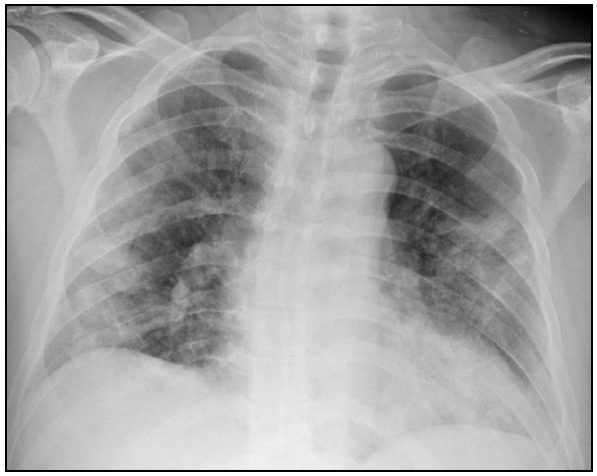
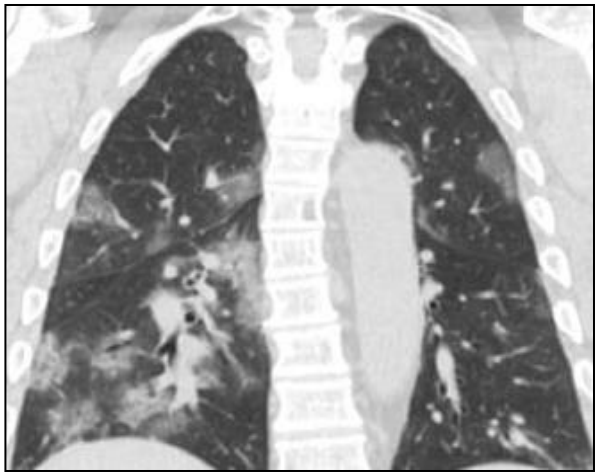
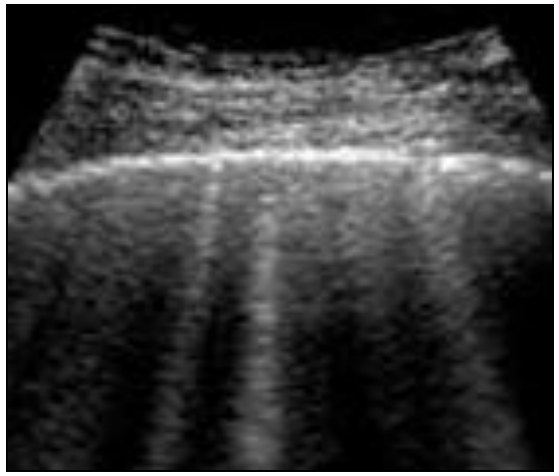
Primer Simposio COVID 19 HHA
XXXVIII Aniversario Hospital Hermanos Ameijeiras
I Foro Virtual 23 de noviembre - 22 de diciembre del 2020

HALLAZGOS IMAGENOLÓGICOS "NEUMONÍA POR SARS-CoV2"

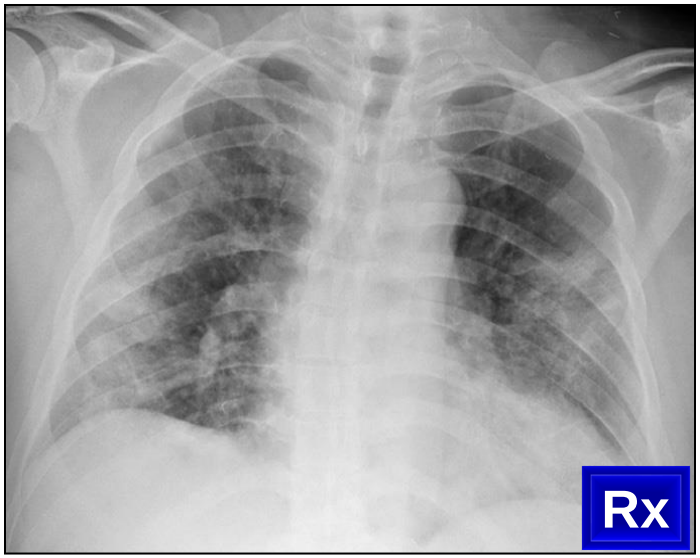
Dr. Pedro Pablo González Rojas.
Dr. Desy Pozo Alonso.
Profesor Auxiliar.
La Habana. Cuba.

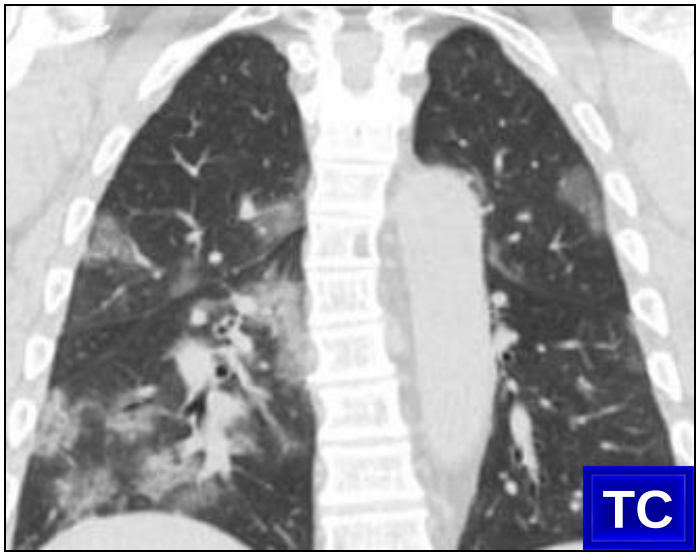
Sociedad Cubana de Imagenología

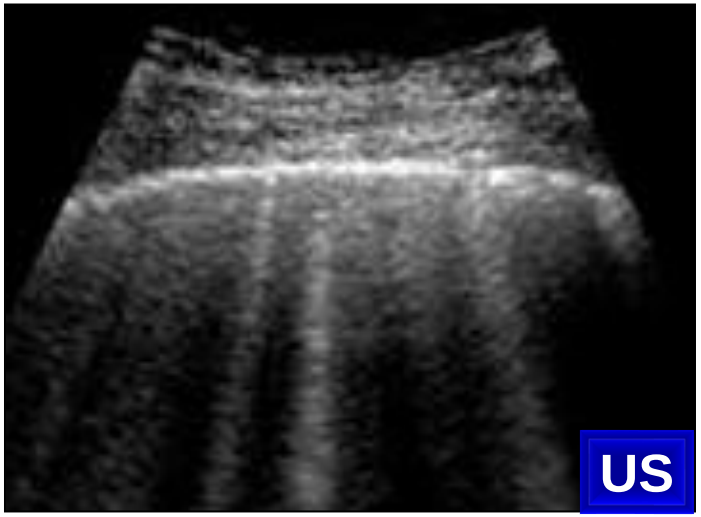
Objetivos

- Técnicas de diagnóstico por imágenes.
- Hallazgos imagenológicos.
- Imágenes en pacientes convalesciente.
- Inteligencia artificial.

