



# COVID-19 INFЕКCIÓ PULMONOLÓGIAI SZÖVŐDMÉNYEK

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EGYETEMI ADJUNKTUS / PH.D.

**BELGYÓGYÁSZAT SZAKVIZSGA ELŐKÉSZÍTŐ ÉS EKG ELEMZÉS A KLINIKAI GYAKORLATBAN**

**TANFOLYAM**

**2021. MÁJUS 17 - JÚNIUS 11. PÉCS**

**ON-LINE TANFOLYAM**

# TÜNETEK

## LEGGYAKORIBB TÜNETEK

- láz
- száraz köhögés
- fáradékonyság

### Súlyos tünetek:

- légzési nehézség, illetve légszomj
- nyomás vagy fájdalom a mellkasi régióban
- a beszédképesség elvesztése, illetve mozgásképtelenség

ARDS – légzési elégtelenség

## KEVÉSBÉ GYAKORI TÜNETEK:

- torokfájás
- hasmenés
- kötőhártya-gyulladás
- fejfájás
- a szaglás/ízlelés elvesztése
- bőrkiütés, vagy elszíneződés az ujjakon/lábujjakon

# CORONAVIRUS DISEASE 2019 (COVID-19): A SYSTEMATIC REVIEW OF IMAGING FINDINGS IN 919 PATIENTS

AJR:215, July 2020



A



B



C



D

**Fig. 1**—79-year-old woman who presented with chest pain, cough, and fever for 3 days. Coronavirus disease (COVID-19) had recently been diagnosed in two of her household members. Patient developed acute respiratory distress syndrome within subsequent few days and died 11 days after admission. (Courtesy of Song F, Shanghai Public Health Clinical Center, Shanghai, China)

**A and B**, CT image (**A**) and chest radiograph (**B**) show ground glass opacification (GGO) on day 1.

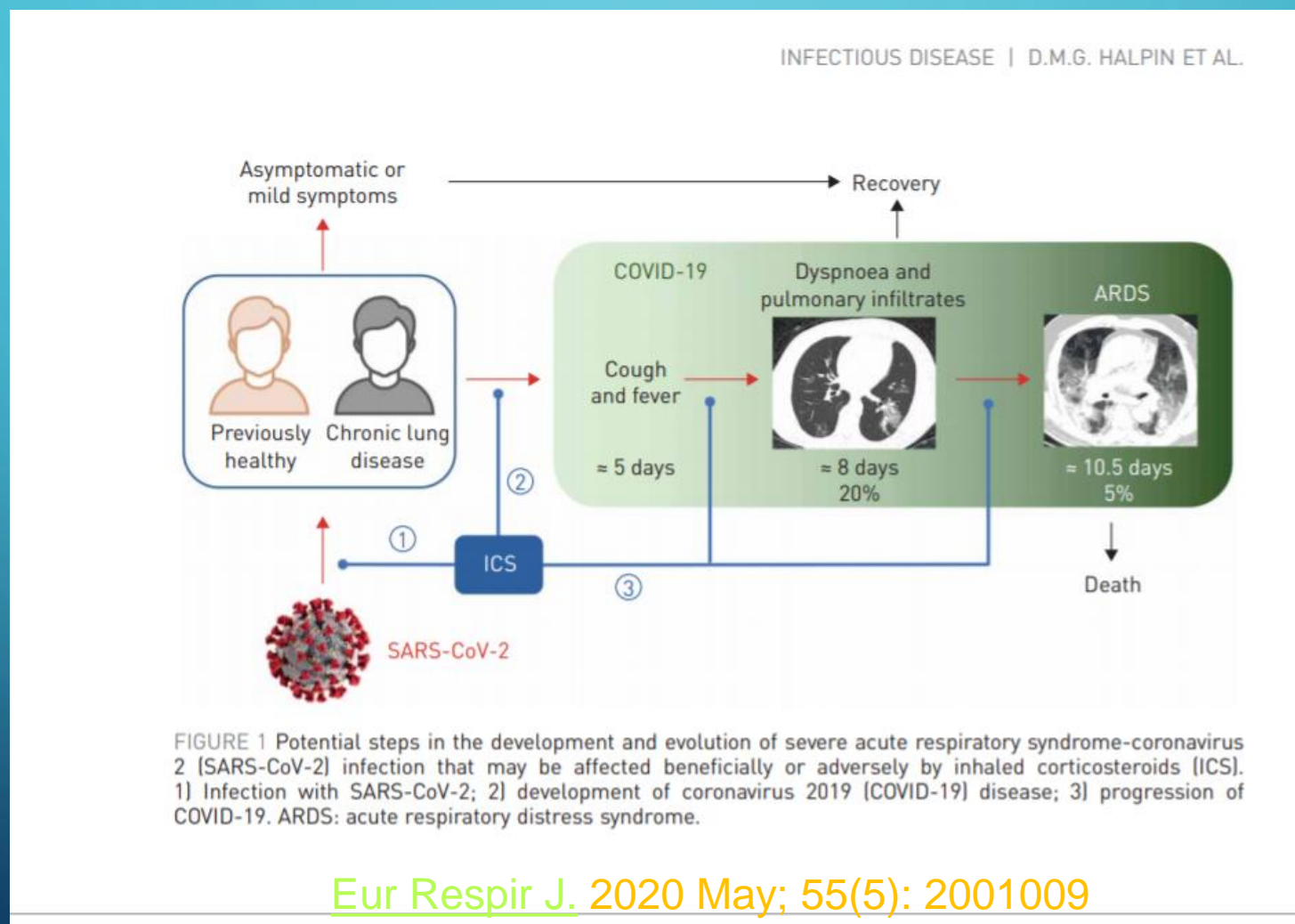
**C and D**, CT image (**C**) and chest radiograph (**D**) obtained on day 4 show GGO has progressed to airspace consolidation.

# CORONAVIRUS DISEASE 2019 (COVID-19): A SYSTEMATIC REVIEW OF IMAGING FINDINGS IN 919 PATIENTS

**TABLE 2: Common Patterns and Distribution on Initial CT Images of 919 Patients With Coronavirus Disease (COVID-19)**

Imaging Finding	No. of Studies	No. (%) of Reported Cases/ Total No. of Patients
Bilateral involvement	12	435/497 (87.5)
Peripheral distribution	12	92/121 (76.0)
Posterior involvement	1	41/51 (80.4)
Multilobar involvement	5	108/137 (78.8)
Ground-glass opacification	22	346/393 (88.0)
Consolidation	10	65/204 (31.8)

