
Chest Radiographic Findings in COVID-19



UCLA CXR COVID REPORTING CLASSIFICATION

COVID Imaging Classification	CXR Appearance	Suggested Impression
Typical	<ul style="list-style-type: none"> • Multifocal peripheral consolidation • Multifocal rounded opacities and nodules 	Commonly reported imaging features of COVID-19 pneumonia are present. Other processes such as influenza pneumonia and organizing pneumonia, as can be seen with drug toxicity and connective tissue disease, can cause a similar imaging pattern.
Indeterminate	<ul style="list-style-type: none"> • Multifocal non peripheral consolidation 	Imaging features can be seen with COVID-19 pneumonia, though are nonspecific and can occur with a variety of infectious and noninfectious processes.
Atypical May be due to COVID-19 but must consider other causes	<ul style="list-style-type: none"> • Focal lobar consolidation • Pleural effusion • Perihilar interstitial opacities • Bronchial wall thickening • Atelectasis • Lymphadenopathy 	Imaging features are atypical or uncommonly reported for COVID-19 pneumonia. Alternative diagnoses should be considered.
Negative Does not excluded COVID-19	<ul style="list-style-type: none"> • No CXR findings of pneumonia • Edema 	No CXR findings present to indicate pneumonia. Note that CXR may be negative in the early stages of COVID-19.



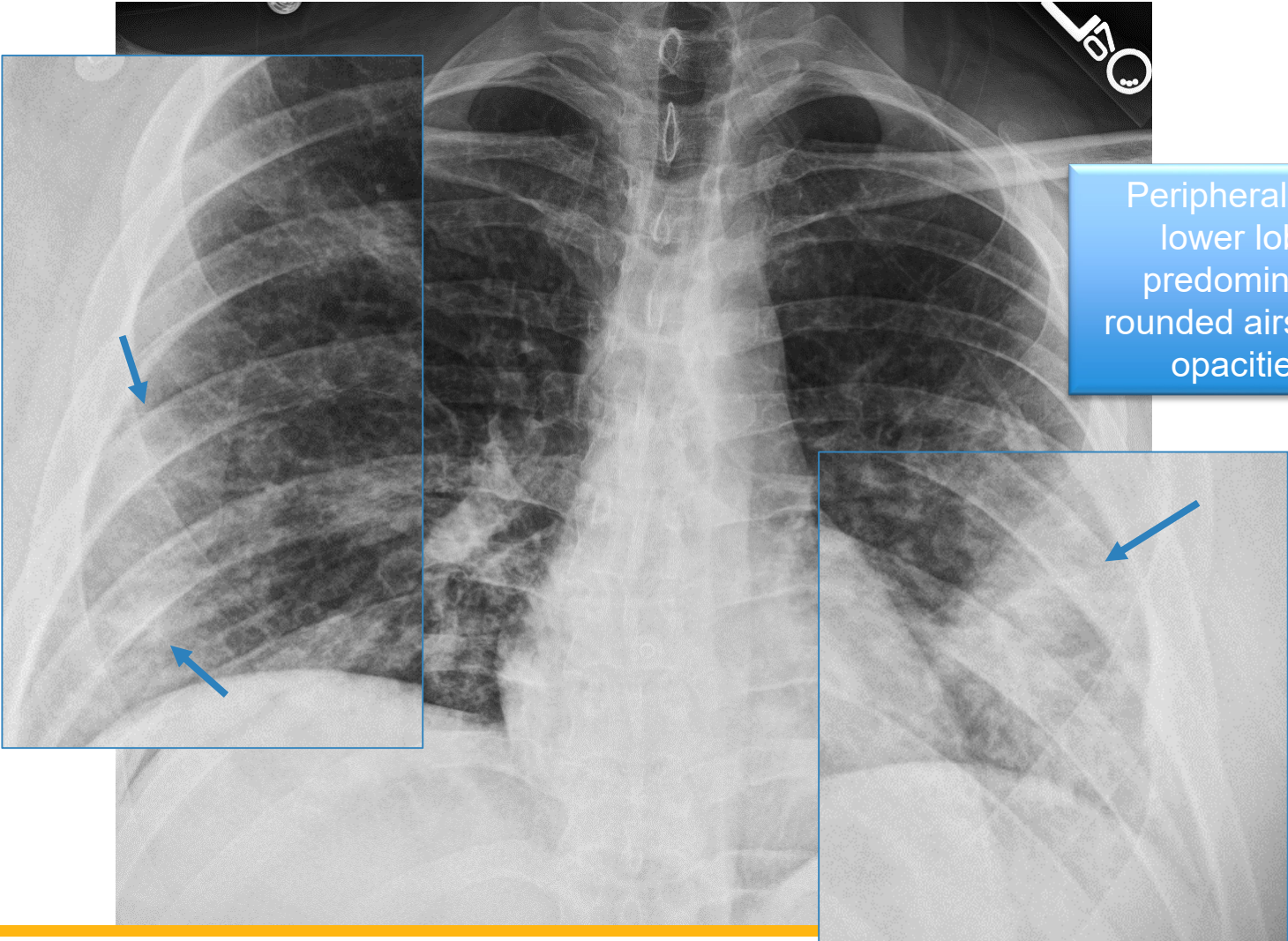
Timeline of Radiographic Findings

- Studies have shown ground glass opacities to develop on CT between days 0-4 of symptom onset with a peak between 6-13 days.
- CXR typical appearance, as shown here, is in early disease.