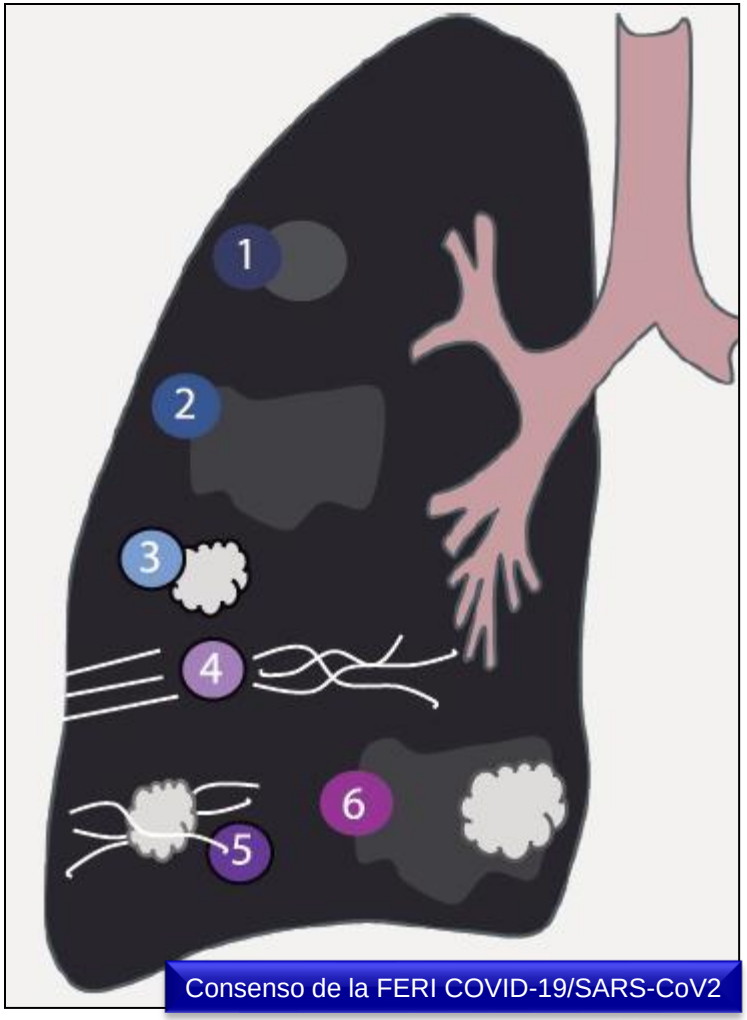
Herramientas diagnósticas



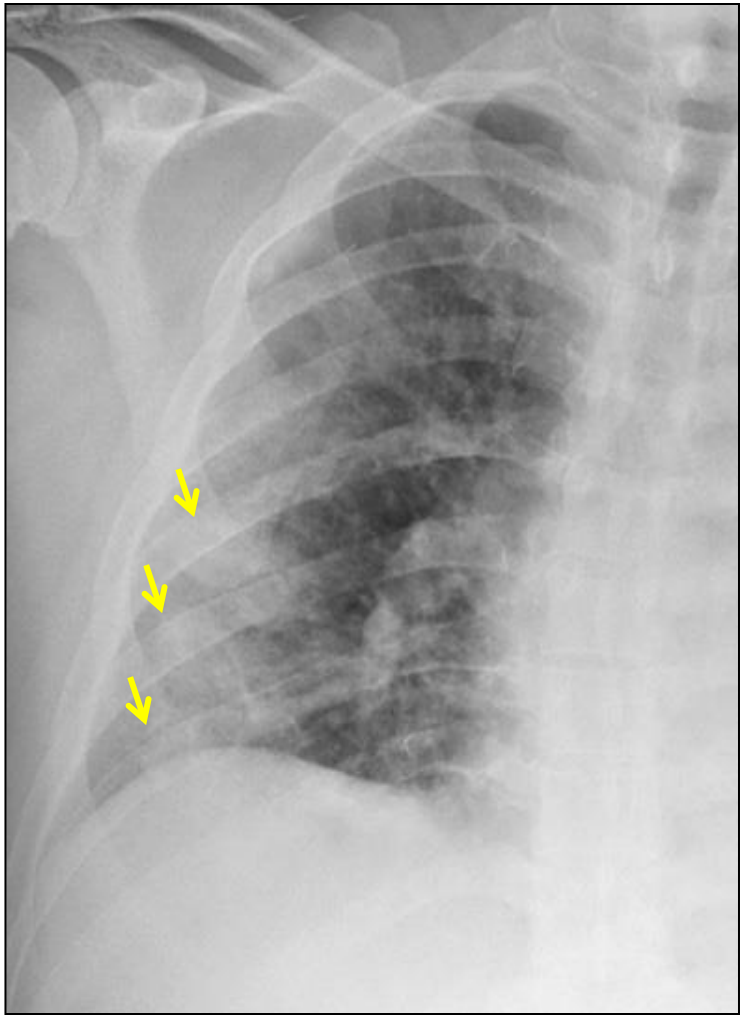




Rx - Hallazgos frecuentes



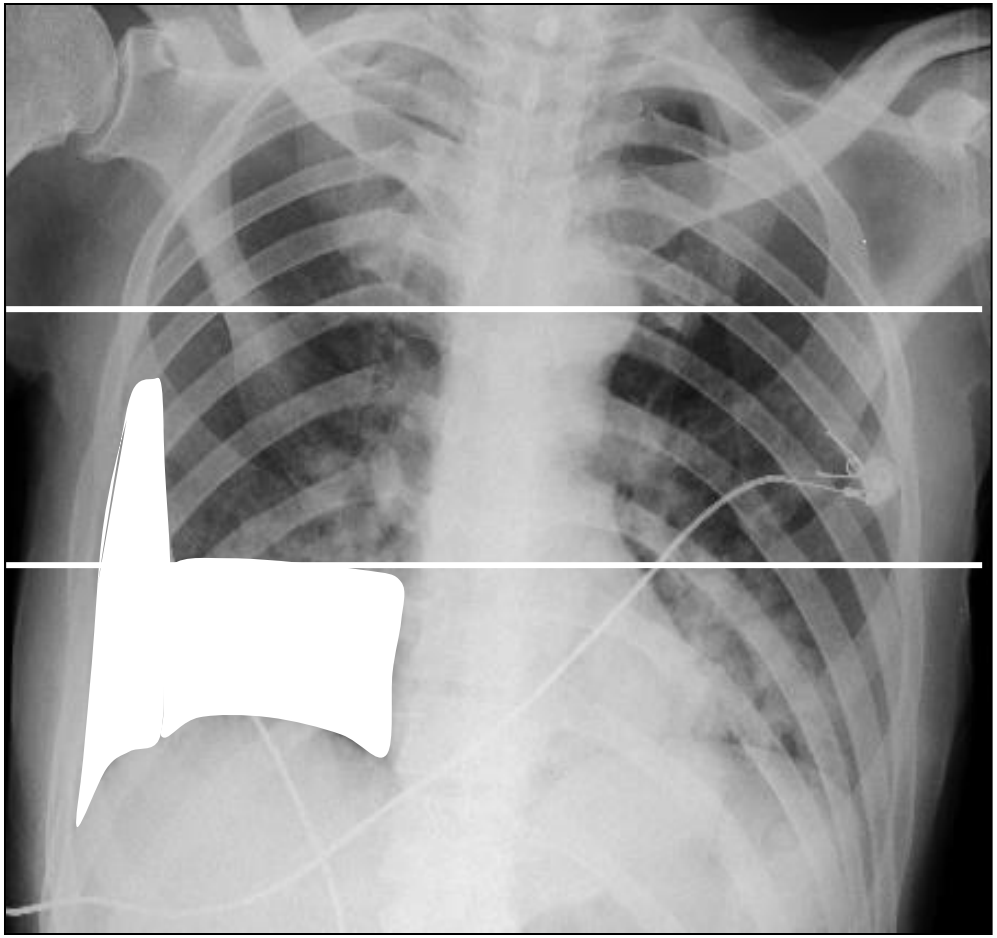
Consenso de la FERI COVID-19/SARS-CoV2



Wong HYF, Lam HYS, Fong AHT, Leung ST, Chin et al. Frequency and Distribution of Chest Radiographic Findings in COVID-19 Positive Patients. Radiology. 2020

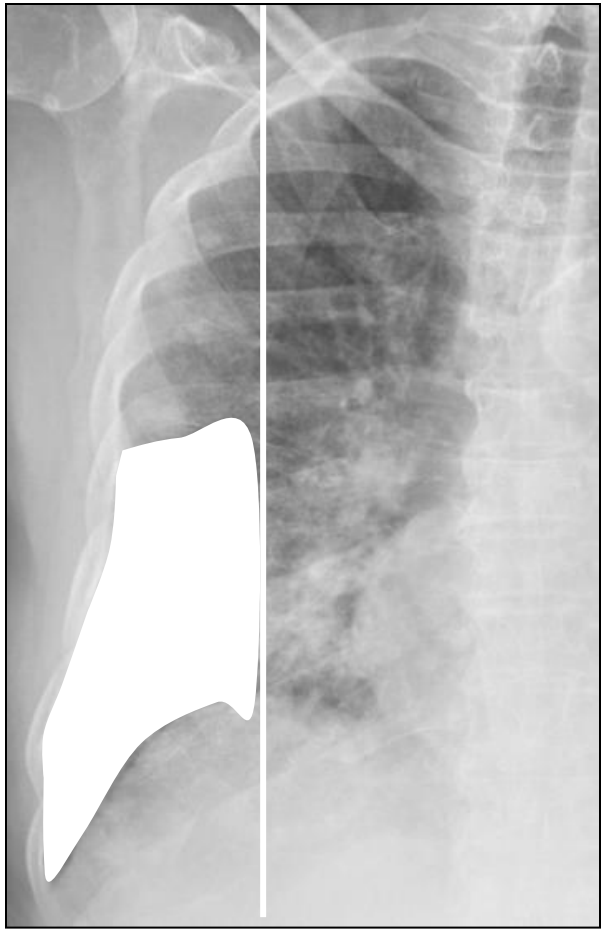
Rx - Hallazgos frecuentes

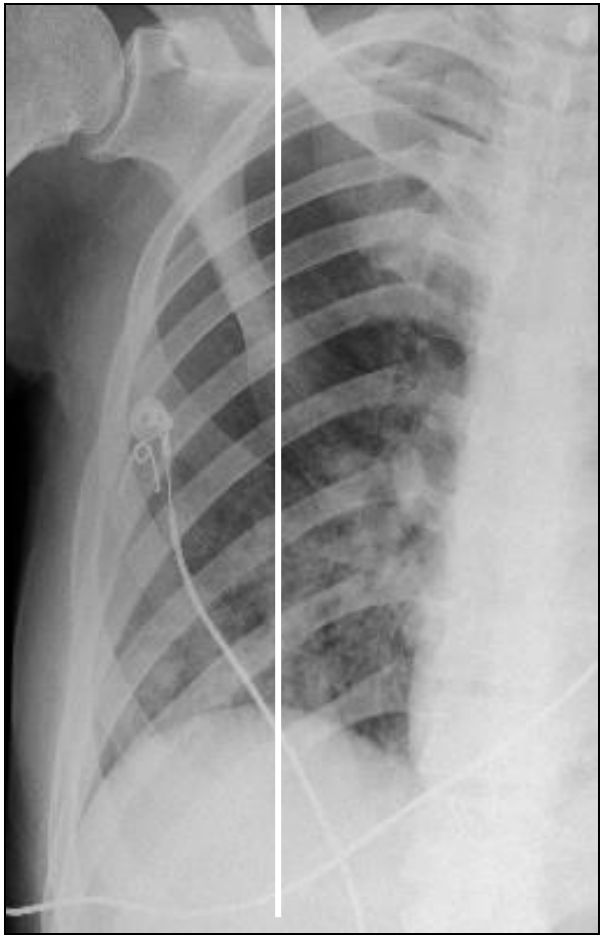
- Periférica.
- **Subpleural**.
- **Basal posterior**.
- Múltiples.
- Bilateral.



Ng M-Y et al. Imaging Profile of the COVID-19 Infection: Radiologic Findings and Literature Review. Radiol Cardiothoracic Imaging. 2020 Feb 1;2(1): e200034

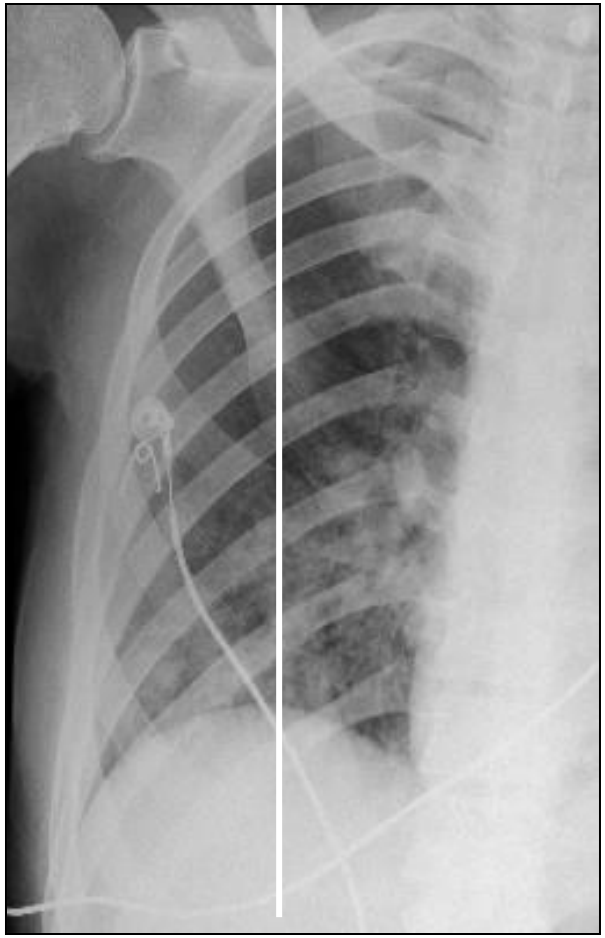
Diferencial





Diferencial

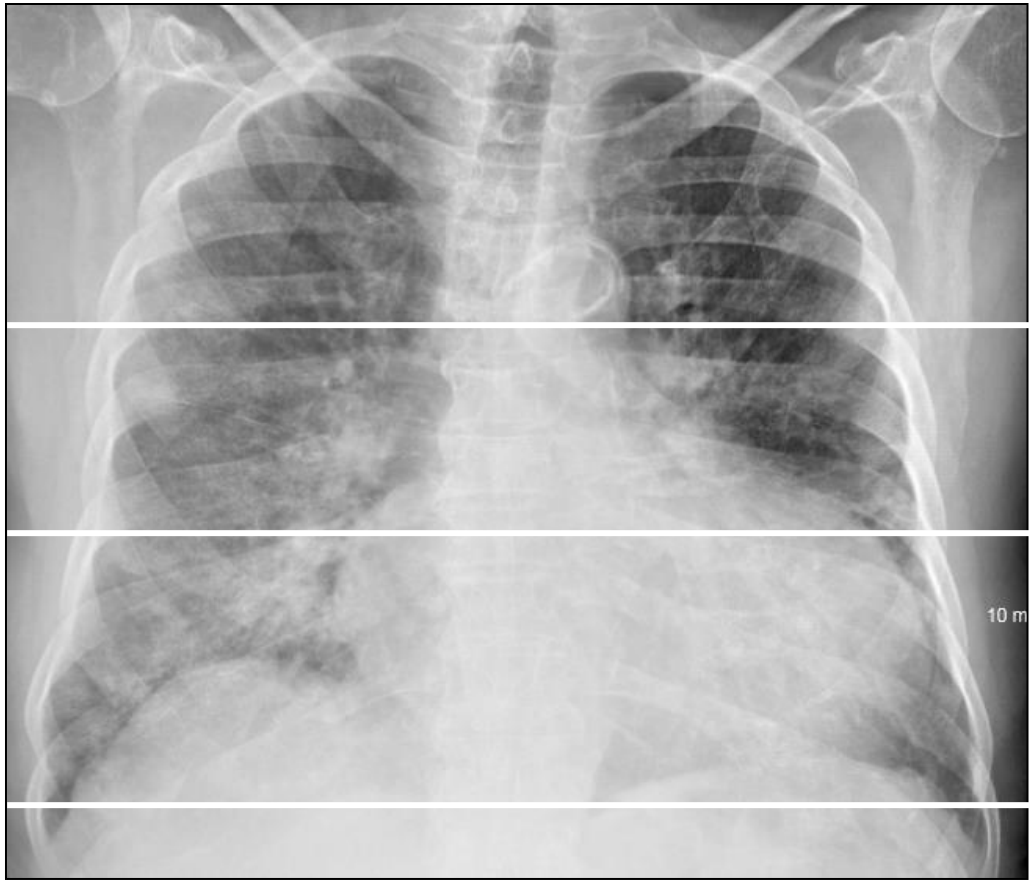
- **Periféricos**:
  - Neumonía eosinofílica.
- **No periféricos**:
  - Influenza.
  - H1N1.
- **Neumonía organizada**:
  - Virales.
  - Bacterianas.
  - ETC.
  - Hipersensibilidad (fármacos).



