

UC San Diego Health

Case Presentation: Radiologic Manifestation of COVID-19

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Case Presentation

- 69yo female with T2DM and HTN
- Presented to primary care clinic with altered mental status, shortness of breath and dysuria
- Referred to Emergency Department for significant hypoxemia and hyperglycemia



Case Presentation – Emergency Department



T 100.3, HR 102, BP 92/50
SpO₂ 80's on room air

Ill appearing, Moderate distress,
A&O x0, Incomprehensible
speech, Tachycardic,
Tachypneic, Rhonchi in RLL,
TTP in suprapubic area.



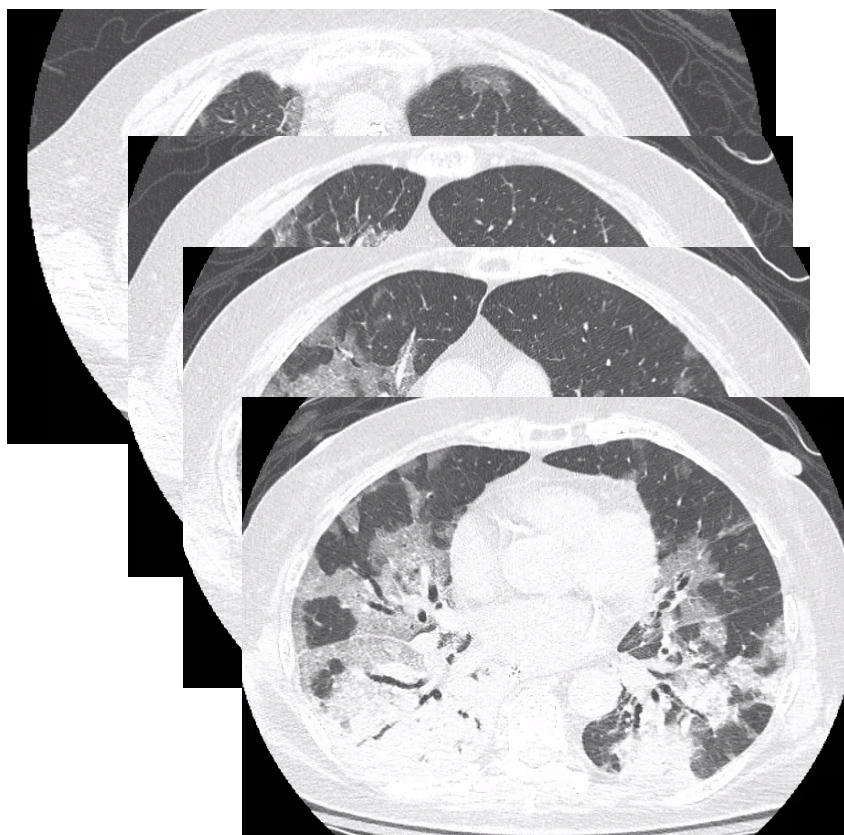
Basic laboratory
studies

CT head, chest,
abdomen/pelvis



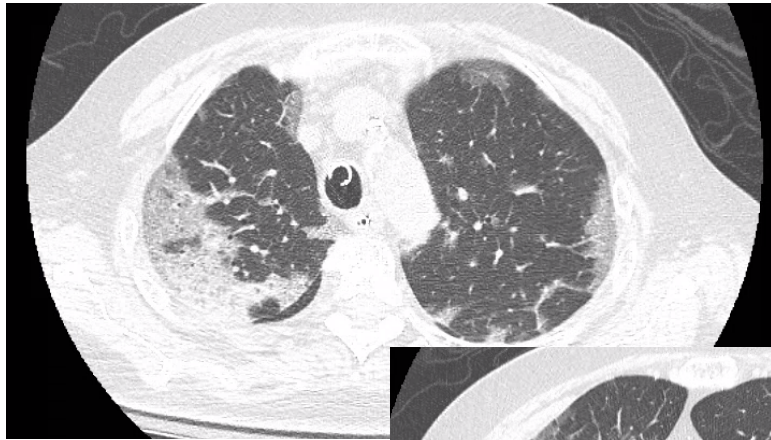
She was intubated
and admitted to ICU

CT chest on Admission

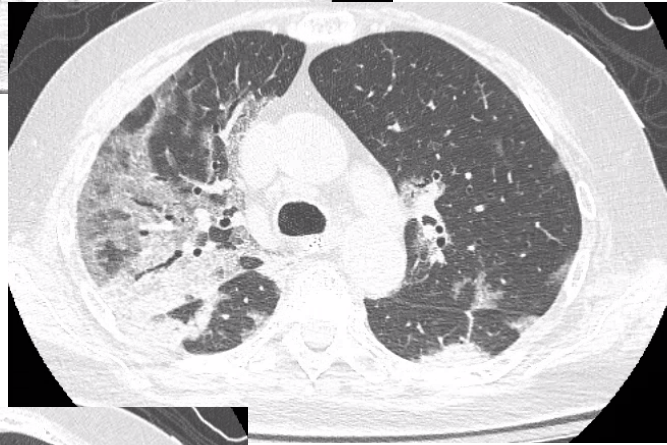


- Prominent mediastinal lymph nodes.