Typical – COVID-19+



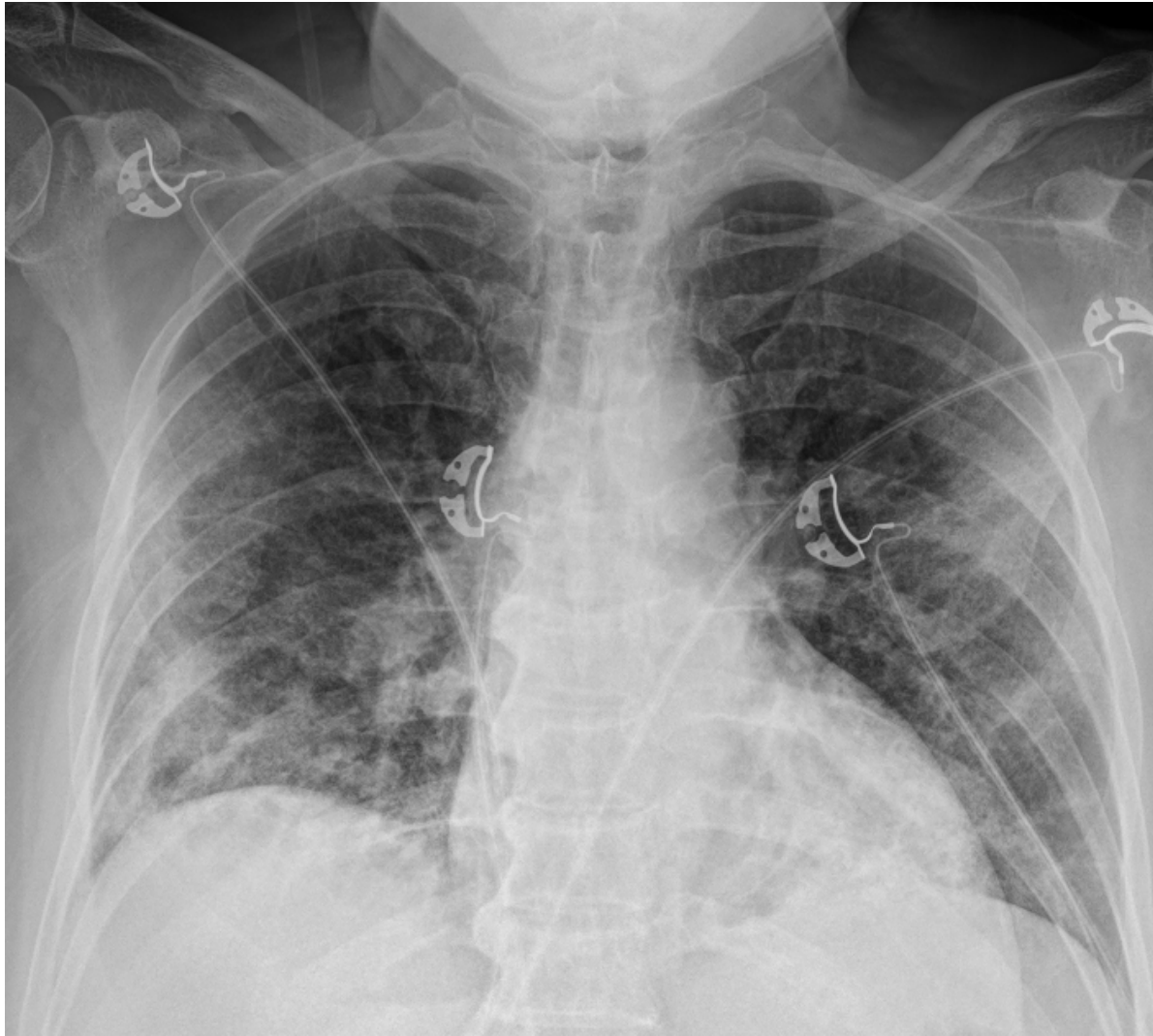
Typical – COVID-19+