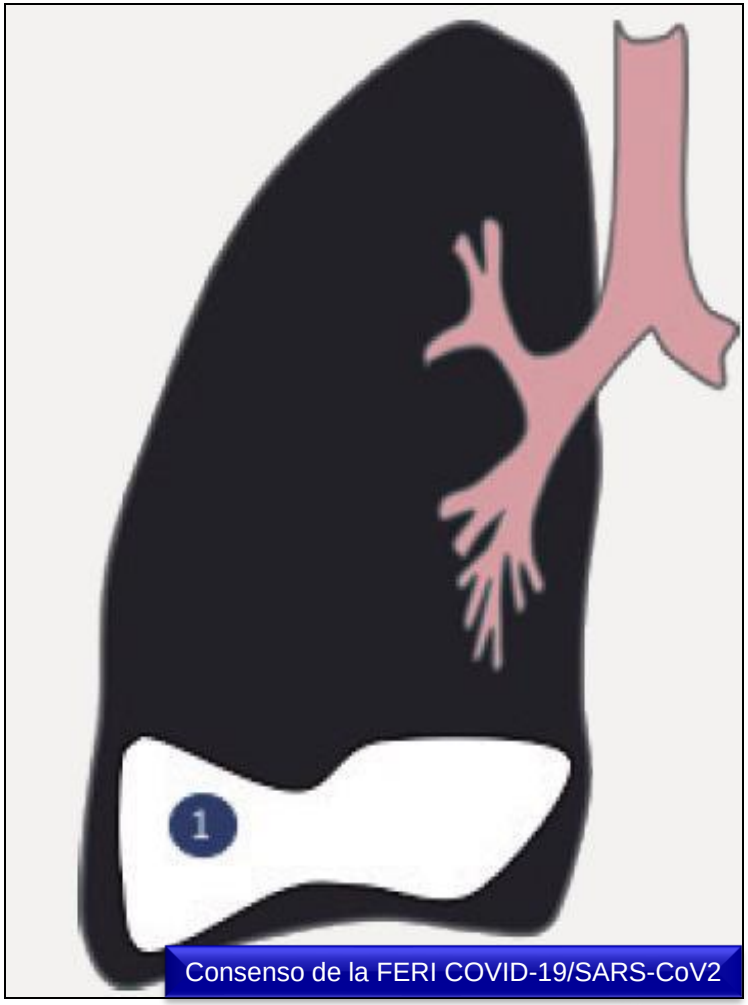
Koo HJ, Lim S, Choe J, Choi SH, Sung H, Do KH. Radiographic and CT features of viral pneumonia. Radiographics. 2018

Rx - Hallazgos frecuentes

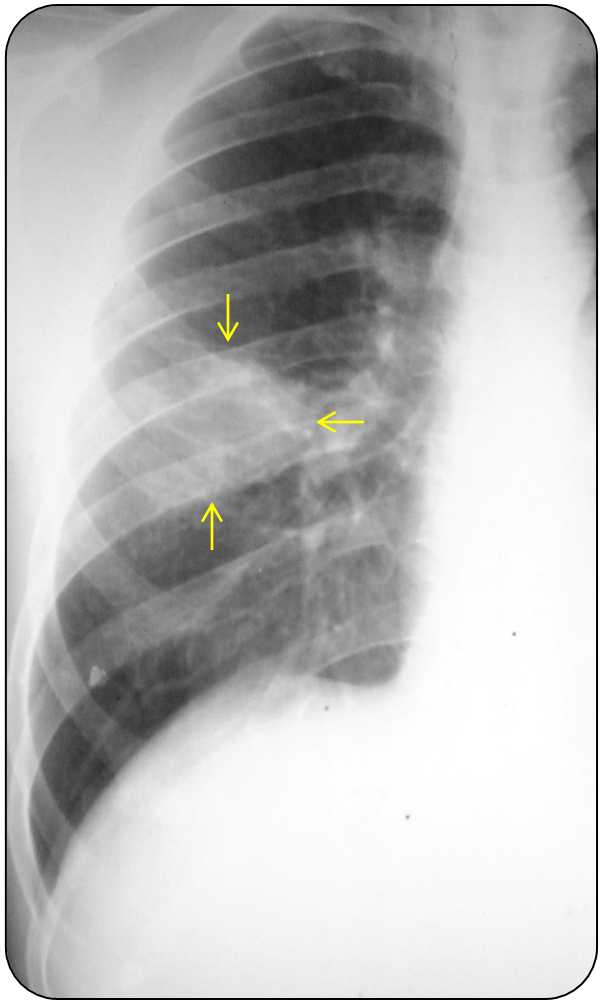
- Masculino.
- 64 años.
- ERCT.
- Diabetes mellitus.
- HTA.
- Tos seca.
- Falta de aire.



Rx - Hallazgos poco frecuentes



Consenso de la FERI COVID-19/SARS-CoV2



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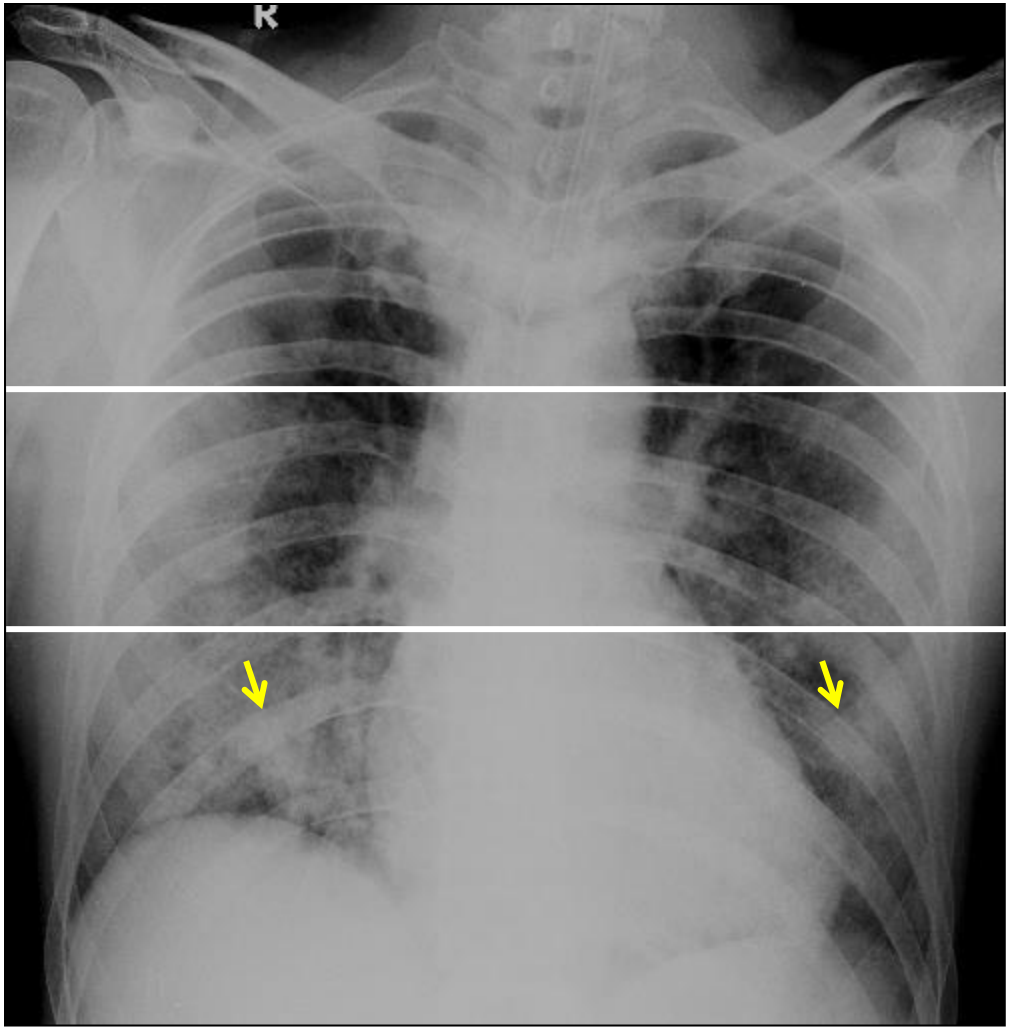
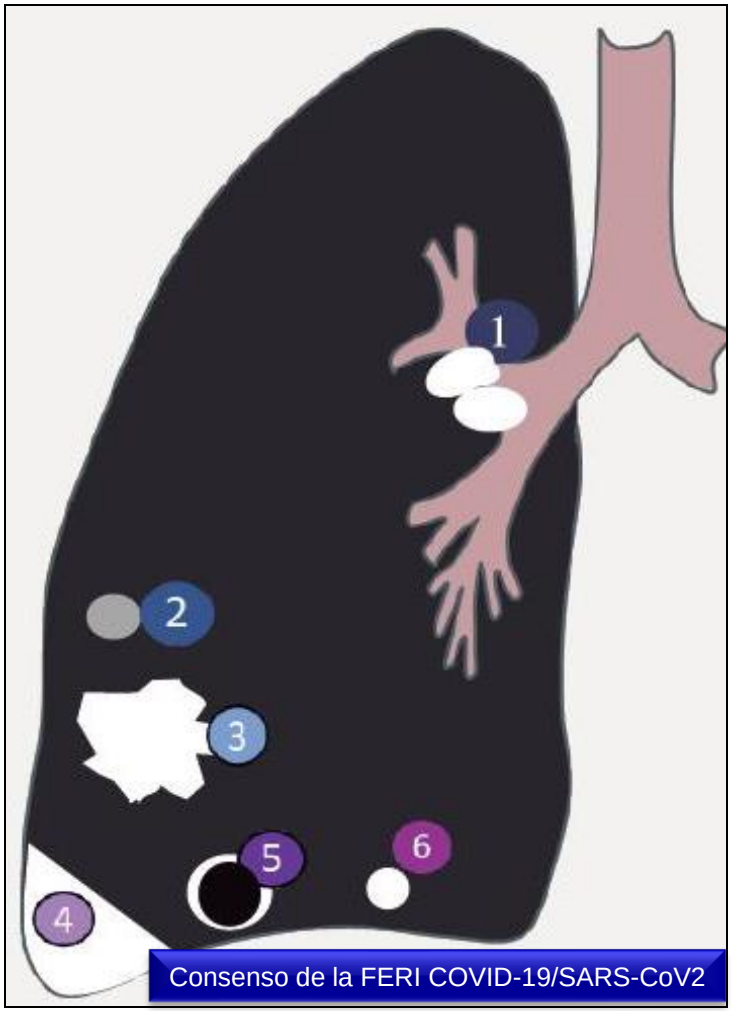
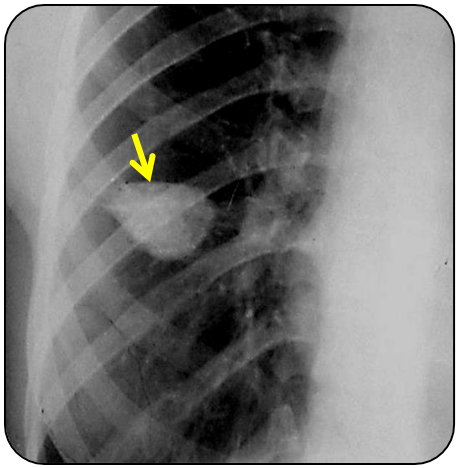
Patrón combinado