# INHALED CORTICOSTEROIDS AND COVID-19: A SYSTEMATIC REVIEW AND CLINICAL PERSPECTIVE

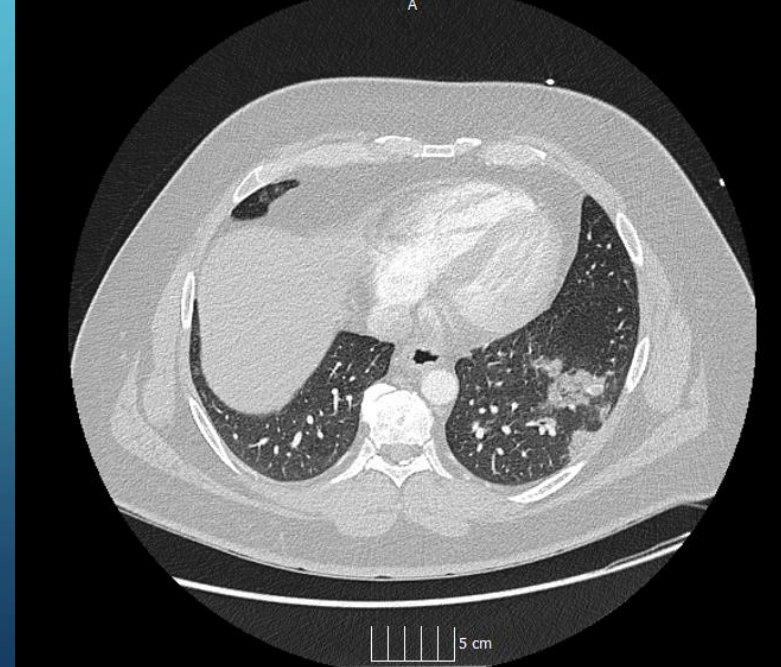
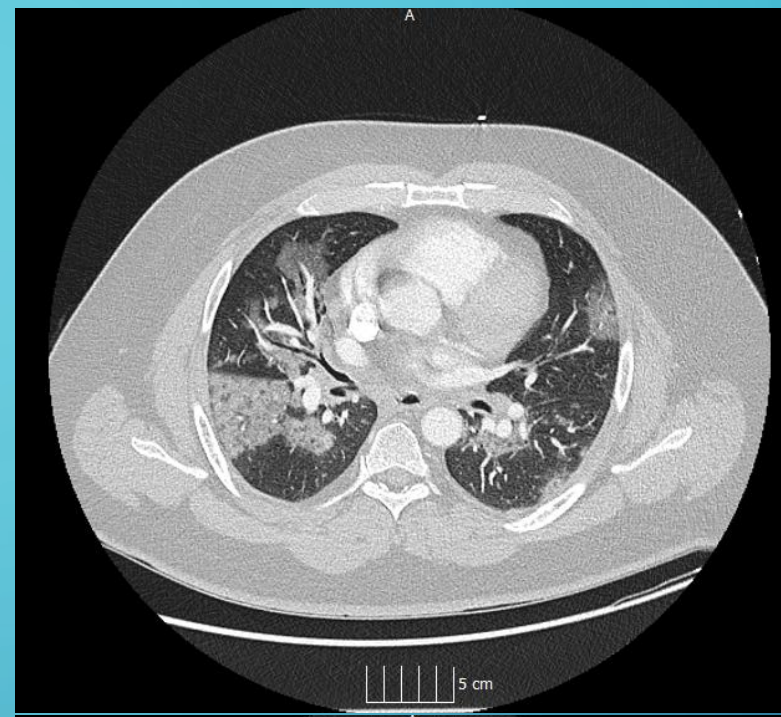
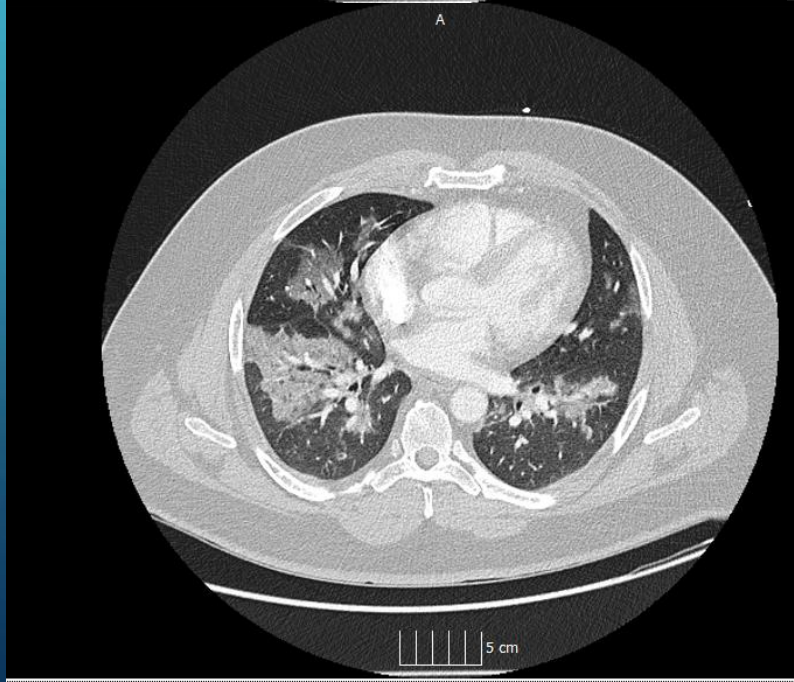
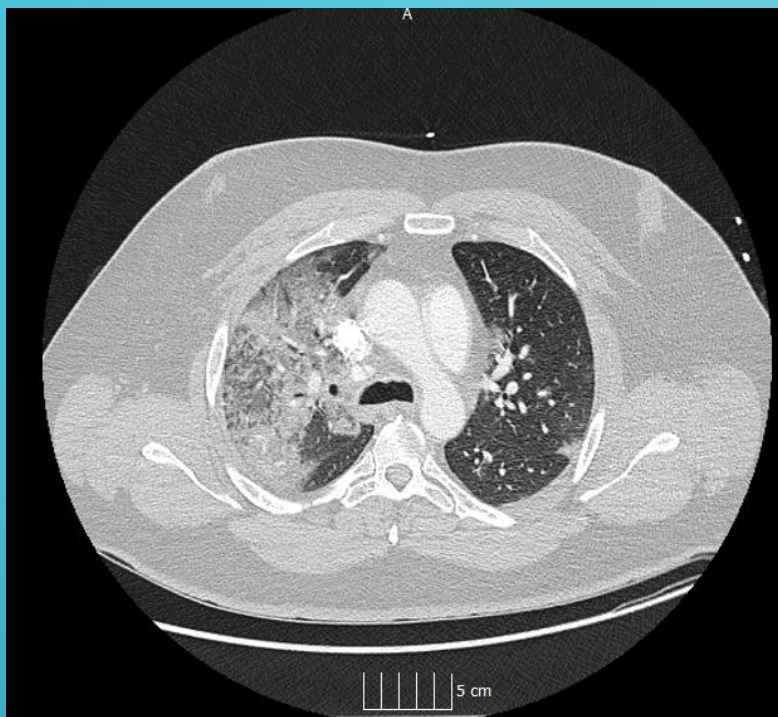


# ESET

- ff
- 1975.
- 2021.02.26: Köhögés, tartós láz
- 2021.02.28. PCR pozitív
- 2021.03.03. SBO-panaszai fokozódtak: köhögés, 38,6
  - AngionCT: Pneumonia l. u. CTSl: 14/25, Emboliát kizárta
- 2021. 03.03.-03.07. KEK T2