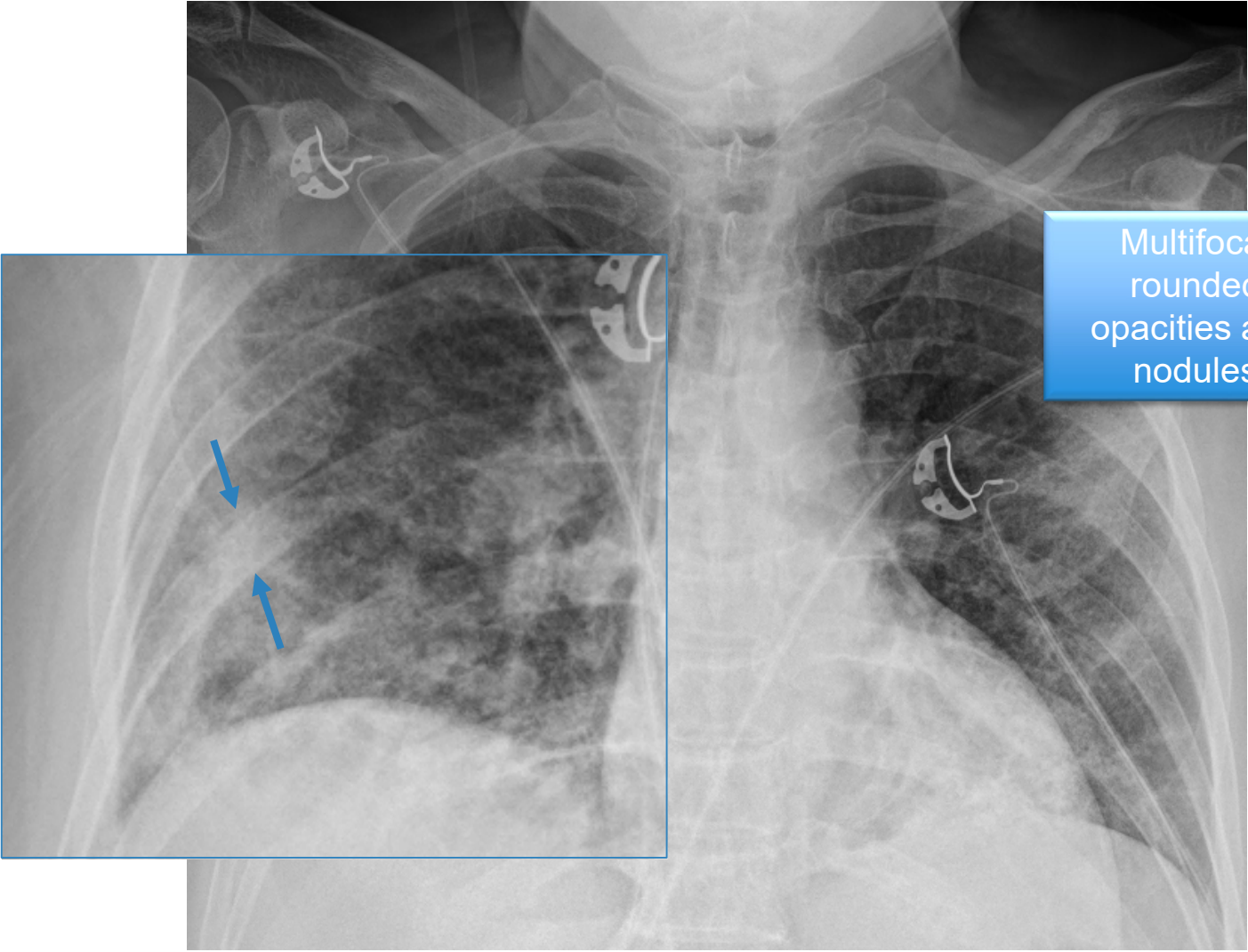
Peripheral and lower lobe predominant rounded airspace opacities