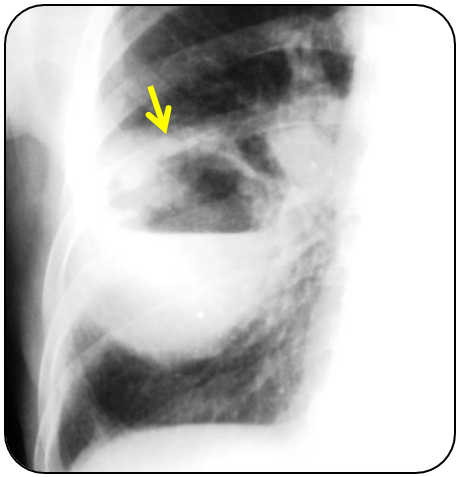


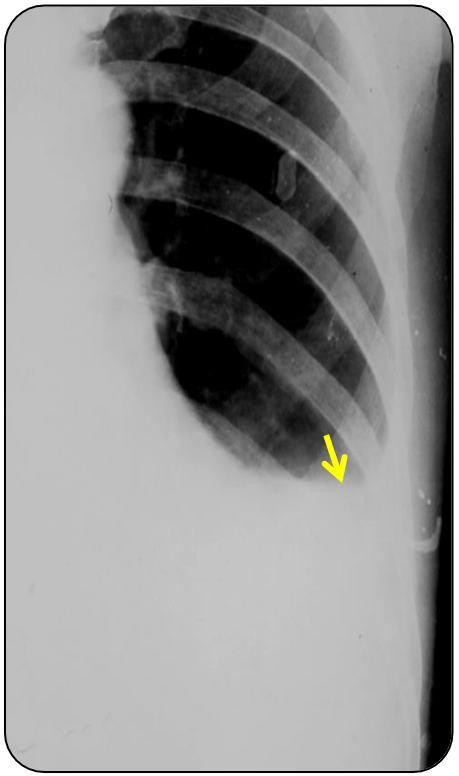
Rx - Hallazgos diferente etiología



Consenso de la FERI COVID-19/SARS-CoV2







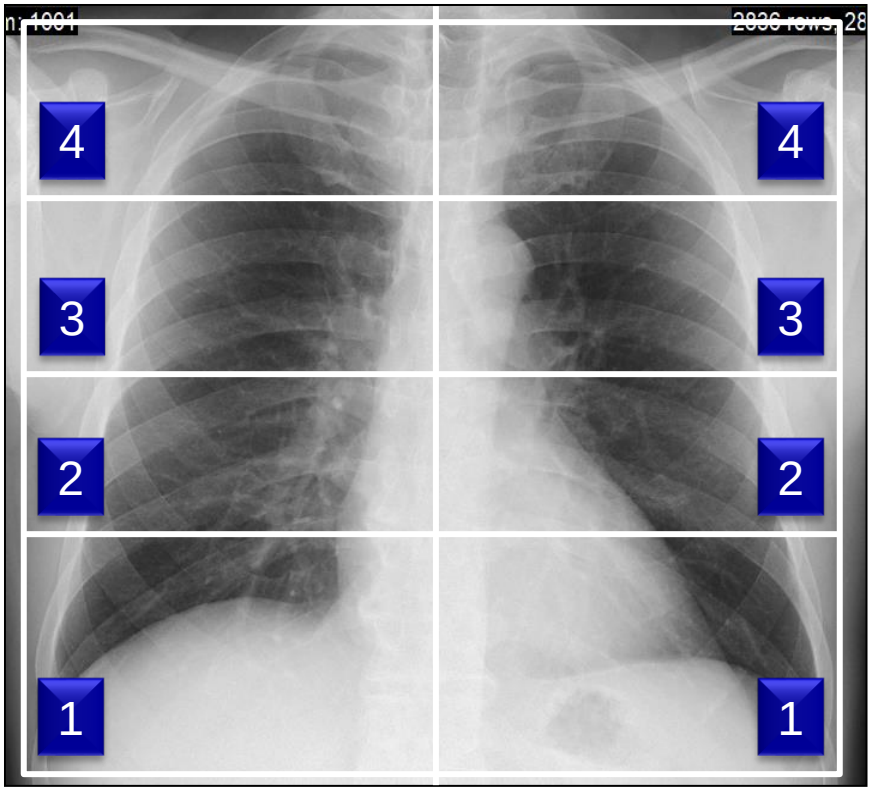
Ng M-Y et al. Imaging Profile of the COVID-19 Infection: Radiologic Findings and Literature Review. Radiol Cardiothoracic Imaging. 2020 Feb 1;2(1): e200034

Escala estratificación de severidad

Puntaje:

- Normal: 0
- < 25%: 1
- 25 - 50%: 2
- 50 - 75%: 3
- > 75%: 4

RALE modificado



RadioGraphics Assessment of Lung Edema

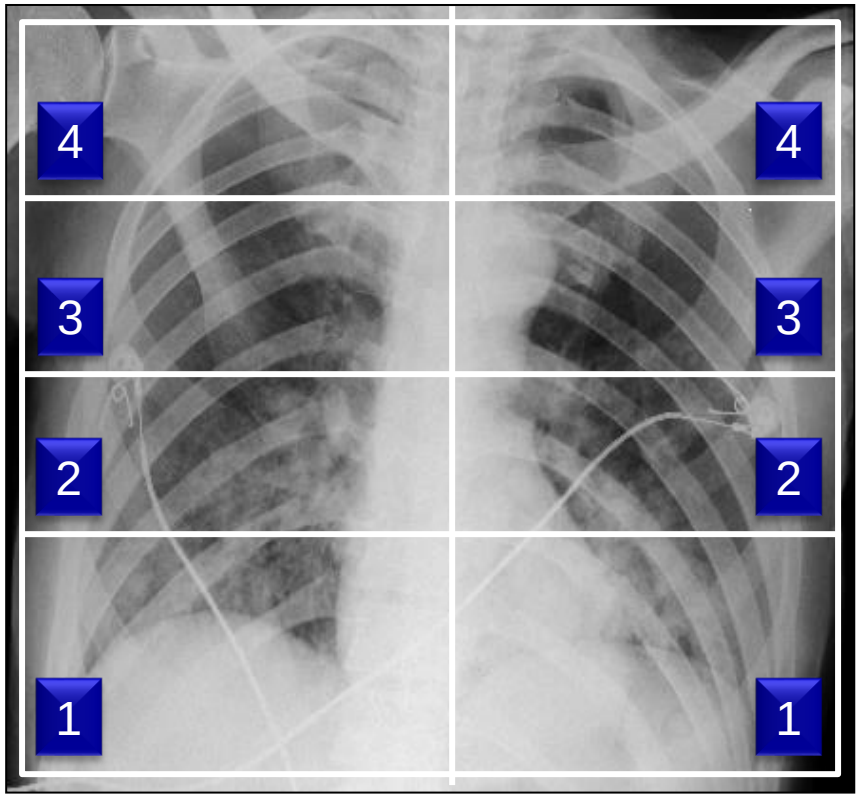
Warren MA, Zhao Z, Koyama T, Bastarache JA, Shaver CM, Semler MW, et al. Severity scoring of lung o edema on the chest radiograph is associated with clinical outcomes in ARDS. Vol. 73, Thorax. 2018. p. 840–6

Afectación pulmonar

Clasificación final:

- Normal: 0
- Leve: 1 - 2
- Moderada: 3 - 6
- Severa: 7 - 8

RALE modificado



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Evidencia científica

Radiology

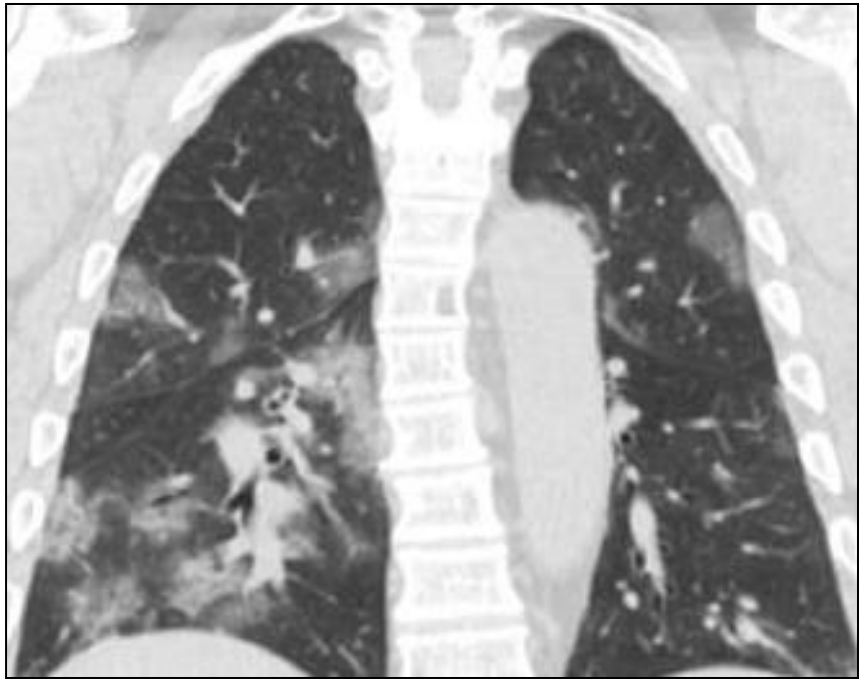
Clinical and Chest Radiography Features Determine Patient Outcomes in Young and Middle-aged Adults with COVID-19

Results: The study included 338 patients: 210 men (62%), with median age of 39 years (interquartile range, 31–45 years). After adjustment for demographics and comorbidities, independent predictors of hospital admission (n = 145, 43%) were chest radiograph severity score of 2 or more (odds ratio, 6.2; 95% confidence interval [CI]: 3.5, 11; $P < .001$) and obesity (odds ratio, 2.4 [95% CI: 1.1, 5.4] or morbid obesity). Among patients who were admitted, a chest radiograph score of 3 or more was an independent predictor of intubation (n = 28) (odds ratio, 4.7; 95% CI: 1.8, 13; $P = .002$) as was hospital site. No significant difference was found in primary outcomes across race and ethnicity or those with a history of tobacco use, asthma, or diabetes mellitus type II.

Conclusion: For patients aged 21–50 years with coronavirus disease 2019 presenting to the emergency department, a chest radiograph severity score was predictive of risk for hospital admission and intubation.

TC

- Sensibilidad: 60 - 98%.
- Especificidad: 25 - 53%.
- VPP: 92%.
- VPN: 42%.