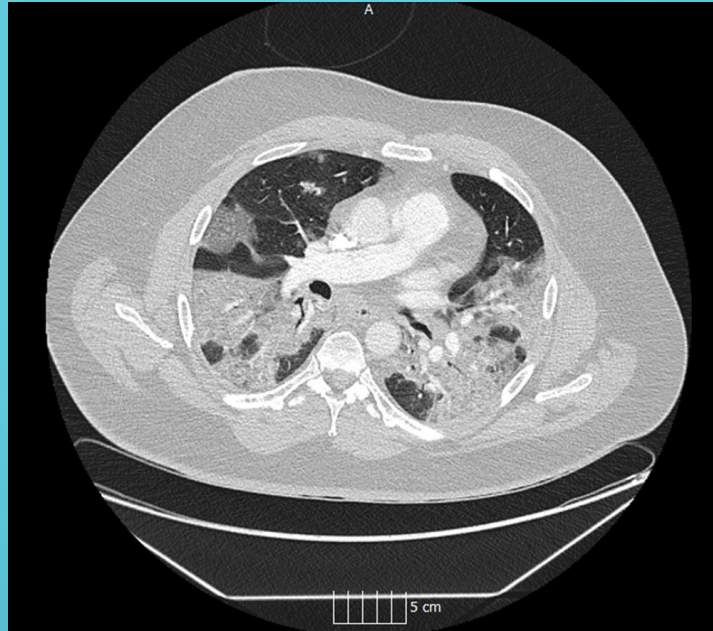
2021.03.03  
CTSI: 14/15

Kontrasztanyag

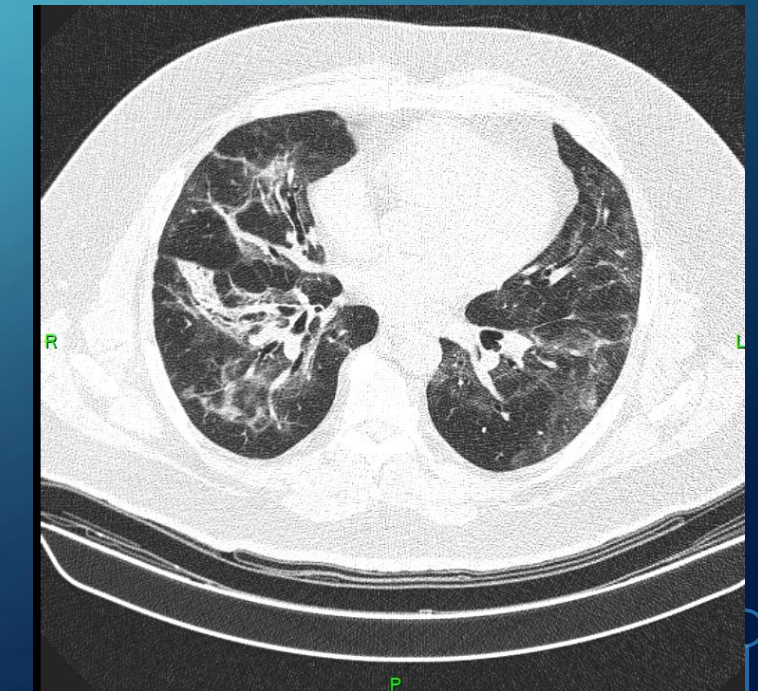
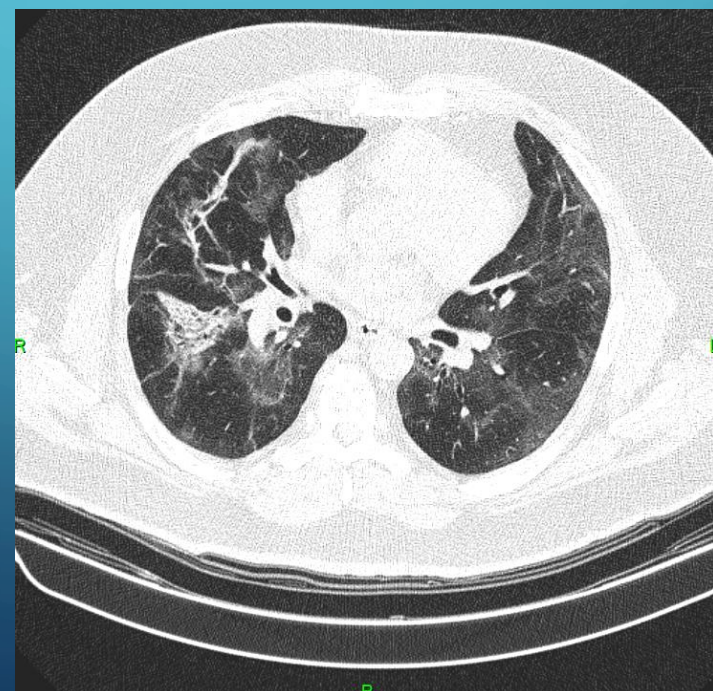
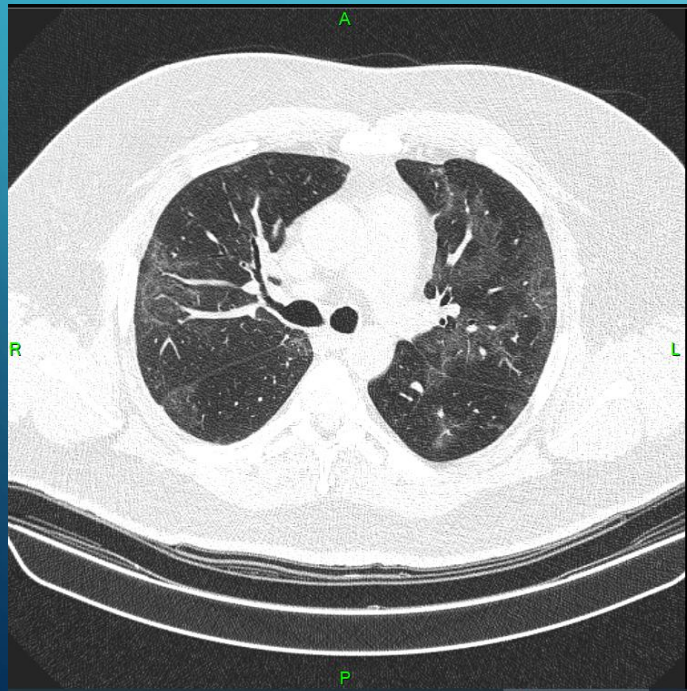


