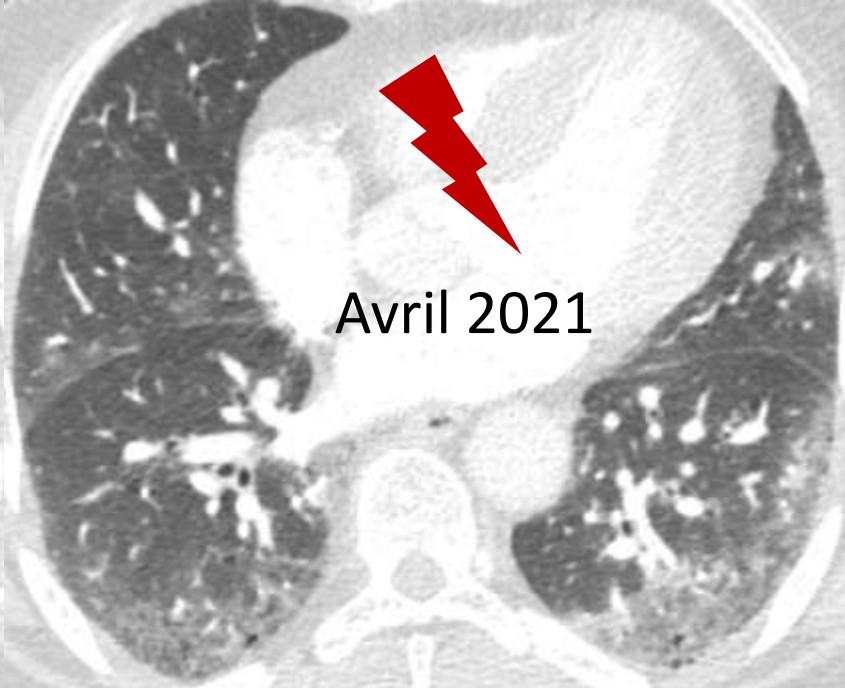
M12

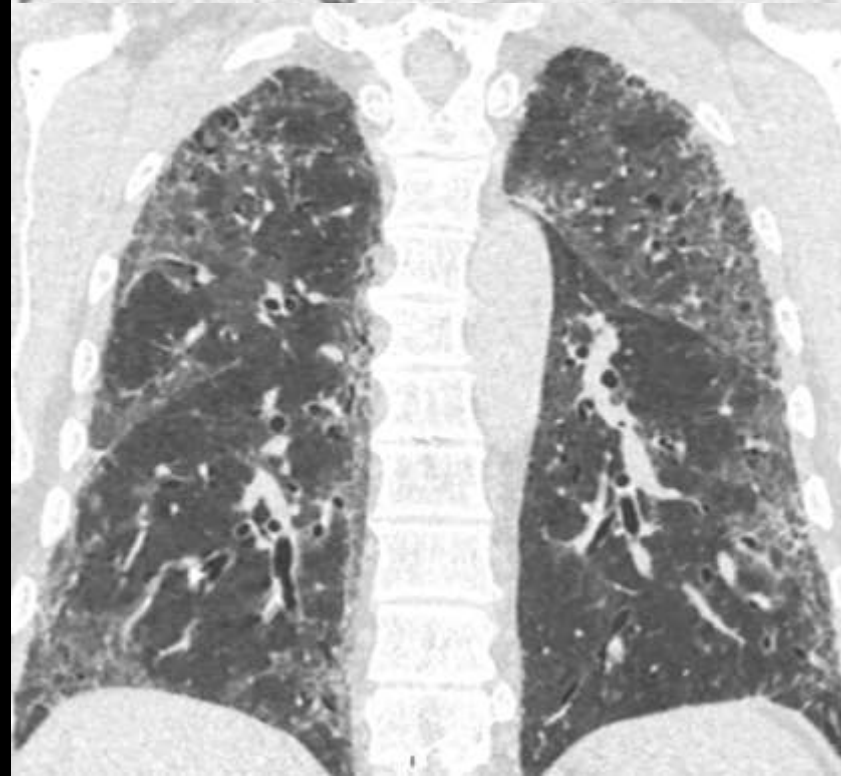
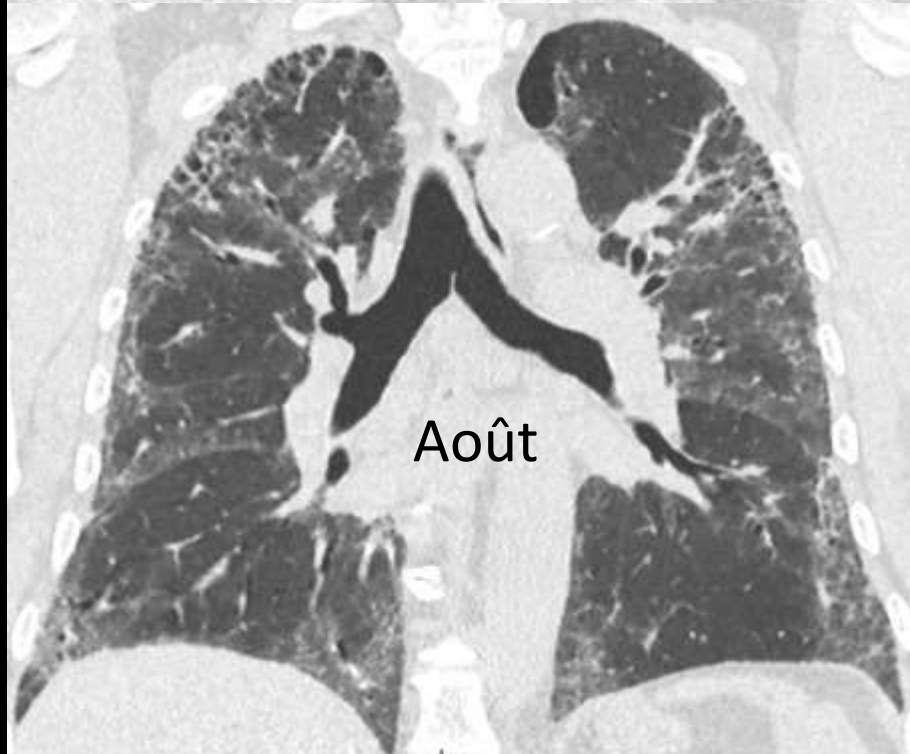
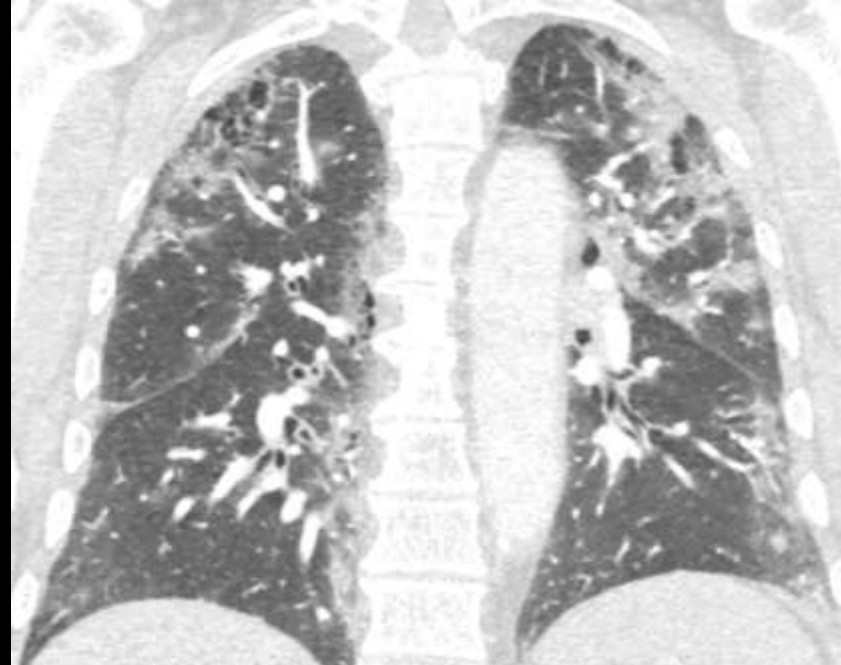
- Huang et al

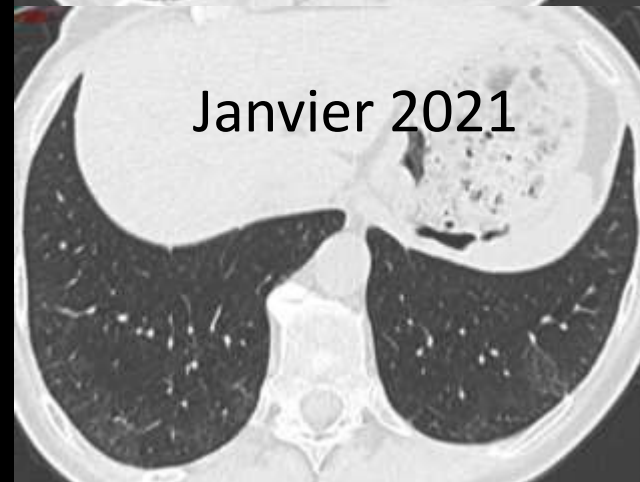
	Scale 3: not requiring supplemental oxygen			Scale 4: requiring supplemental oxygen			Scale 5-6: requiring HFNC, NIV, or IMV		
	6 month	12 month	p value	6 month	12 month	p value	6 month	12 month	p value