Ai T, Yang Z, Hou H, Zhan C, Chen C, Lv W, Tao Q, Sun Z, Xia L. Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases. Radiology. 2020 Feb 26:200642. Doi: 10.1148/radiol.2020200642. [Epub ahead of print] PubMed PMID:

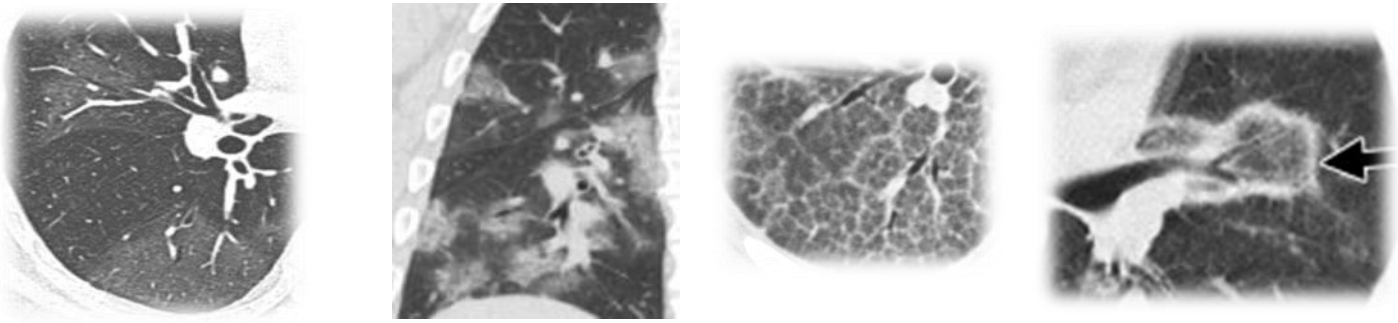
Wen Z, Chi Y, Zhang L, Liu H, Du K, Li Z, Chen J, Cheng L, Wang D. Coronavirus Disease 2019: Initial Detection on Chest CT in a Retrospective Multicenter Study of 103 Chinese Subjects. RYCT-20-0092, in press

Inui S, Fujikawa A, Jitsu M, Kunishima N, Watanabe S, Suzuki Y, Umeda S, Uwabe Y. Chest CT Findings in Cases from the Cruise Ship “Diamond Princess” with Coronavirus Disease 2019 (COVID-19). Radiology Cardiothoracic Imaging 2020 Mar 17. doi: 10.1148/ryct.2020200110

Fang Y, Zhang H, Xie J, Lin M, Ying L, Pang P, Ji W. Sensitivity of Chest CT for COVID-19: Comparison to RT-PCR. Radiology. 2020 Feb 19:200432. doi: 10.1148/radiol.2020200432. [Epub ahead of print] PubMed PMID: 32073353.

Radiological Society of North America Expert Consensus Statement on Reporting Chest CT Findings Related to COVID-19. Endorsed by the Society of Thoracic Radiology, the American College of Radiology, and RSNA.

- Típica.

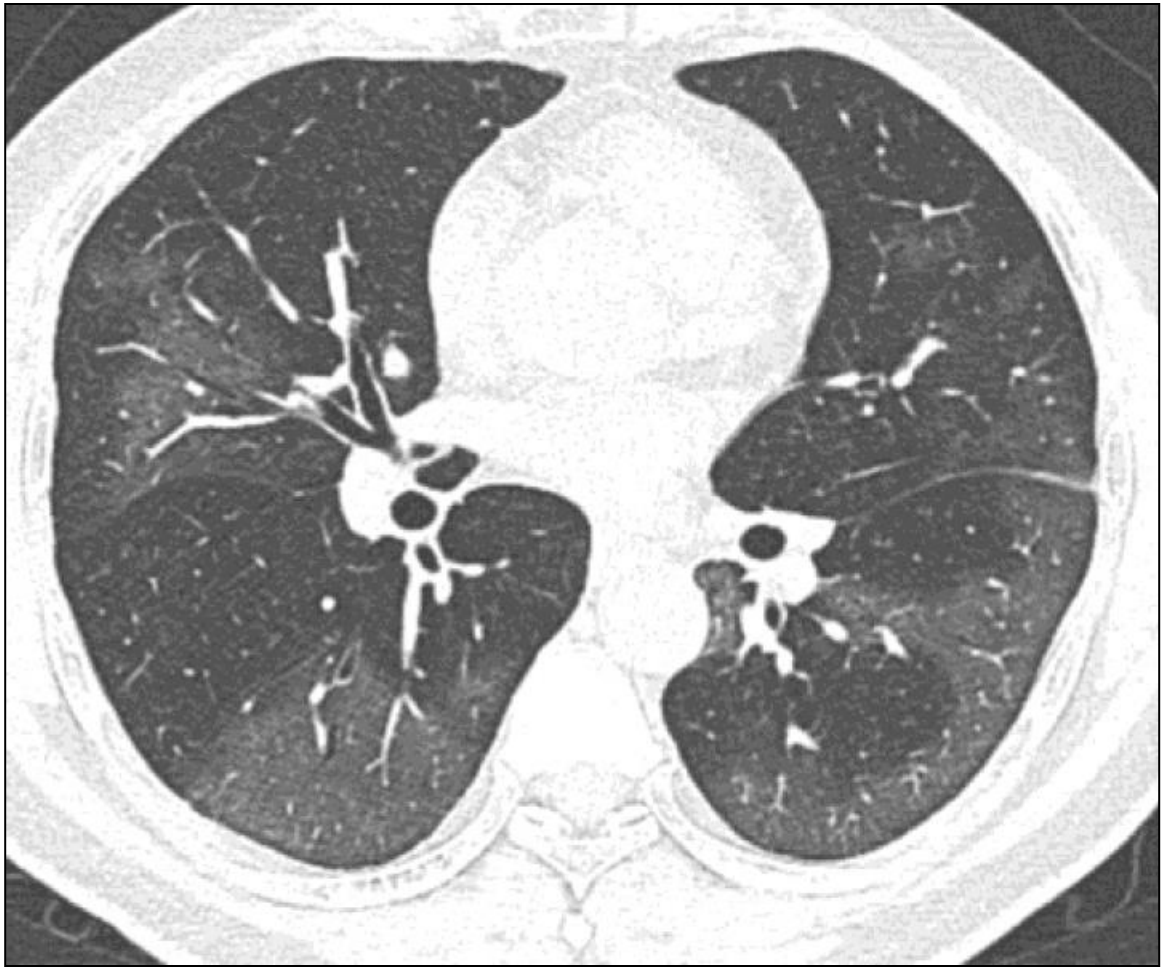


- Indeterminada.

- Atípica.

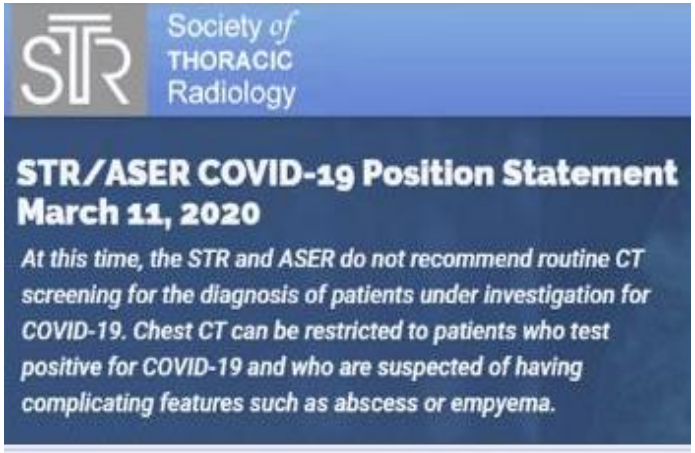
- Negativo.

Apariencia típica

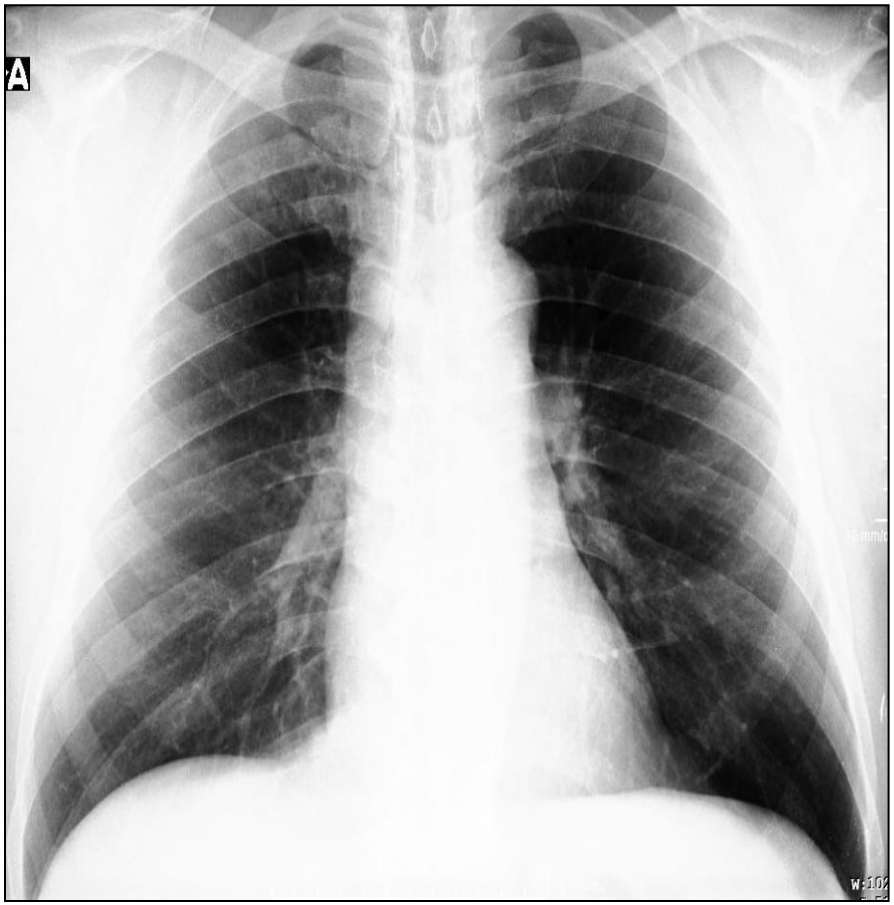


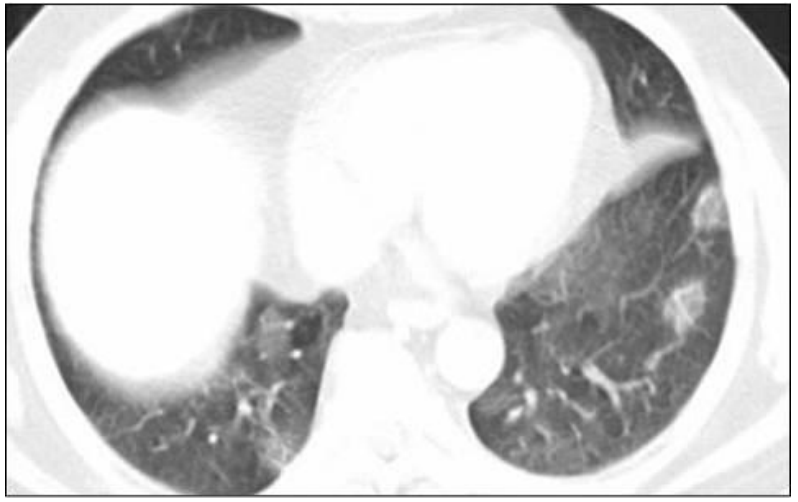
TC

*La Society of Thoracic Radiology **(STR)** y American Society of Emergency Radiology Society **(ASER)** no recomiendan a la tomografía como estudio de rutina para el diagnóstico de COVID-19 en pacientes bajo investigación. La tomografía puede utilizarse en aquellos pacientes con test positivo de RT-PCR y sospecha de complicaciones tales como absceso o empiema.*