2021.03.07.  
CTSI: 23/25

Nativ



2021.05.05



Testsúly(kg): 105 Testmagasság(cm): 167

Megnevezés	Normál érték		Mért érték		M/N%	2.Mért érték	M2/N%
FVC:	4.11	L	3.42	L	83 %	L	%
FEV1:	3.39	L	2.83	L	84 %	L	%
FEV1/FVC%:		%	82.74	%	%	L	%
PEF:	8.47	L/s	5.83	L/s	69 %	L/s	%
MEF-75:	7.34	L/s	5.48	L/s	75 %	L/s	%
MEF-50:	4.58	L/s	3.64	L/s	79 %	L/s	%
MEF-25:	1.85	L/s	1.28	L/s	69 %	L/s	%
MMEF 75/25:	4.00	L/s	3.02	L/s	75 %	L/s	%
FIV1:		L	3.31	L	%	L	%
TLC:	6.26	L	5.35	L	85 %	L	%
FRC:	3.22	L	2.60	L	81 %	L	%
RV:	1.95	L	1.93	L	99 %	L	%
RV/TLC%:	31.51	%	36.05	%	114 %	L	%
VC:	4.28	L	3.42	L	80 %	L	%
IC:	3.00	L	2.76	L	92 %	L	%
ERV:	1.28	L	0.67	L	52 %	L	%
R:	0.30	kPa/L/s	0.32	kPa/L/s	107 %	kPa/L/s	%

Megnevezés	Norm.érték	Mért érték		M/N%	
TLCO:	9.55	5.78	mmol/min/kPa	61	%
KCO:	1.53	1.54	mmol/min/kPa	101	%

Vélemény:

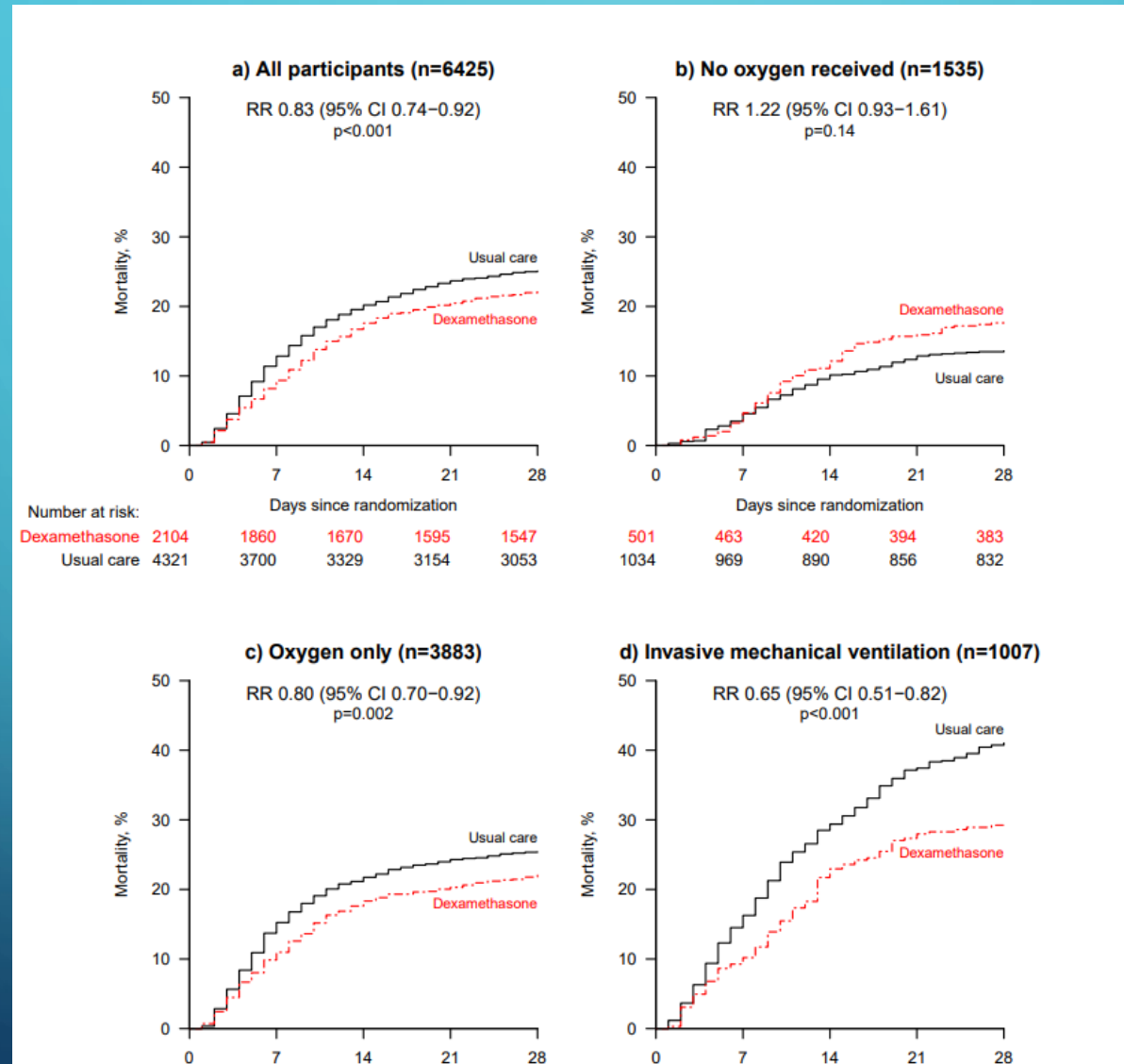
Normális ventilációs értékek. A diffúziós kapacitás kissé csökkent.

Pécs, 2021.05.05

# Szisztémás szteroid (iv. és per os is) csökkenti a mortalitást súlyos Covid fertőzésben

Nuffield Department of Population Health; June 16, 2020

# EFFECT OF DEXAMETHASONE IN HOSPITALIZED PATIENTS WITH COVID-19 - RECOVERY COLLABORATIVE GROUP



# JÁRVÁNY ELSŐ IDŐSZAKA: ASZTMÁS BETEGEK

- Rossz kimenetel : hypertonia, obesitas
- Asztmás betegek –megkíméltek - ICS miatt???
- Szisztémás szteroid (iv. és per os is) csökkenti a mortalitást súlyos Covid fertőzésben <sup>1</sup>
- ICS hatására ACE2 TMPRSS2 expresszió csökken <sup>2</sup>
- ICS csökkenti a légúti gyulladást, ödémát, nyákszekréciót <sup>3</sup>
- Ciclesonid gátolja a SARS-Cov2 replikációt <sup>4</sup>
- Budesonid-glycopyronium-formoterol gátolja koronavírussal fertőzött sejtek cytokin termelését <sup>5</sup>