Typical – COVID-19+

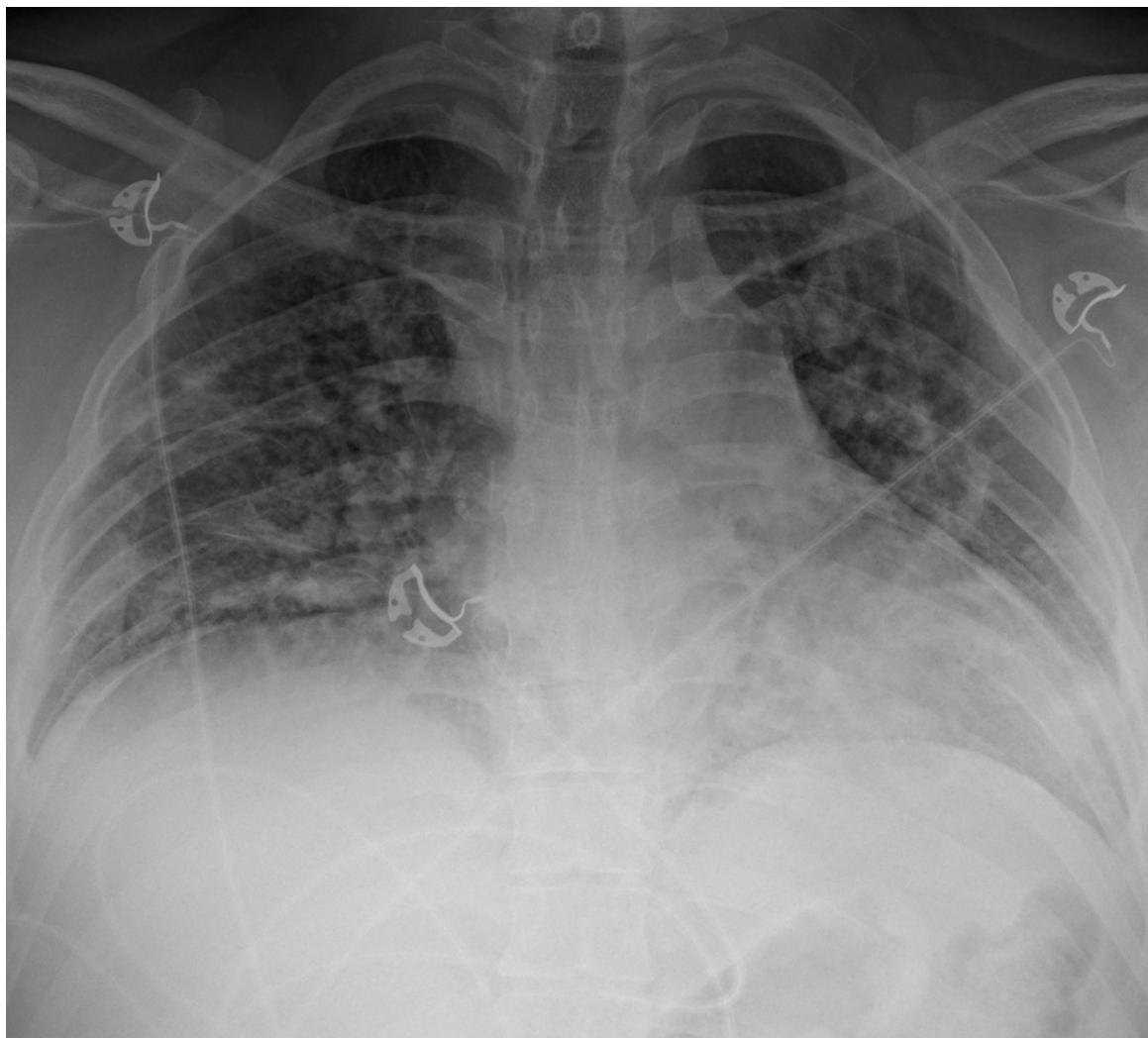


Typical – COVID-19+

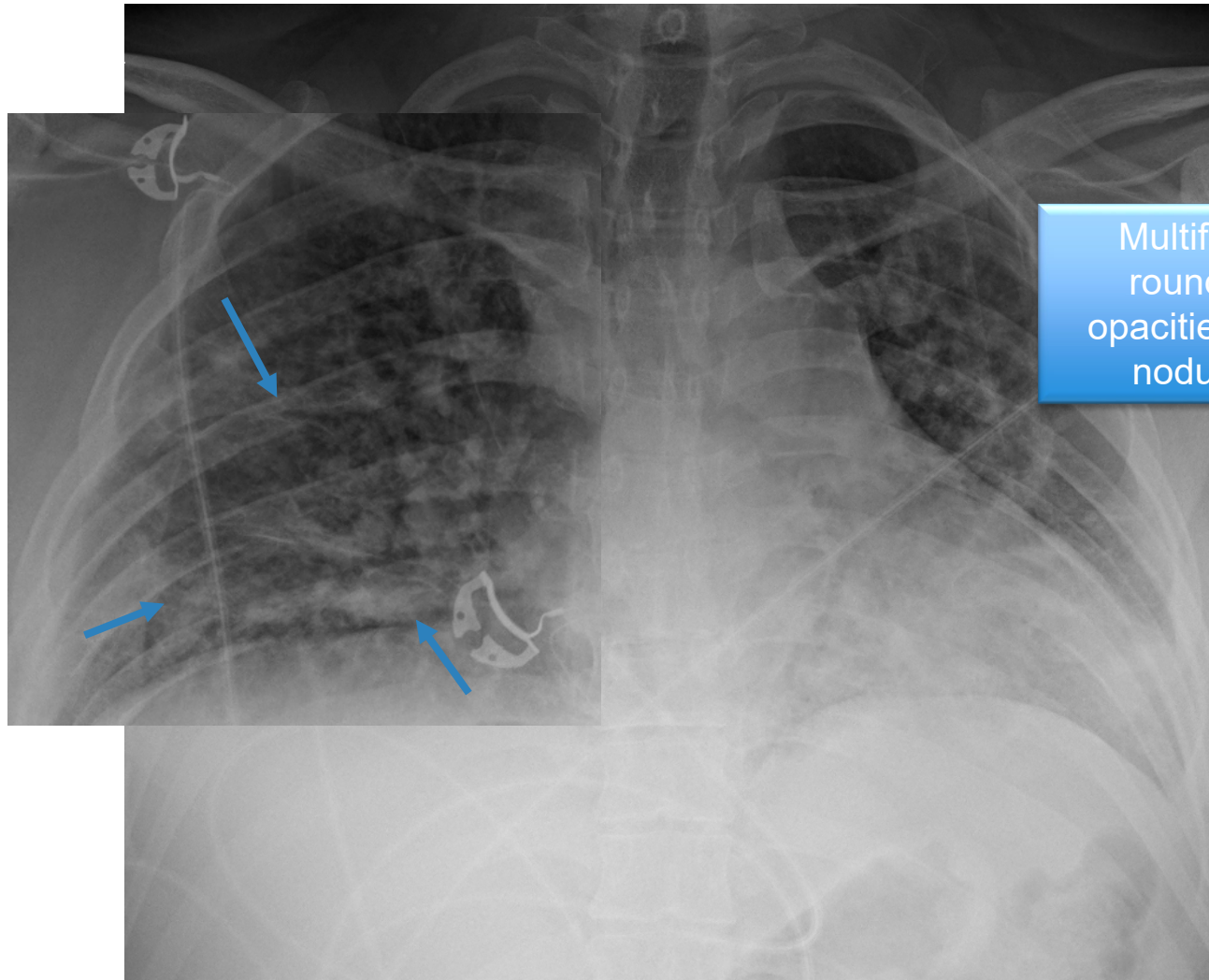