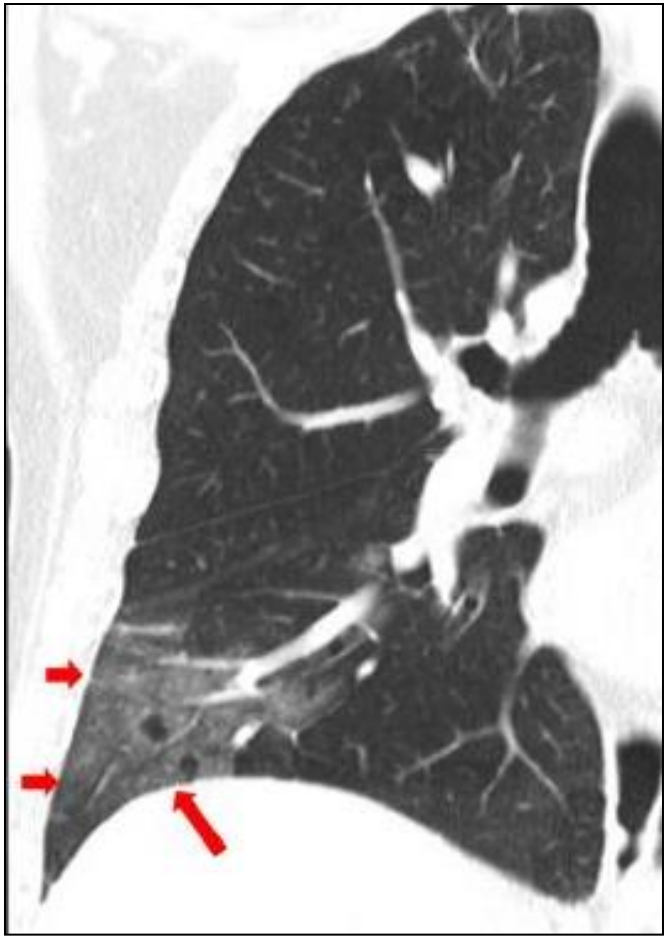


Falso negativo





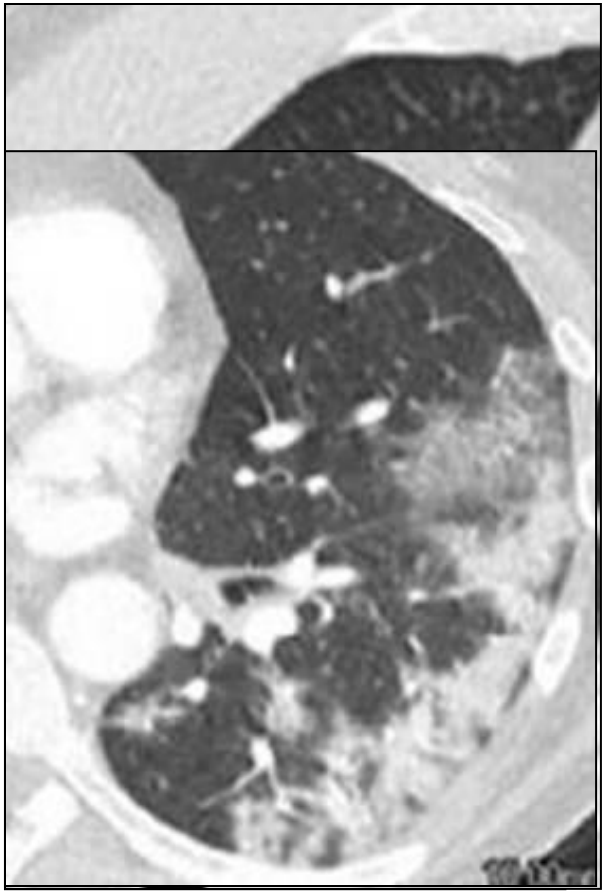
Falso negativo



Fases de la neumonía

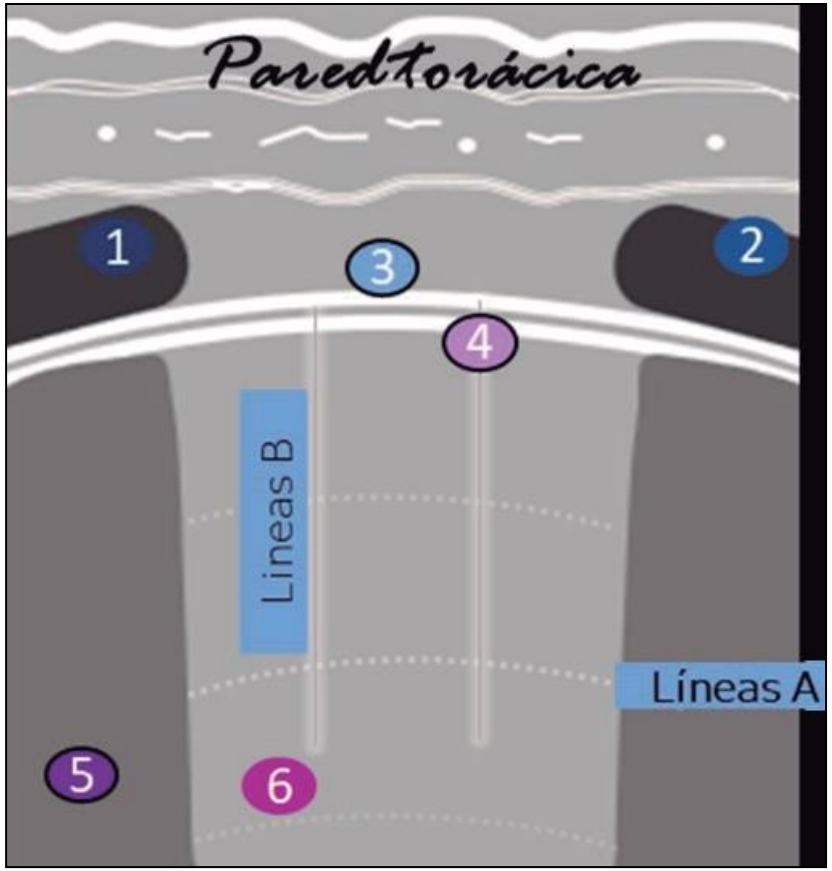
Fases:

- Estadio 1: 0 - 4 días
- Estadio 2: 5 - 8 días
- Estadio 3: 9 - 13 días
- Estadio 4: > 14 días



Pan F, Ye T, Sun P, Gui S, Liang B, Li L, et al. Time Course of Lung Changes On Chest CT During Recovery From 2019 Novel Coronavirus (COVID-19) Pneumonia. Radiology. 2020;

Ecografía



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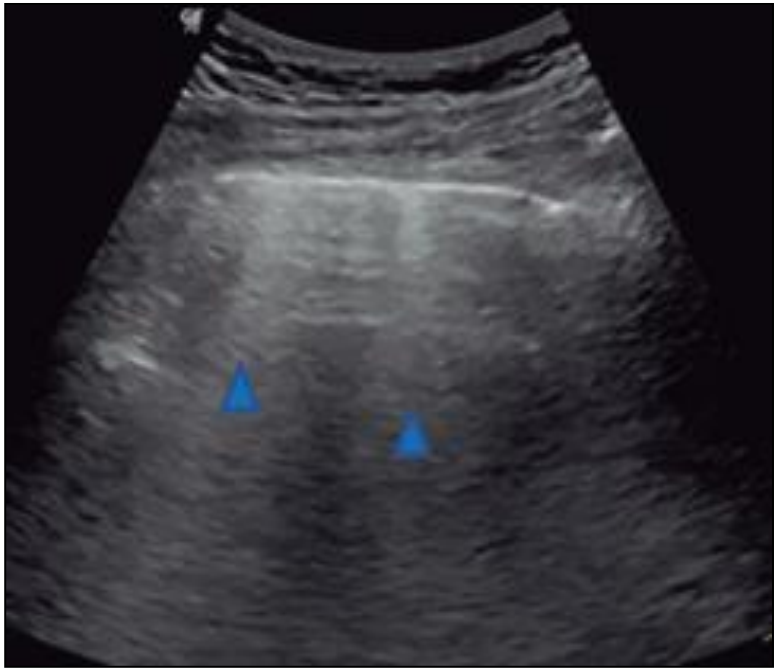


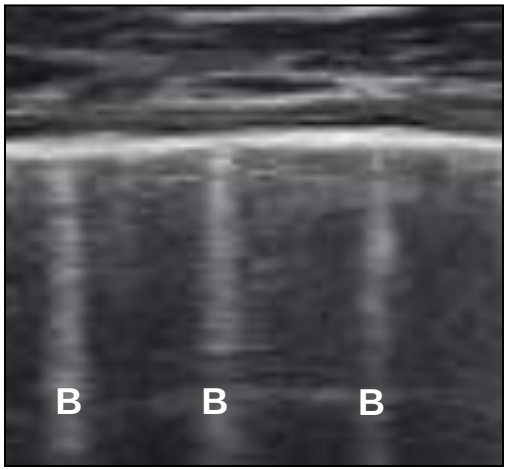
Ecografía

Hallazgos:

- Engrosamiento pleural.
- Irregularidad pleural.
- Líneas B (focal, multifocal o confluentes.
- Perdidas de líneas A.
- Consolidaciones.
- Haz de luz.

Score ecográfico

PUNTAJE	HALLAZGOS
Puntaje 0	Línea pleural contínua, líneas A
Puntaje 1	Línea pleural irregular, líneas B escasas
Puntaje 2	Disrupción de la línea pleural, líneas B abundantes, pequeñas áreas de consolidación
Puntaje 3	Consolidaciones grandes y pulmón blanco



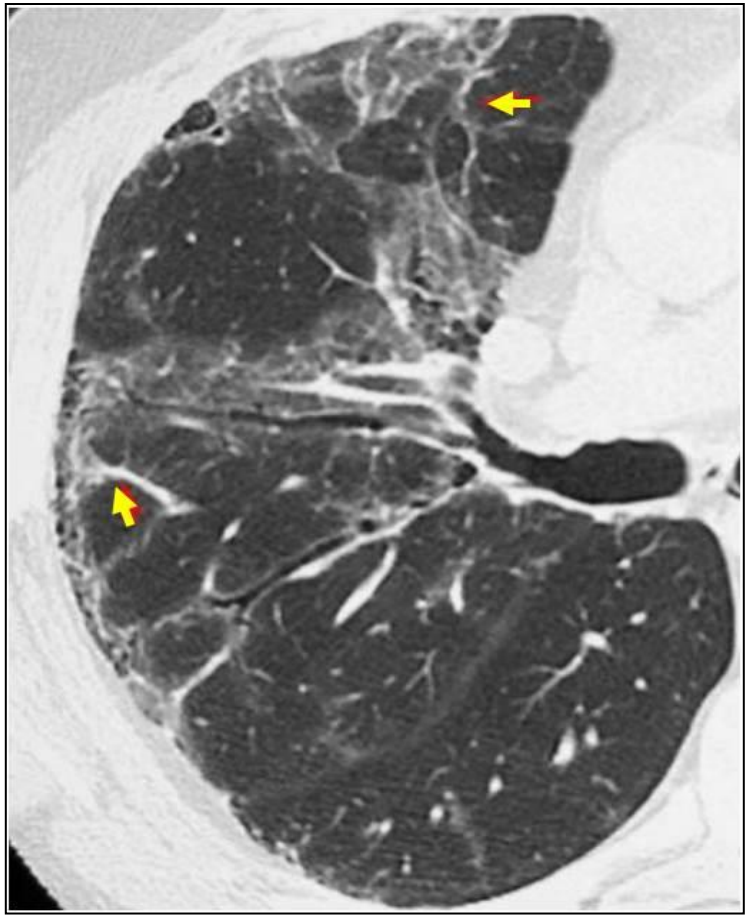
Soldati G, Smargiassi A, Inchingolo R, Buonsenso D, Perrone T, Briganti DF, et al. Proposal for international standardization of the use of lung ultrasound for COVID-19 patients; a simple, quantitative, reproducible method. J Ultrasound Med. 2020;1–7.