1. Nuffield Department of Population Health; June 16, 2020.

2. <https://www.atsjournals.org/doi/10.1164/rccm.202005-1651ED>

3. <https://cks.nice.org.uk/corticosteroids-inhaled>

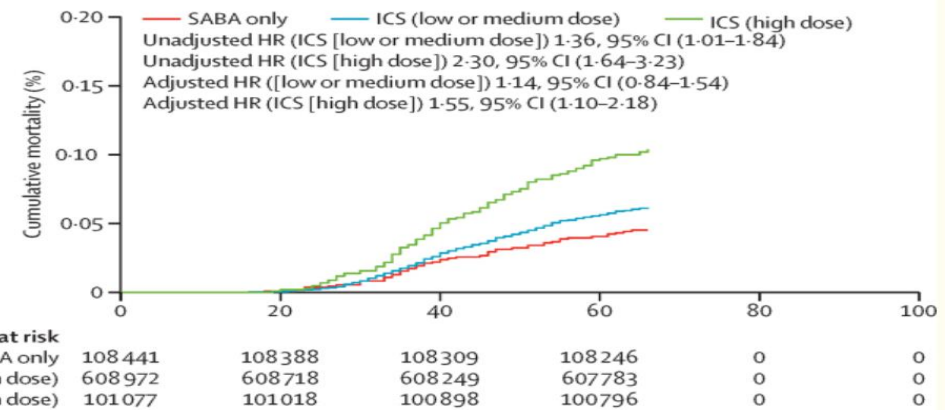
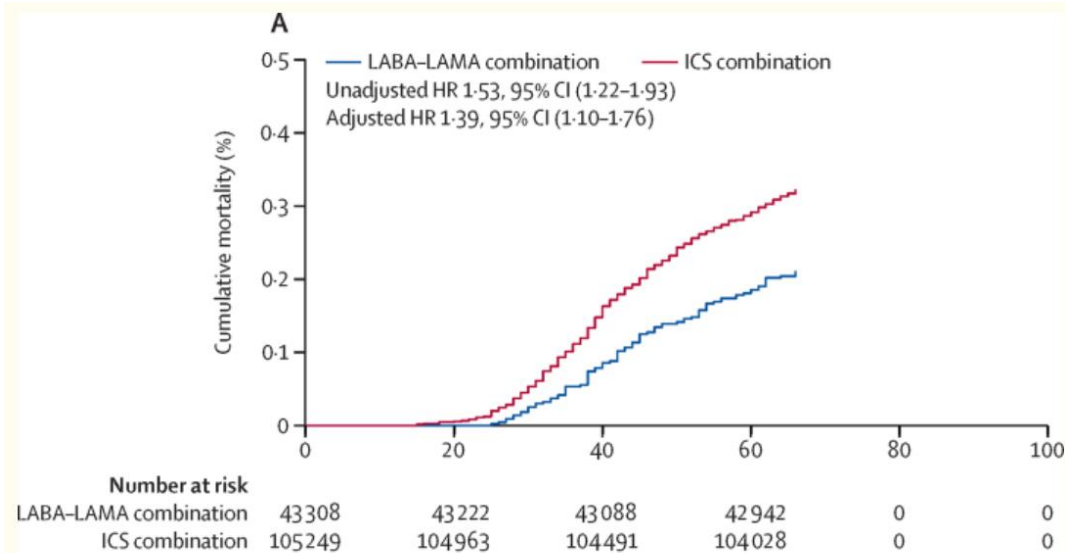
4. Matsuyama S et al The inhaled corticosteroid ciclesonide blocks coronavirus RNA replication

5. Yamaya M et al Respir Investig. 2020;58:155–168.

# ICS - KONTRA

- ICS - COPD fokozott pneumonia hajlam <sup>1,2,3,</sup>
- ICS használat károsítja az interferon termelést, fokozza a virális fertőzésekre a hajlamot <sup>4,5</sup>
- ..

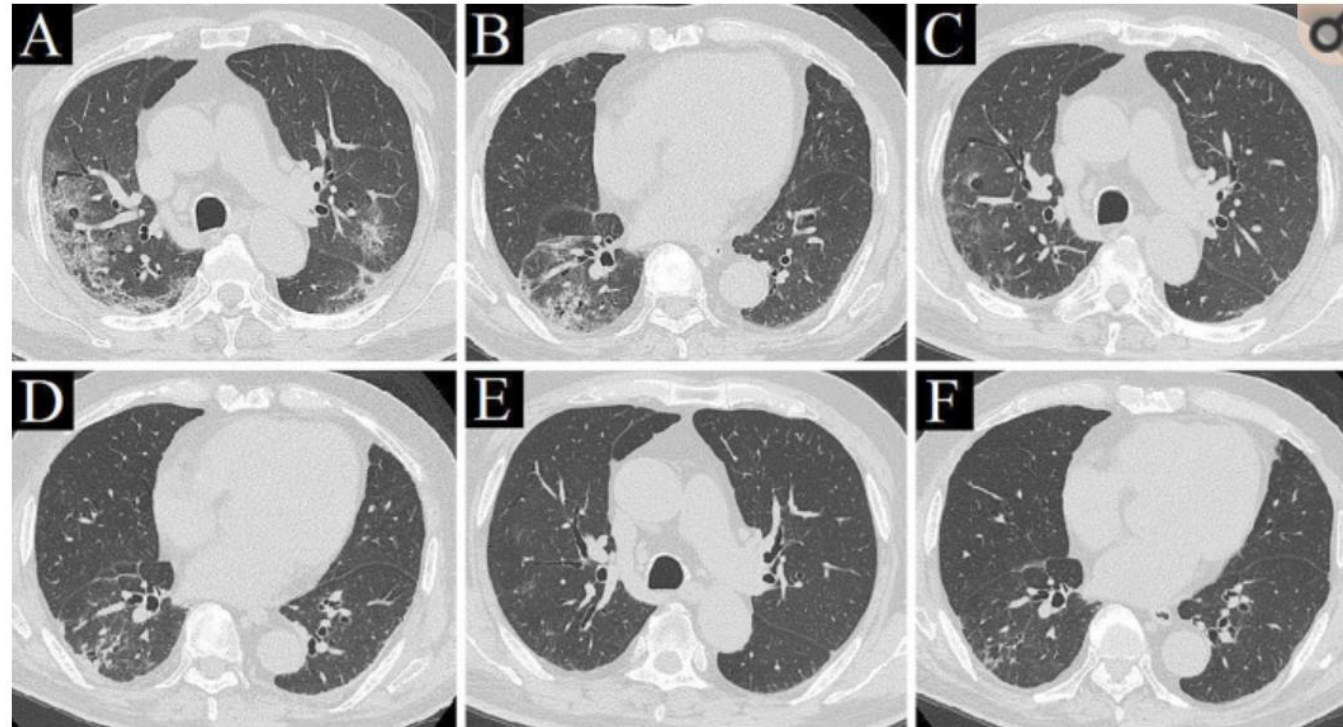
1. Ernst P, et al Am J Respir Crit Care Med. 2007;176:162–166.
2. Suissa S et al, Thorax. 2013;68:1029–1036.
3. Crim C et al TORCH study results. Eur Respir J. 2009;34:641–647.
4. Simpson JL et al Chest. 2016;149:704–713.
5. National Health Service England; 2020. Coronavirus (COVID-19) research platform



# **RISK OF COVID-19-RELATED DEATH AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE OR ASTHMA PRESCRIBED INHALED CORTICOSTEROIDS: AN OBSERVATIONAL COHORT STUDY USING THE OPENSAFELY PLATFORM**