Multifocal rounded opacities and nodules

Typical – COVID-19+



Typical – COVID-19+

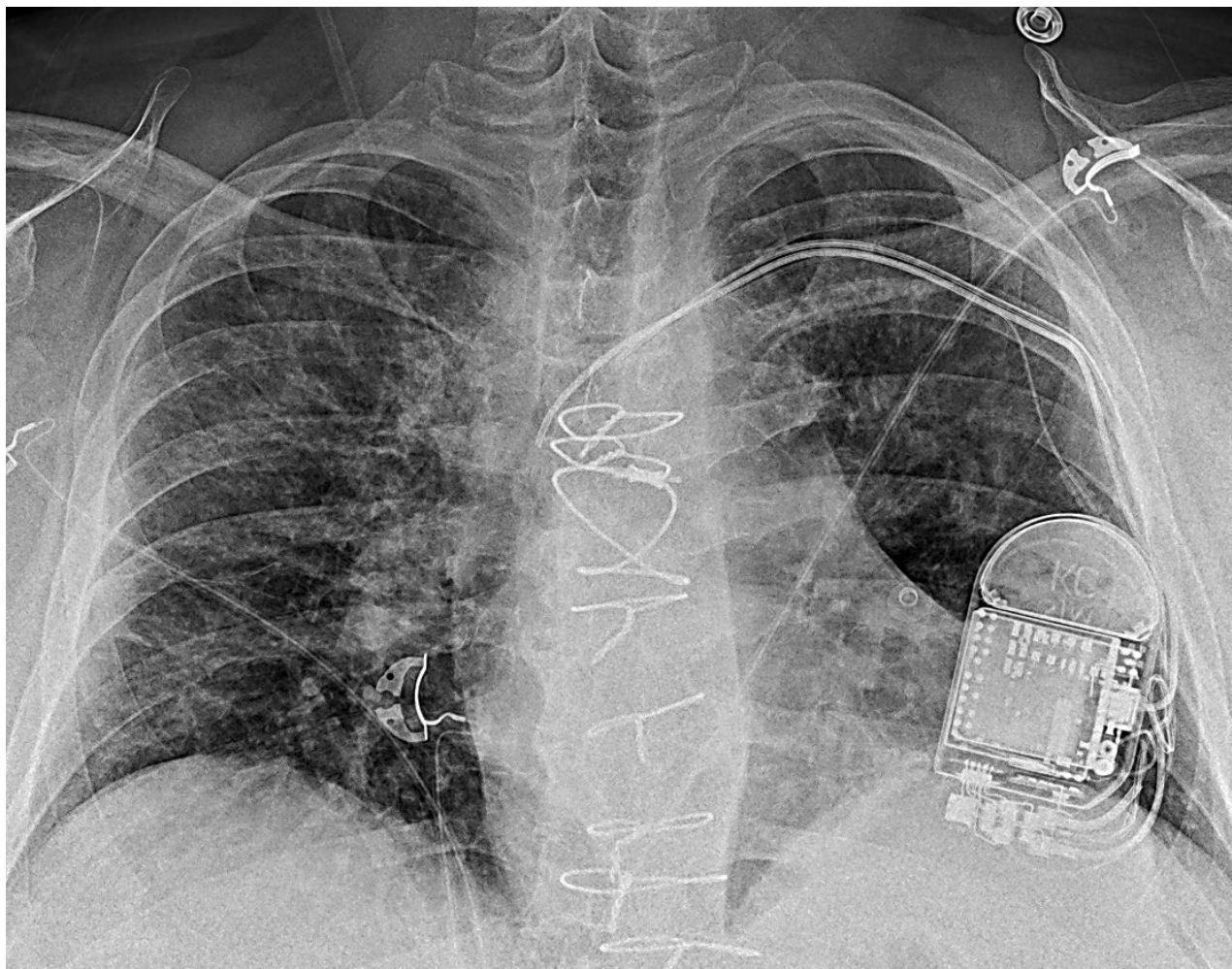


Multifocal rounded opacities and nodules