Secuelas post COVID-19

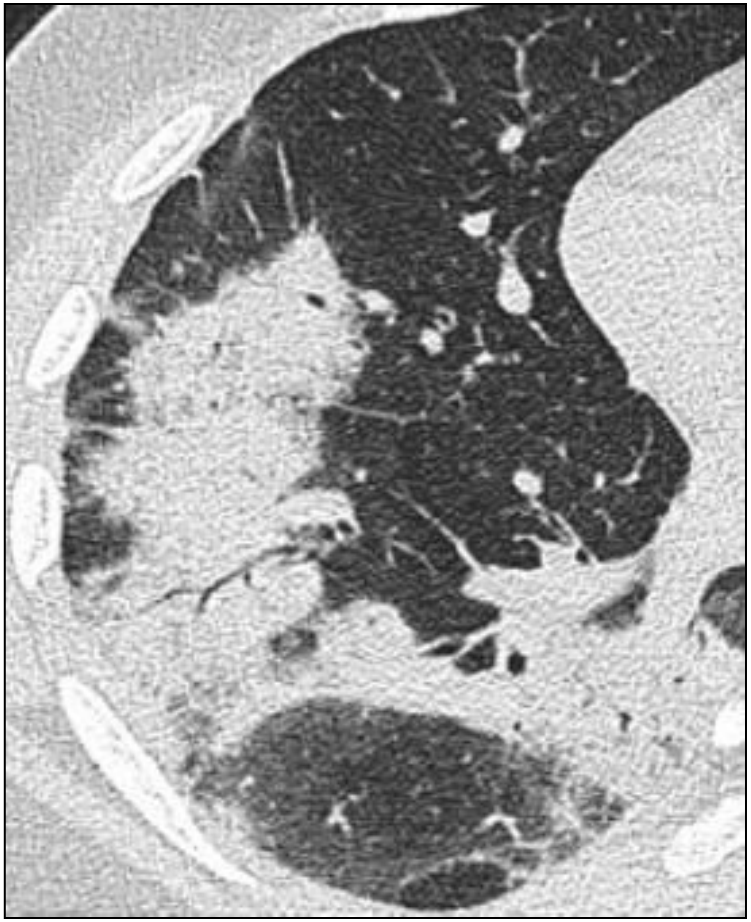
I. Enfermedad intersticial pulmonar difusa.

- NINE.
- Neumonía organizada.
- Fibrosis pulmonar:
  - Engrosamiento septos inter o intralobulillar.
  - Bronquioloectasia por tracción.
  - Disminución de volumen pulmonar.
  - Bandas parenquimatosas.
  - Panalización (+ raro).