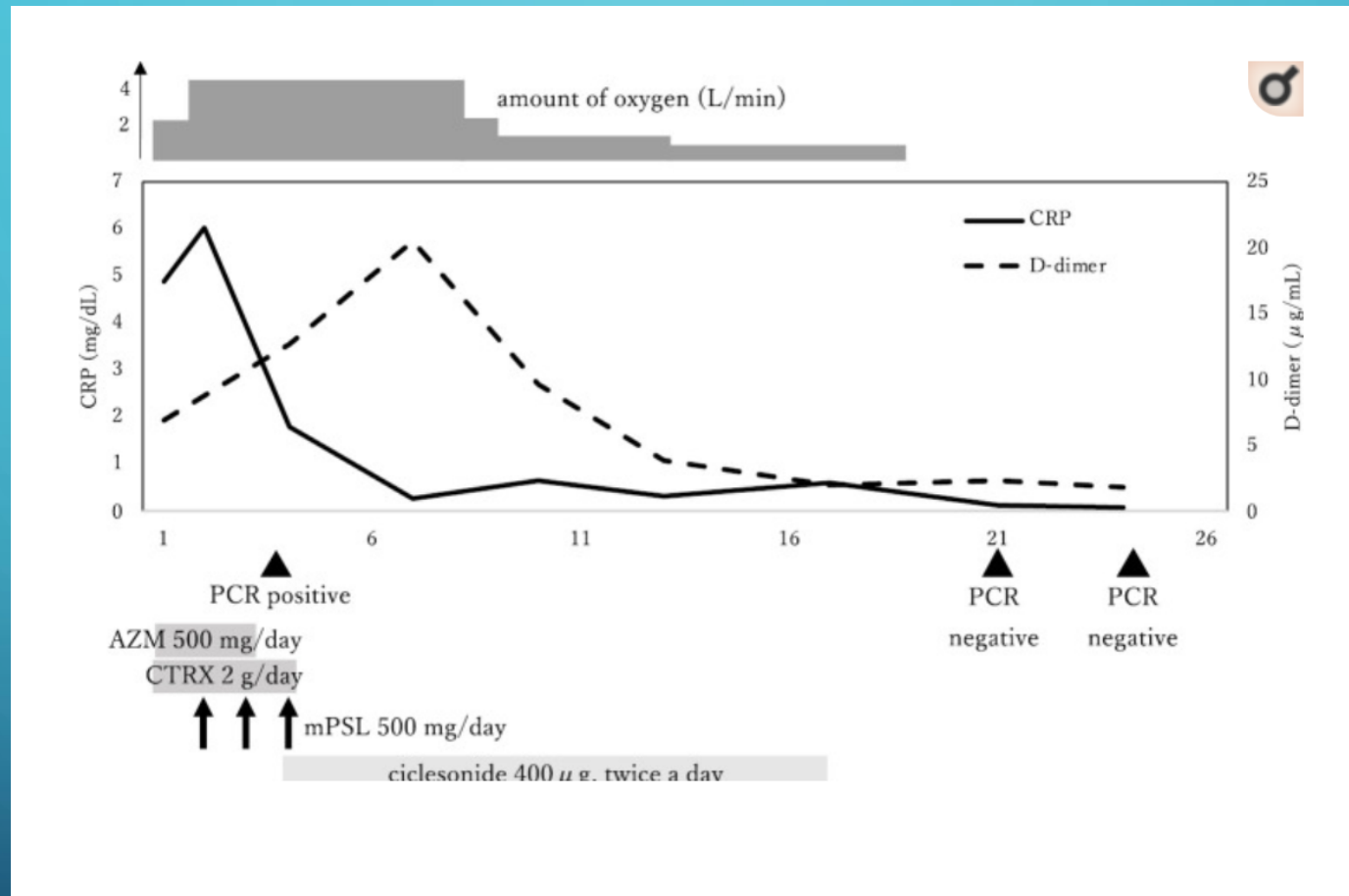
Lancet Respir Med. 2020 Nov; 8(11): 1106–1120.

# COVID-19 PNEUMONIA RESEMBLING AN ACUTE EXACERBATION OF INTERSTITIAL PNEUMONIA



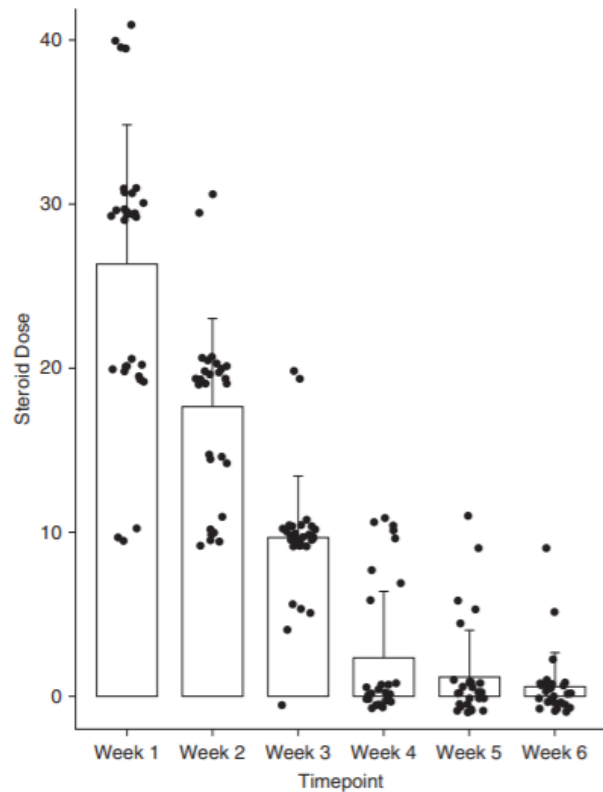
Chest computed tomography (CT) images. CT on admission revealed ground-glass opacities (GGO) and reticular shadows with predominance in the peripheral lung, with traction bronchiectasis and volume loss of the right lower lobe (A, B). CT on day 4 revealed improvement in GGO (C, D). CT on day 24 revealed that GGO in both lungs had improved further, and traction bronchiectasis was obscured (E, F).