Lung function									
Number of patients	59	56	..	125	118	..	70	70	..
FEV ₁ <80%, % of predicted	4 (7%)	2 (4%)	0.32	2 (2%)	3 (3%)	0.56	10 (14%)	4 (6%)	0.014
FVC <80%, % of predicted	3 (5%)	2 (4%)	<0.0001	0 (0%)	2 (2%)	0.16	9 (13%)	6 (9%)	0.08
FEV ₁ /FVC <70%	5 (8%)	4 (7%)	0.32	11 (9%)	6 (5%)	0.10	2 (3%)	0 (0%)	0.16
TLC <80%, % of predicted	6/57 (11%)	3 (5%)	0.18	12/124 (10%)	8/117 (7%)	0.65	27/69 (39%)	20 (29%)	0.021
FRC <80%, % of predicted	4/57 (7%)	6 (11%)	0.32	5/124 (4%)	5/116 (4%)	1.00	14/67 (21%)	16 (23%)	1.00
RV <80%, % of predicted	12/57 (21%)	15 (27%)	1.00	18/124 (15%)	26/117 (22%)	0.050	34/69 (49%)	44 (63%)	0.11
DLCO <80%, % of predicted*	12/57 (21%)	13 (23%)	0.53	32/124 (26%)	36/117 (31%)	0.13	39/69 (57%)	38 (54%)	0.53
Chest CT									
Number of patients	33	28	..	56	52	..	39	38	..