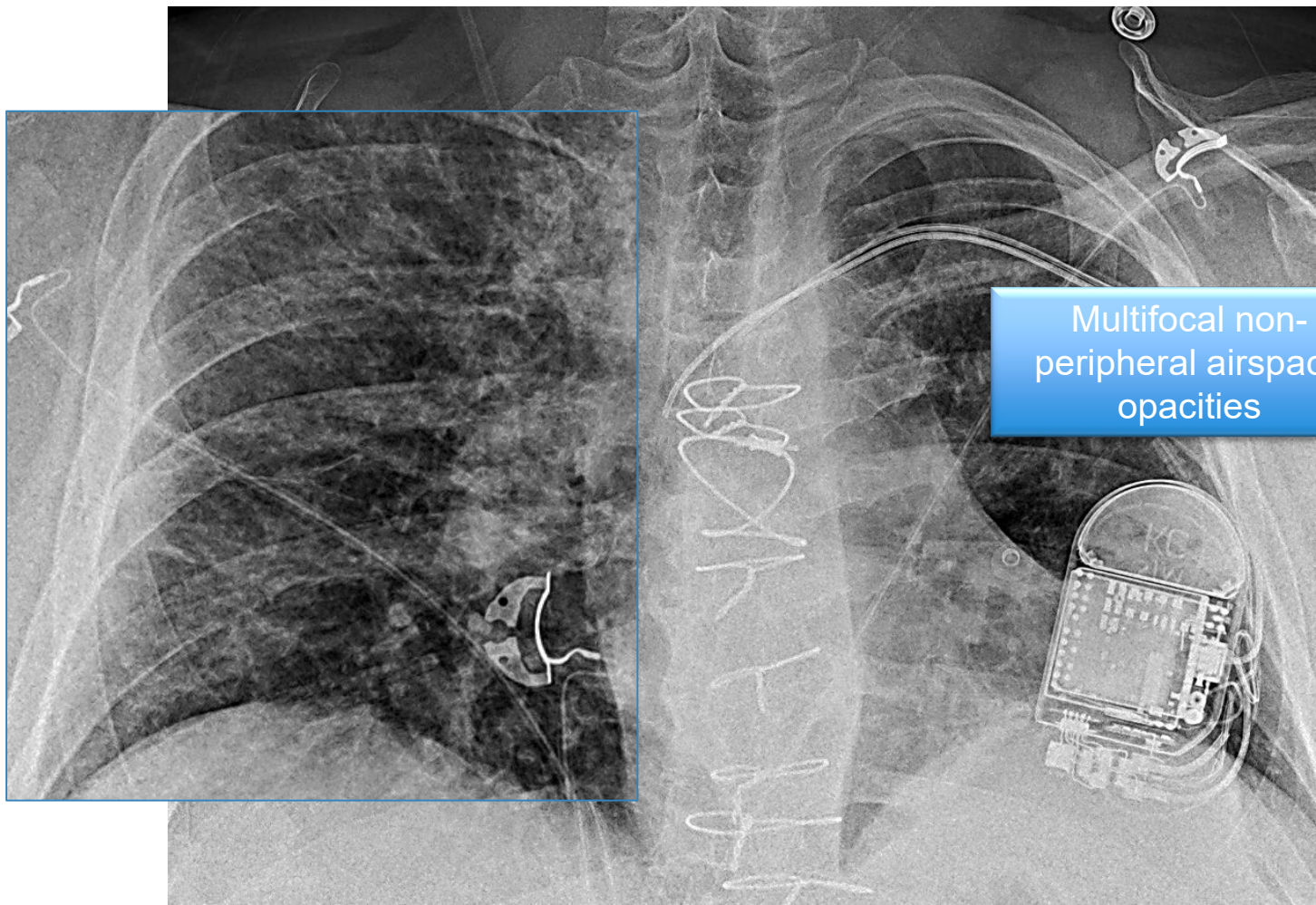
Indeterminate Appearance



Indeterminate Appearance – COVID-19+



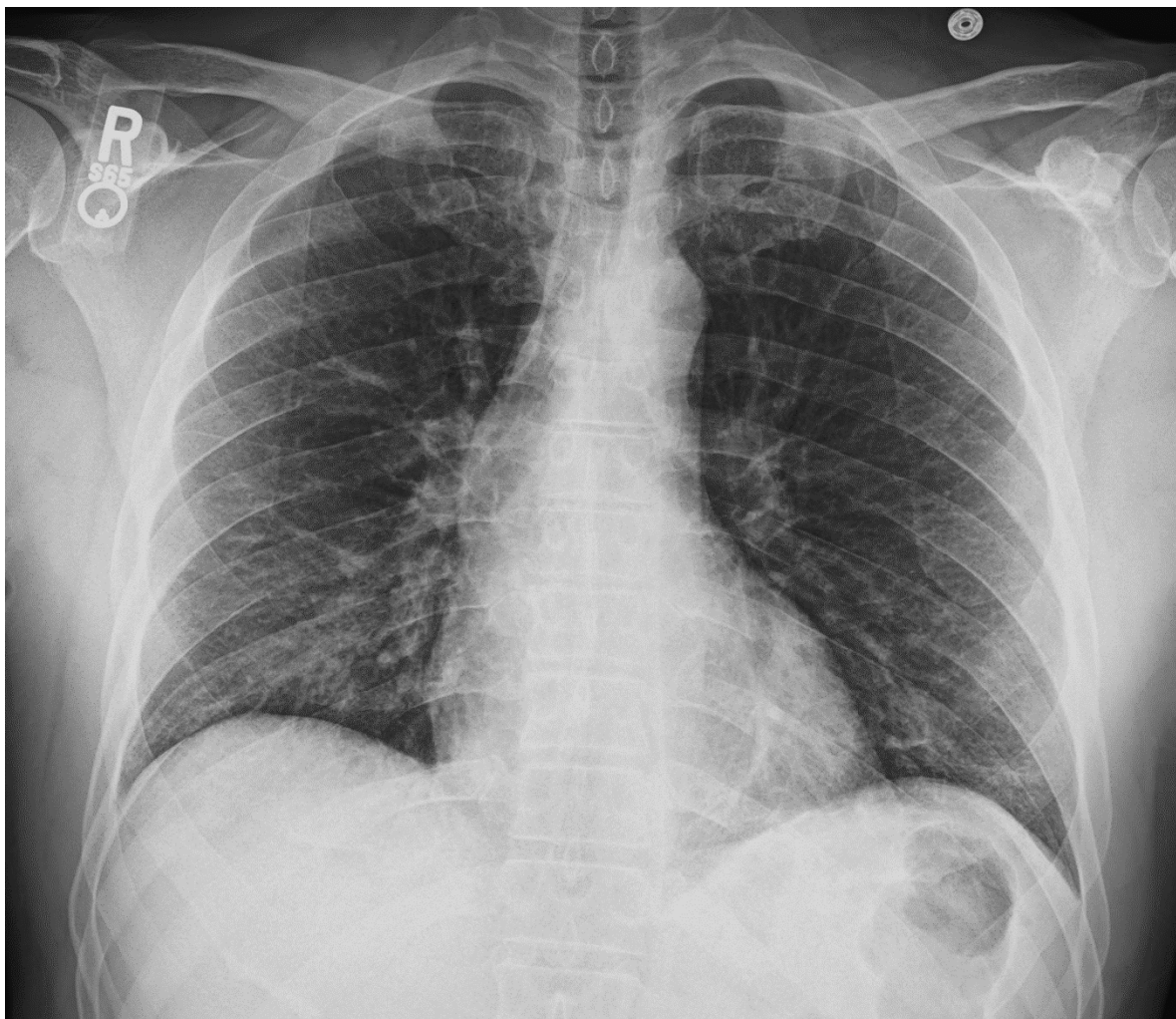