# COVID-19 PNEUMONIA RESEMBLING AN ACUTE EXACERBATION OF INTERSTITIAL PNEUMONIA

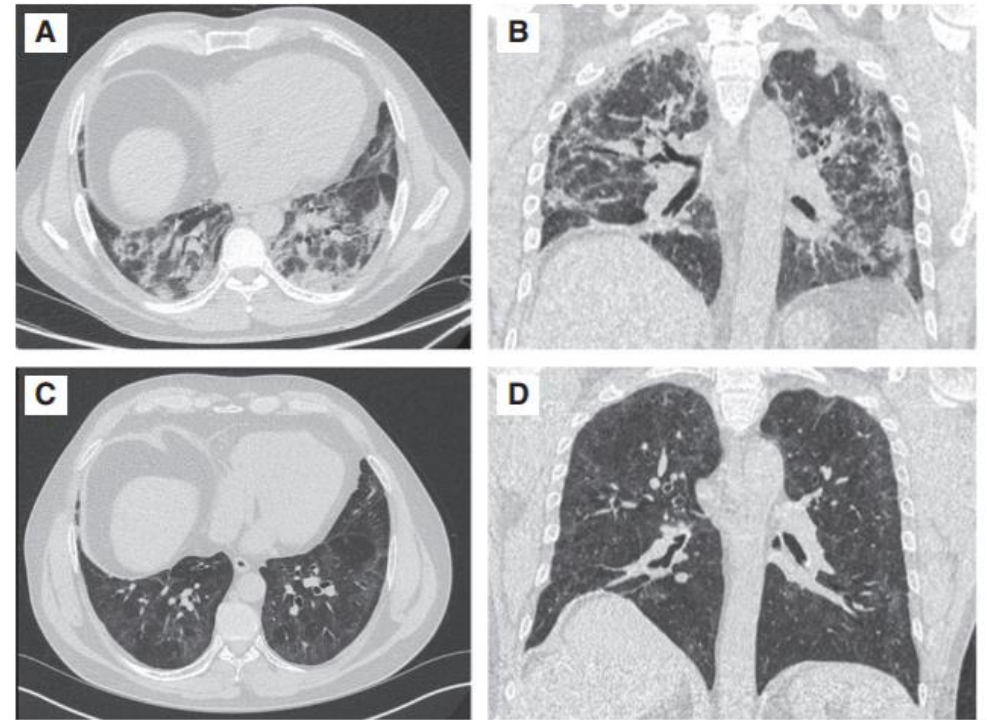


[Intern Med. 2020 Dec 15; 59\(24\): 3207–3211.](#)

# PERSISTENT POST-COVID-19 INTERSTITIAL LUNG DISEASE AN OBSERVATIONAL STUDY OF CORTICOSTEROID TREATMENT-ANN AM THORAC SOC VOL 18, NO 5, PP 799-806, MAY 2021



**Figure 2.** Steroid dosing by week. Data are presented as median and interquartile range.



**Figure 4.** Axial image and coronal reconstruction from computed tomographic (CT) imaging of the thorax acquired immediately before discharge in a previously fit and well 57-year-old man (A and B) shows a radiological pattern of organizing pneumonia disease with predominant peribronchial and perilobular dense consolidation mild traction bronchiectasis of the airways. At this stage, the patient could only walk 30 yards. Follow-up CT imaging of the thorax acquired after 3 weeks of oral prednisolone (C and D) shows resolution of consolidation with residual ground glass and fine subpleural reticulation. The airways still have a slightly nontapering appearance. The patient was now able to run for 30 minutes a day.

# PERSISTENT POST-COVID-19 INTERSTITIAL LUNG DISEASE AN OBSERVATIONAL STUDY OF CORTICOSTEROID TREATMENT

**Table 2.** Admission data from patients with interstitial lung disease following infection with SARS-CoV-2

Admission Data	Value
Length of stay	16.9 ± 12.5
O <sub>2</sub> therapy (>24 h)	29 (82.9)
Max O <sub>2</sub> requirement, %, median ± IQR	38.0 ± 48
Days O <sub>2</sub> therapy, median ± IQR	13.9 ± 12.1
Inpatient steroid treatment, <i>n</i> (%)	6 (17.1)
Critical care admission	19 (54.5)
Invasive mechanical ventilation	16 (45.7)
SpO <sub>2</sub> on discharge	95.1 ± 2

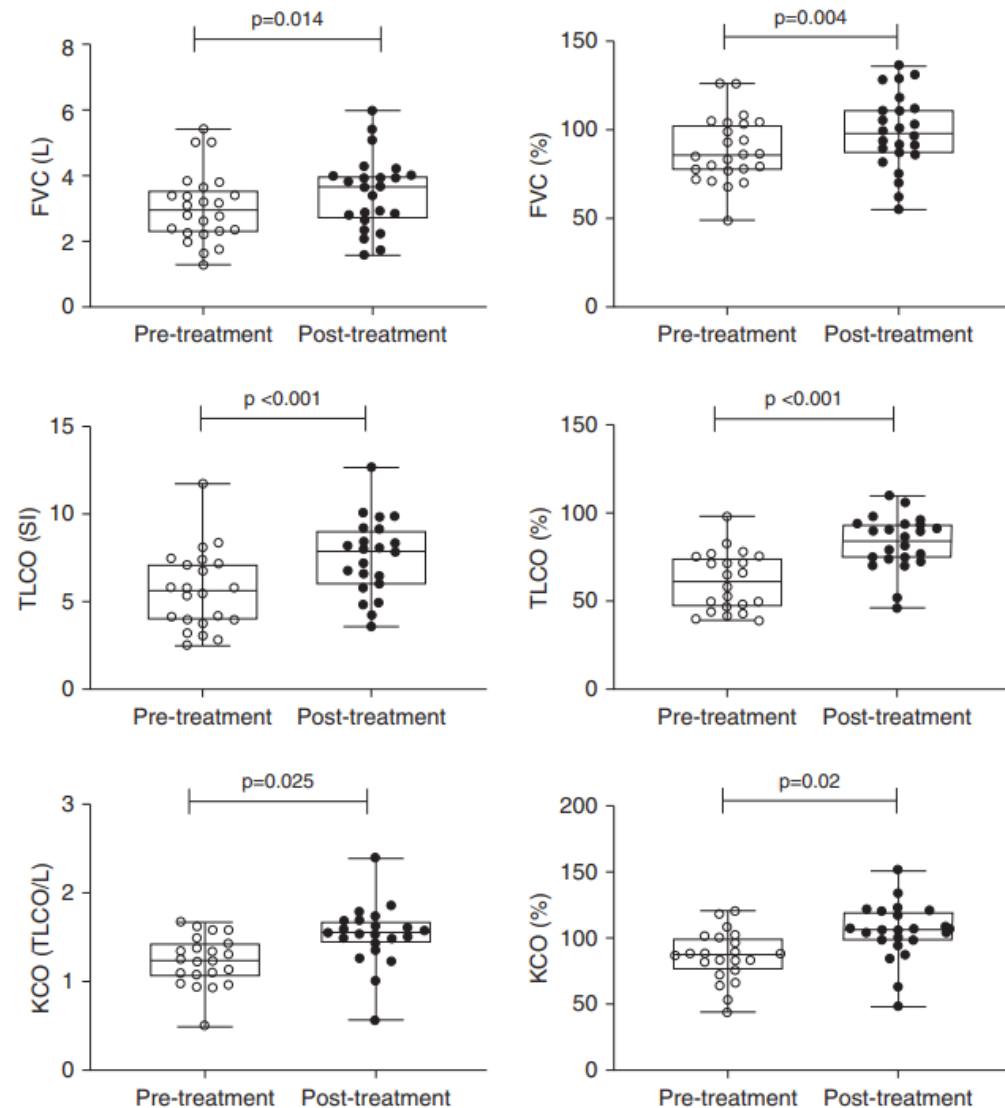
*Definition of abbreviations:* IQR = interquartile range; SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2; SpO<sub>2</sub> = oxygen saturation as measured by pulse oximetry. Data are presented as *n* (%) or mean ± standard deviation unless otherwise stated.