Secuelas post COVID-19

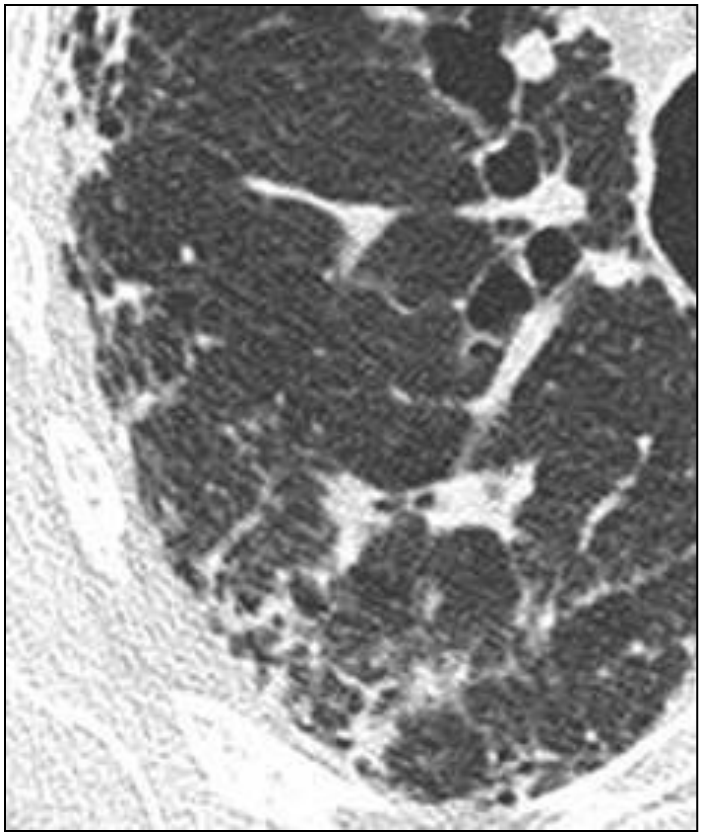


NINE

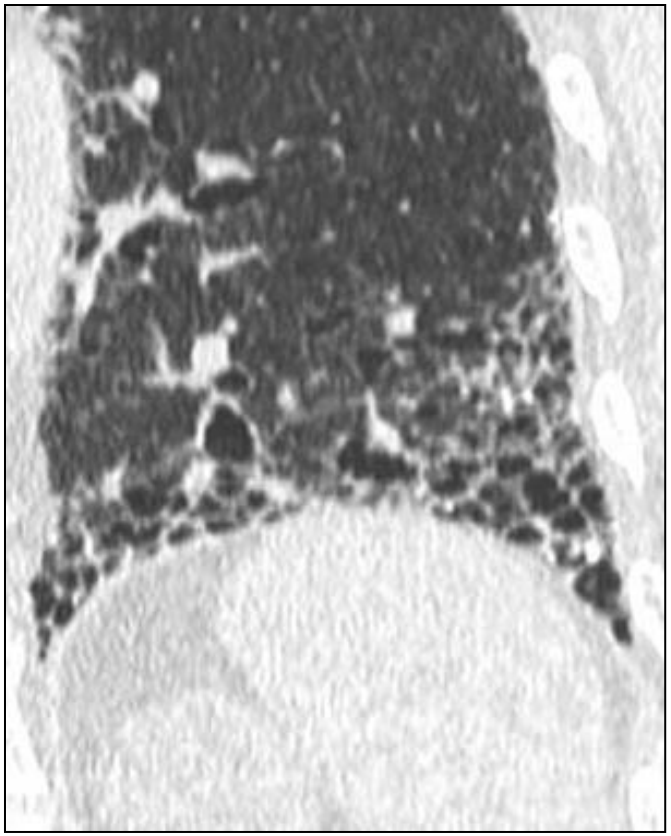


N. Organizada

Secuelas post COVID-19

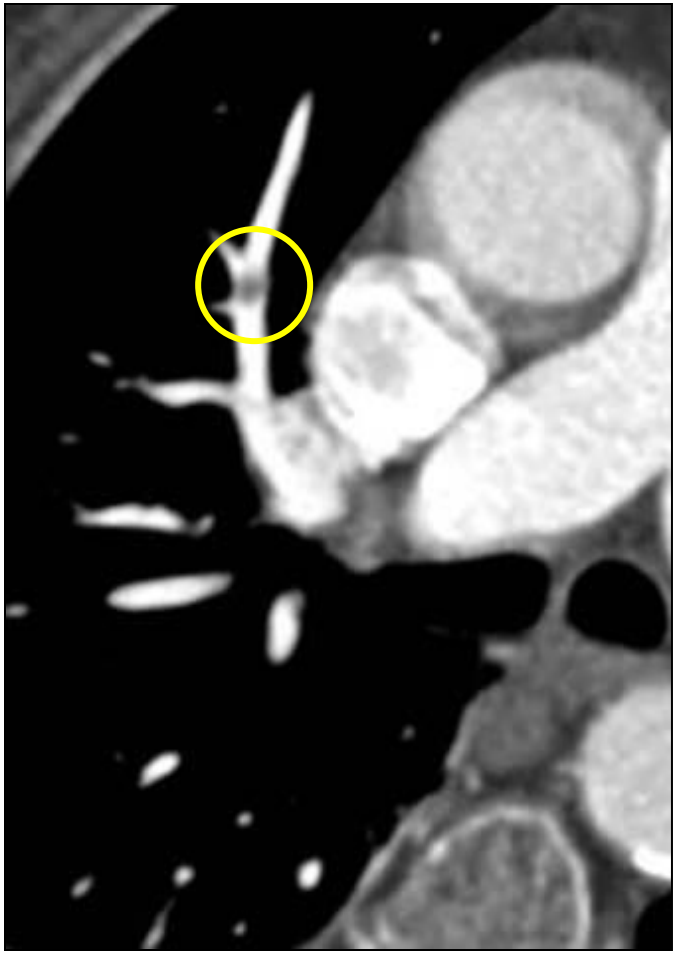


Septos

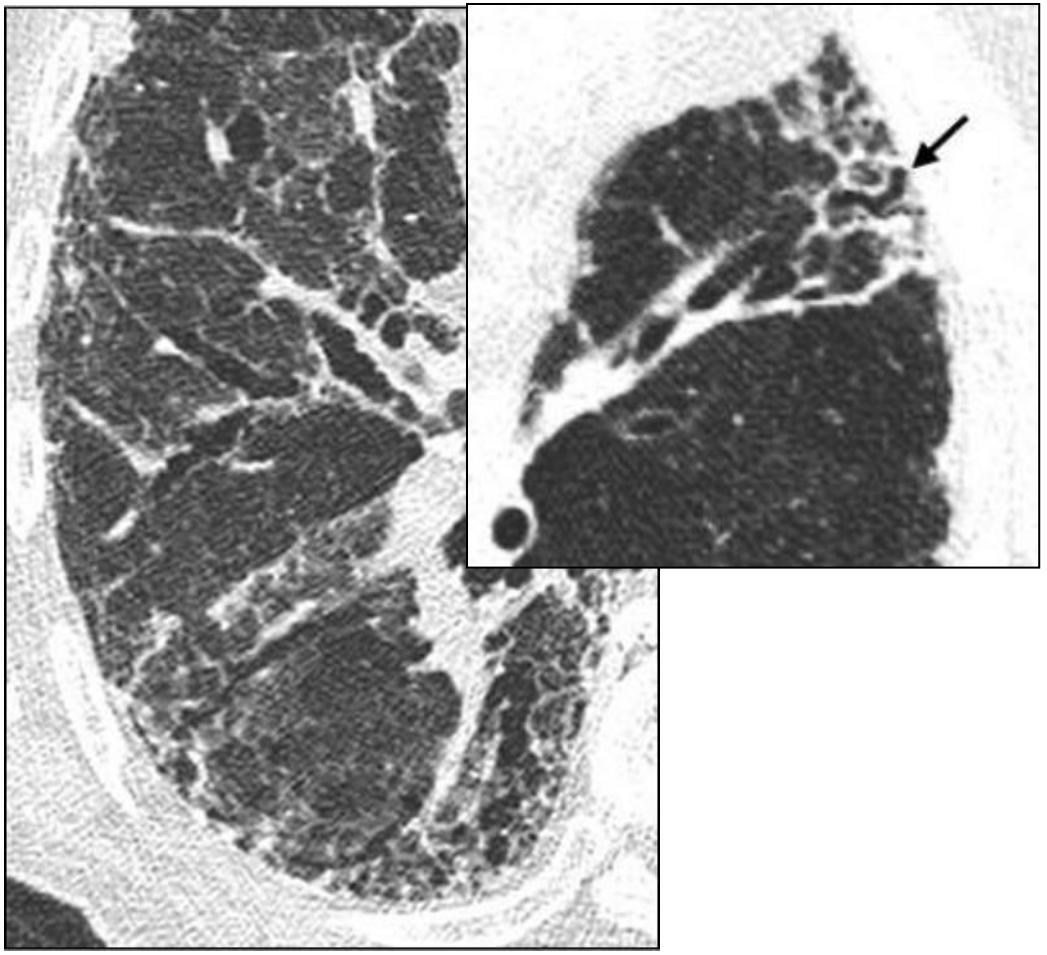


Panalización

Secuelas post COVID-19

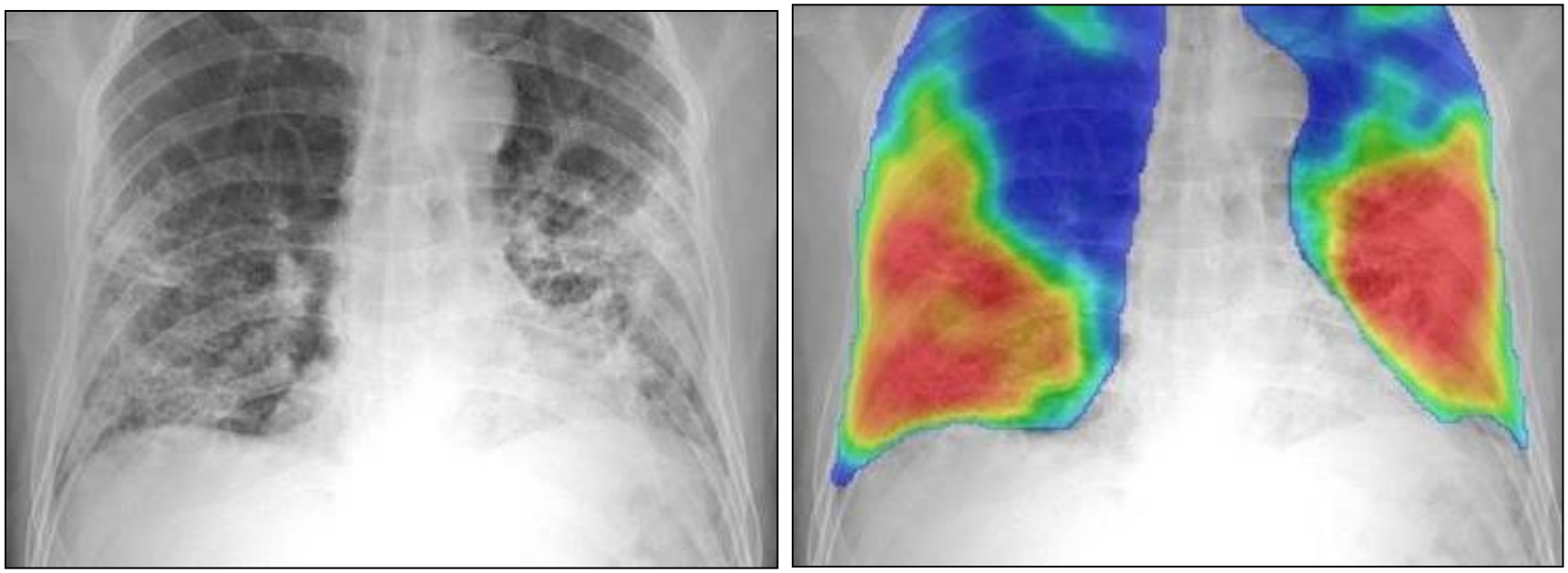


TEP



Bronquiectasias

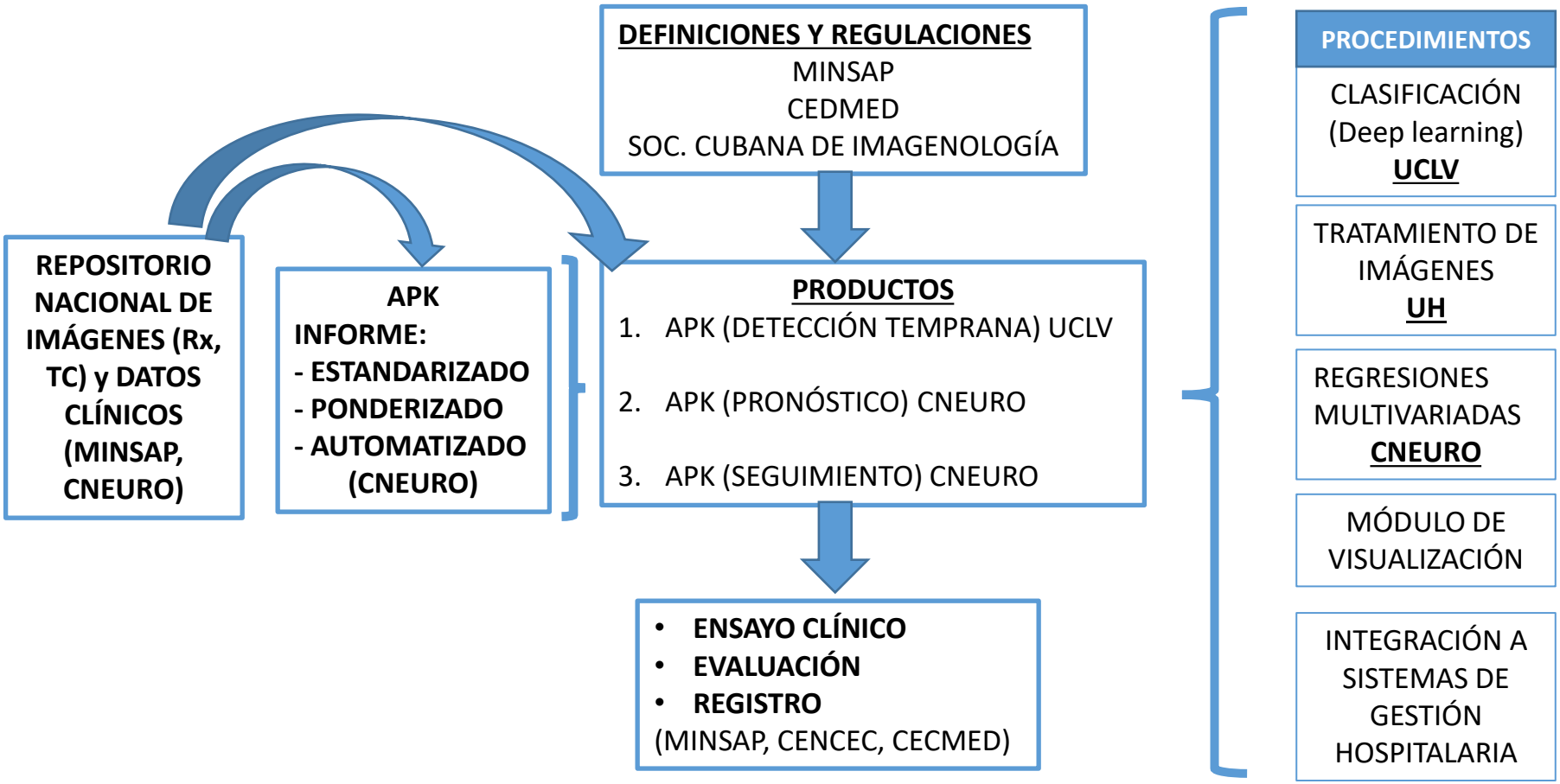
Inteligencia artificial



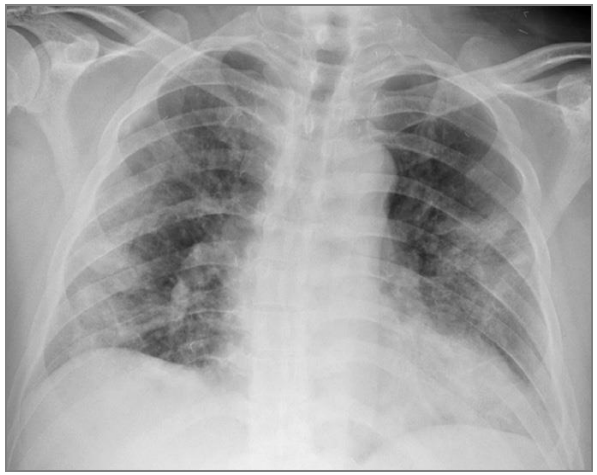
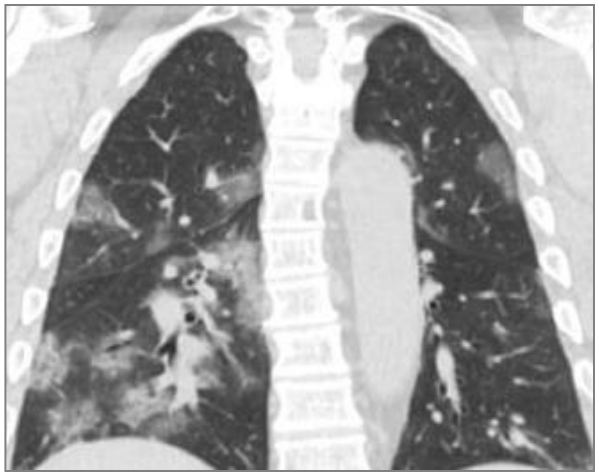
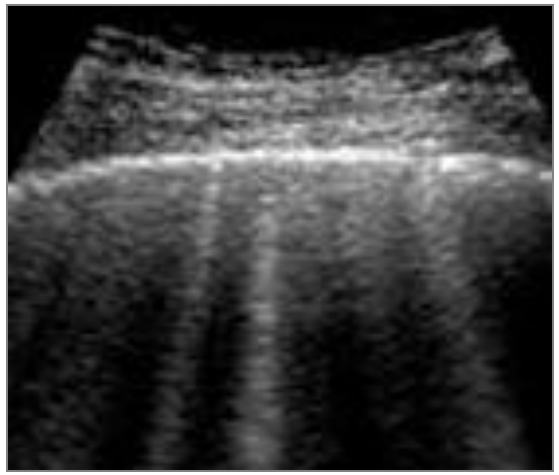
Triage for COVID-19 Using AI on Chest X-rays – Thirona

Li L, Qin L, Xu Z, Yin Y, Wang X, Kong B, et al. Artificial Intelligence Distinguishes COVID-19 from Community Acquired Pneumonia on Chest CT

Objetivos


DEFINICIONES Y REGULACIONES
MINSAP
CEDMED
SOC. CUBANA DE IMAGENOLOGÍA
REPOSITORIO NACIONAL DE IMÁGENES (Rx, TC) y DATOS CLÍNICOS (MINSAP, CNEURO)
APK
INFORME:
- ESTANDARIZADO
- PONDERIZADO
- AUTOMATIZADO
(CNEURO)
PRODUCTOS
1. APK (DETECCIÓN TEMPRANA) UCLV
2. APK (PRONÓSTICO) CNEURO
3. APK (SEGUIMIENTO) CNEURO
• ENSAYO CLÍNICO
• EVALUACIÓN
• REGISTRO
(MINSAP, CENCEC, CECMED)
PROCEDIMIENTOS
CLASIFICACIÓN (Deep learning) UCLV
TRATAMIENTO DE IMÁGENES UH
REGRESIONES MULTIVARIADAS CNEURO
MÓDULO DE VISUALIZACIÓN
INTEGRACIÓN A SISTEMAS DE GESTIÓN HOSPITALARIA

GRACIAS

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