Indeterminate Appearance – COVID-19+



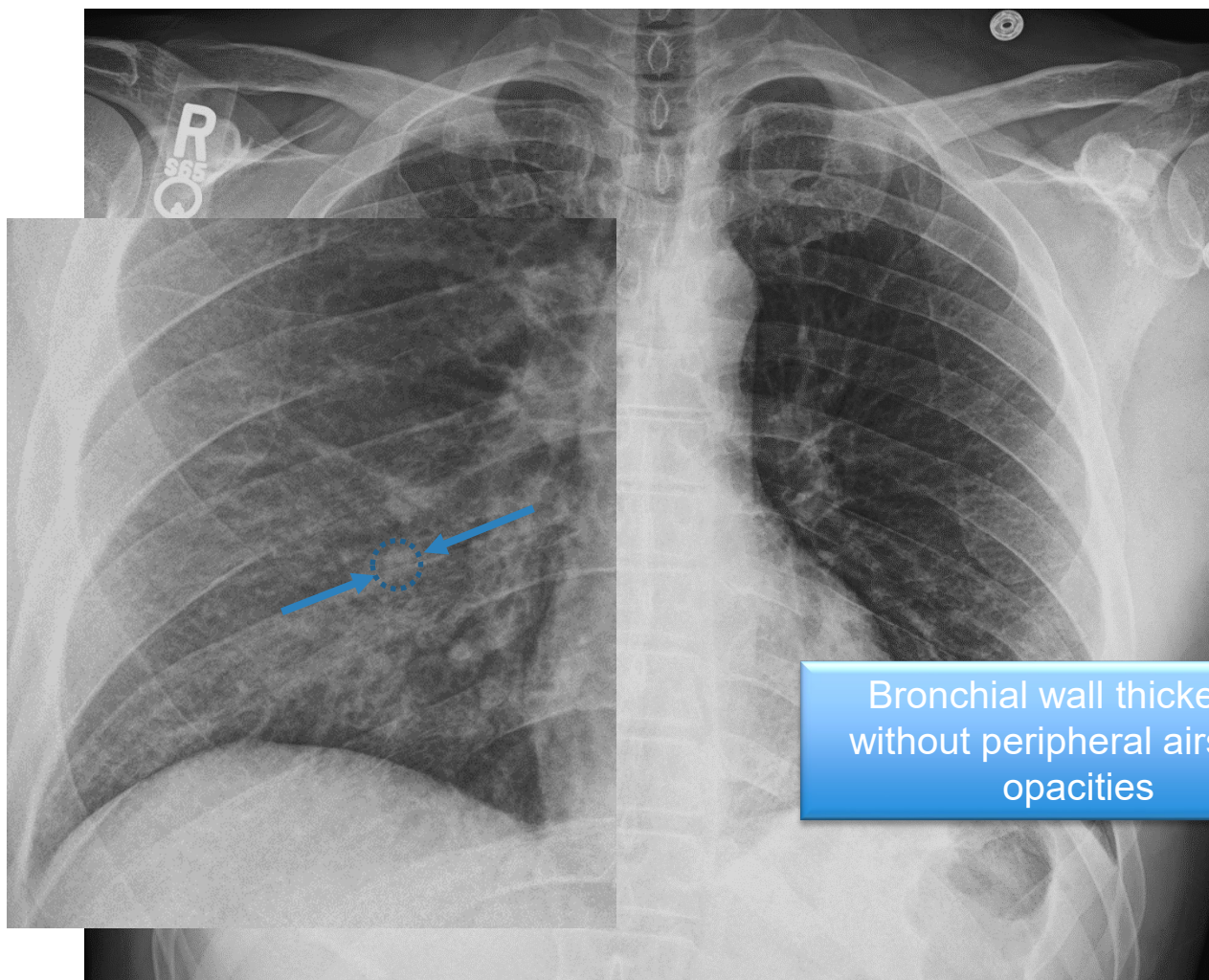
Multifocal non-peripheral airspace opacities