At least one abnormal CT pattern	33 (100%)	11 (39%)	<0.0001	56 (100%)	21 (40%)	<0.0001	39 (100%)	33 (87%)	0.025
GGO	28 (85%)	11 (39%)	0.0047	52 (93%)	14 (27%)	<0.0001	32 (82%)	29 (76%)	0.56
Irregular lines	6 (18%)	6 (21%)	1.00	13 (23%)	12 (23%)	1.00	18 (46%)	23 (61%)	0.22
Subpleural line	5 (15%)	1 (4%)	0.10	1 (2%)	2 (4%)	0.56	3 (8%)	8 (21%)	0.06
Interlobular septal thickening	1 (3%)	0 (0%)	0.32	2 (4%)	1 (2%)	0.56	0 (0%)	4 (11%)	0.046
Reticular pattern	0 (0%)	0 (0%)	NA	0 (0%)	1 (2%)	0.32	1 (3%)	3 (8%)	0.16
Consolidation	0 (0%)	0 (0%)	NA	4 (7%)	0 (0%)	0.08	0 (0%)	1 (3%)	0.32







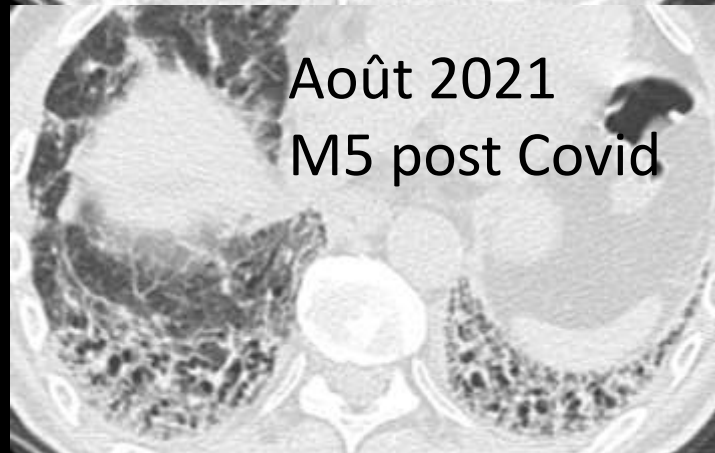
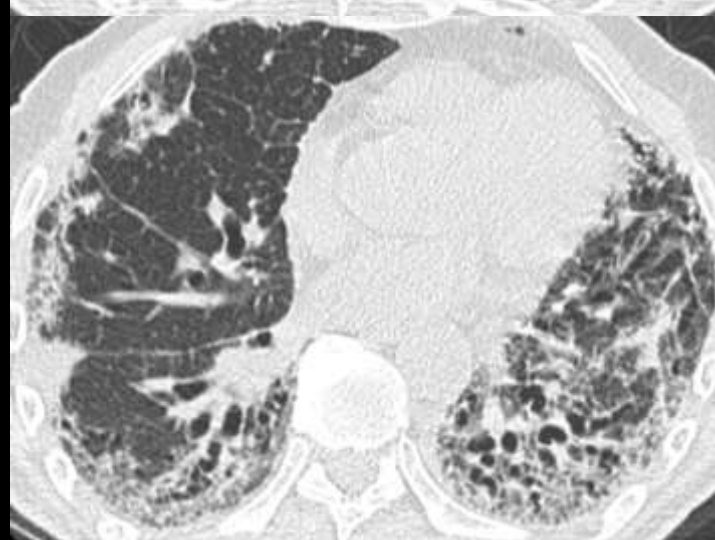
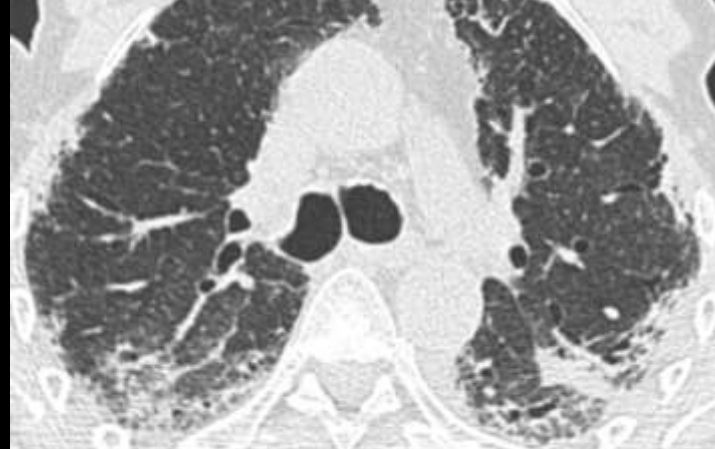




Janvier 2021



Avril 2021



Août 2021
M5 post Covid