Myall, Mukherjee, Castanheira, *et al.*: Persistent Post-COVID-19 ILD

**Table 3.** Patients demonstrated improvement in markers of systemic inflammation at 6 weeks after discharge

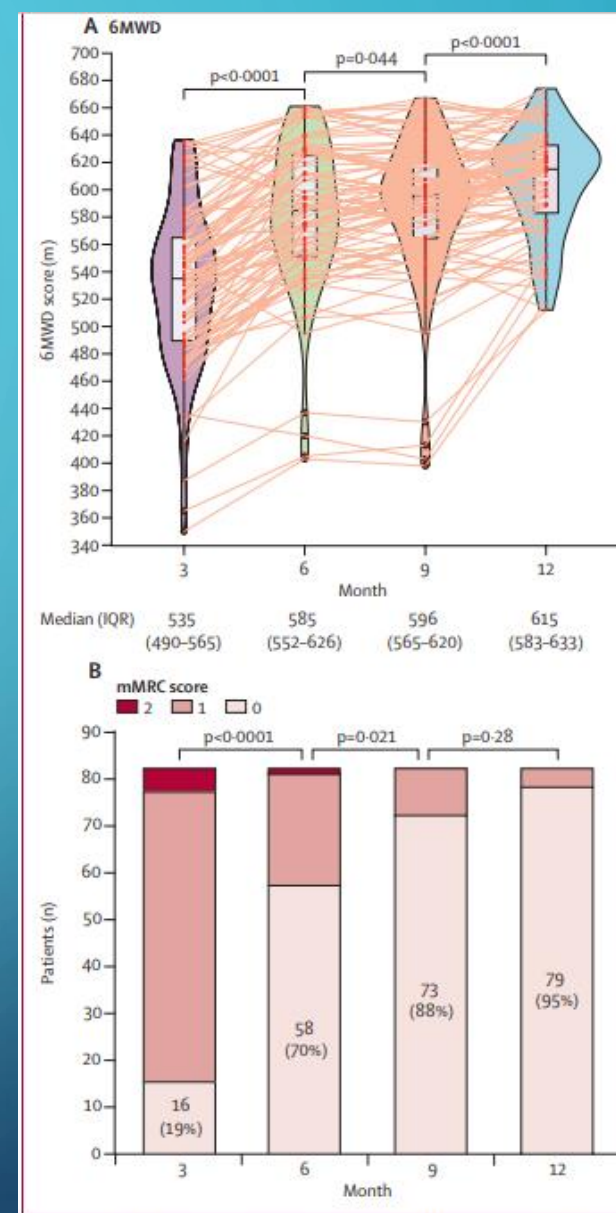
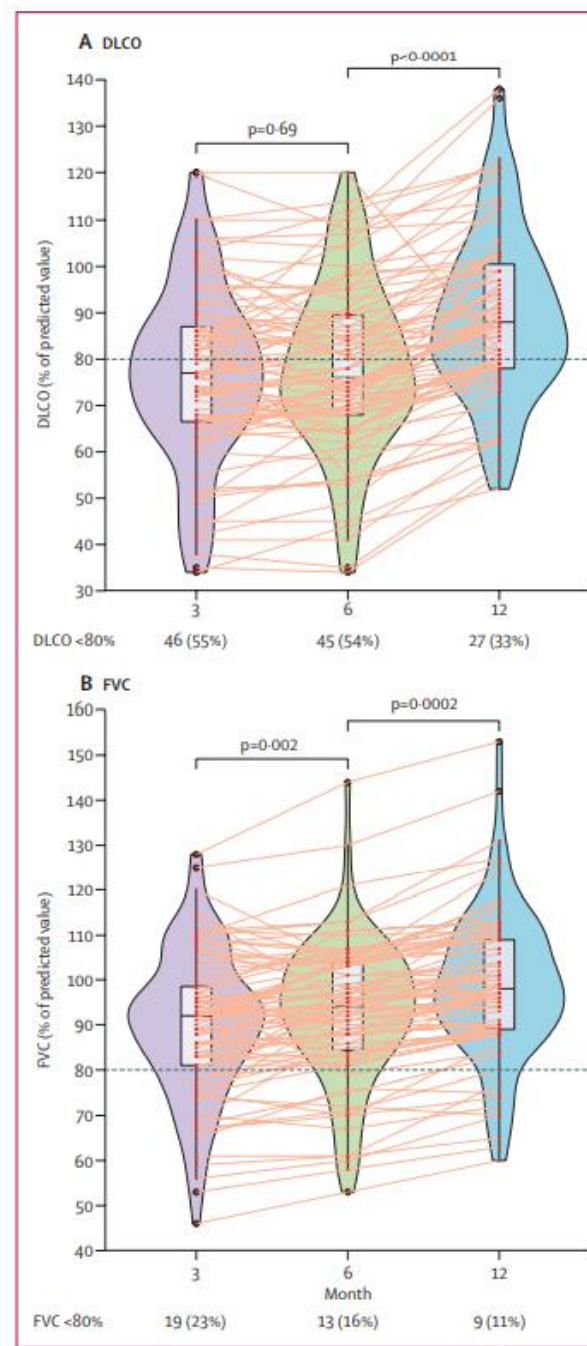
Marker	Peak	Discharge	Clinic
CRP (0–4 mg/L)	230.2 ± 162.6	30.9 ± 37.5	6.1 ± 9.79
Ferritin (30–400 µg/L)	1592.4 ± 1274.6	807.6 ± 450.0	179.0 ± 141.8
Fibrinogen (1.7–3.9 g/L)	12.3 ± 1.1	5.4 ± 1.6	4.2 ± 2.6
D-dimer (0.00–0.55 mg/L)	17.2 ± 8.1	10.2 ± 6.7	2.35 ± 3.7
Creatinine (59–104 µmol/L)	150.2 ± 30.3	87.6 ± 89.0	62.5 ± 33.2
	Nadir	Discharge	Clinic

# PERSISTENT POST-COVID-19 INTERSTITIAL LUNG DISEASE AN OBSERVATIONAL STUDY OF CORTICOSTEROID TREATMENT



**Figure 3.** Change in lung function after treatment with oral prednisolone in patients with interstitial lung disease after infection with SARS-CoV-2. FVC = forced vital capacity; KCO = transfer coefficient; SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2; SI = International System of Units; transfer;  $TL_{CO}$  = transfer factor of the lung for carbon monoxide.

# 3-MONTH, 6-MONTH, 9-MONTH, AND 12-MONTH RESPIRATORY OUTCOMES IN PATIENTS FOLLOWING COVID-19-RELATED HOSPITALISATION: A PROSPECTIVE STUDY



**Figure 3: Effect of severe COVID-19 on follow-up 6MWD test and mMRC score**  
Panel A shows temporal changes in 6MWD at 3 months, 6 months, 9 months, and 12 months after discharge. Data are median (IQR). Panel B shows the distributions of mMRC scores at 3 months, 6 months, 9 months, and 12 months after discharge. Figure shows n (%) of patients without dyspnoea. 6MWD=6-minute walking distance. mMRC=modified Medical Research Council dyspnoea scale.

# POSZTCOVID AMBULANCIA PTE I. SZ BELKLINIKA

The background is a blue gradient. In the corners, there are white line art designs resembling circuit boards or neural networks, with lines and small circles.

KÖSZÖNÖM A MEGTISZTELŐ FIGYELMET!