Atypical Appearance – COVID-19+



Atypical Appearance – COVID-19+



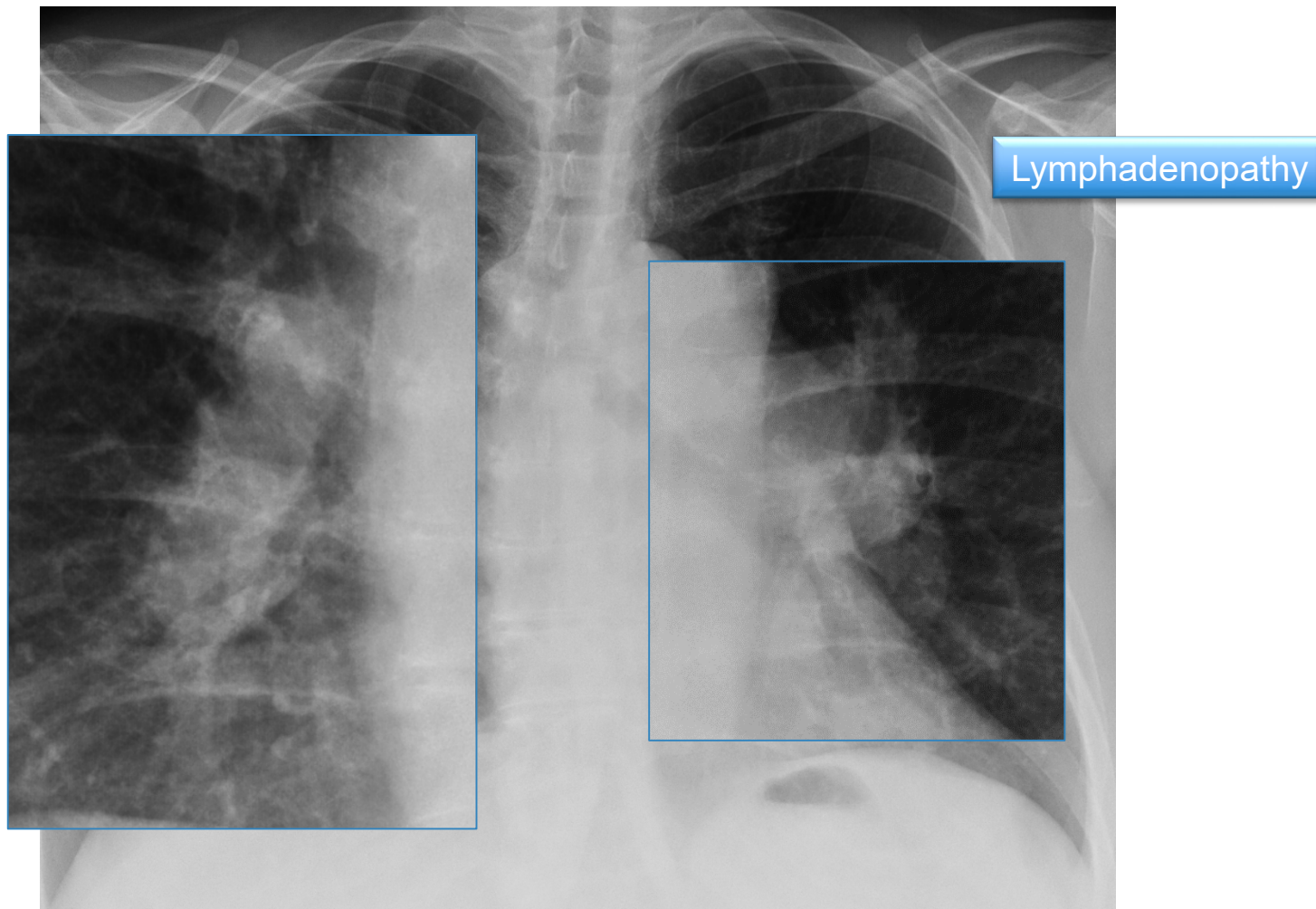
Bronchial wall thickening
without peripheral airspace
opacities



Atypical Appearance – NOT COVID-19+



Atypical Appearance – NOT COVID-19+



Note

- Routine screening CT for diagnosis or exclusion of COVID-19 is currently **NOT** recommended by most professional organizations or the US Centers for Disease Control and Prevention.
- **Negative CXR does not exclude a diagnosis of COVID-19**

References/Resources

- Simpson F, Kay FU, Abbara S, et al. Radiological Society of North American 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. Radiology: Cardiothoracic Imaging. Published Online: Mar 25 2020.
- Wong H, Lam H, Fong A. et al. Frequency and Distribution of Chest Radiographic Findings in COVID-19 Positive Patients. Radiology. Published Online: March 27 2020.
- Zu ZY, Xu PP, Chen W, et al. Coronavirus Disease 2019 (COVID-19): A Perspective from China. Radiology. Published Online: Feb 21 2020
- Kanne JP. Chest CT Findings in 2019 Novel Coronavirus (2019-nCoV) Infections from Wuhan, China: Key Points for the Radiologist. Radiology 2020; 295:16–17.
- Saleh S, Abedi A, Balakrishnan S. Coronavirus Disease 2019 (COVID-19): A Systematic Review of Imaging Findings in 919 Patients. AJR 2020; 215:1-7
- Hosseiny M, Kooraki S, Gholamrezanezhad, et al. Radiology Perspective of Coronavirus Disease 2019 (COVID-19): Lessons From Severe Acute Respiratory Syndrome and Middle East Respiratory Syndrome . AJR 2020; 214:1–5.