- Ground-glass opacities with peripheral and subpleural distribution throughout with intra and interlobular septal thickening.
- Consolidative opacities predominantly within the bilateral lower lobes.

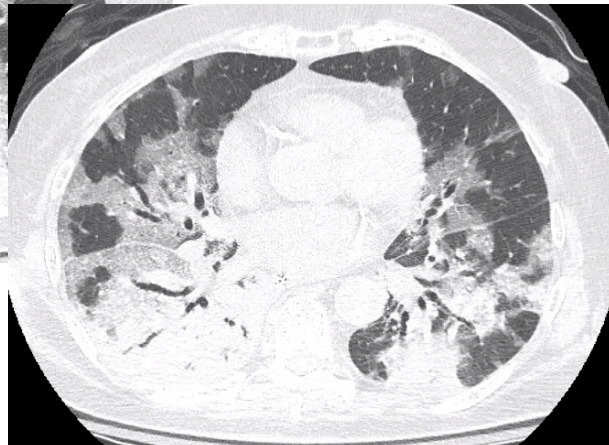
IMPRESSION: Extensive bilateral lung opacities, compatible with COVID-19 pneumonia and diffuse alveolar damage.



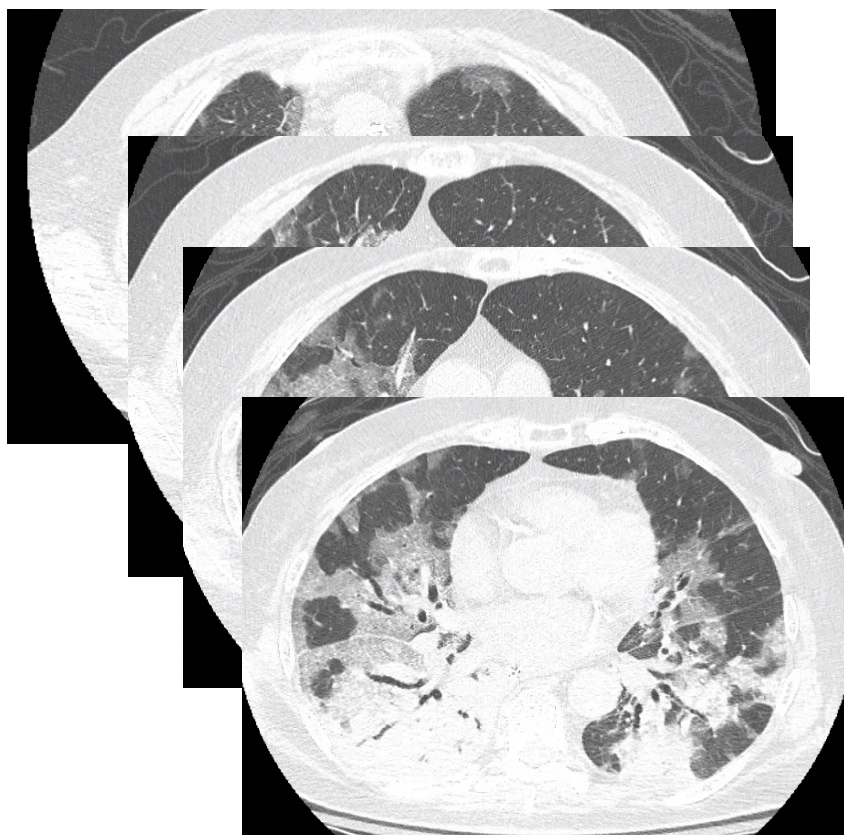
Are these Chest CT images diagnostic for COVID-19?



- A. Yes
- B. Maybe
- C. No



CT chest on Admission



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IMPRESSION: Extensive bilateral lung opacities, compatible with COVID-19 pneumonia and diffuse alveolar damage.

Case Presentation

- On admission, she was found to have
 - ARDS secondary to COVID with superimposed H influenzae and Klebsiella
 - DKA secondary to infectious etiology
 - AKI, likely pre-renal > intrinsic

Case Presentation – ARDS Management



Low tidal volume ventilation



Paralyzed x 48 hours

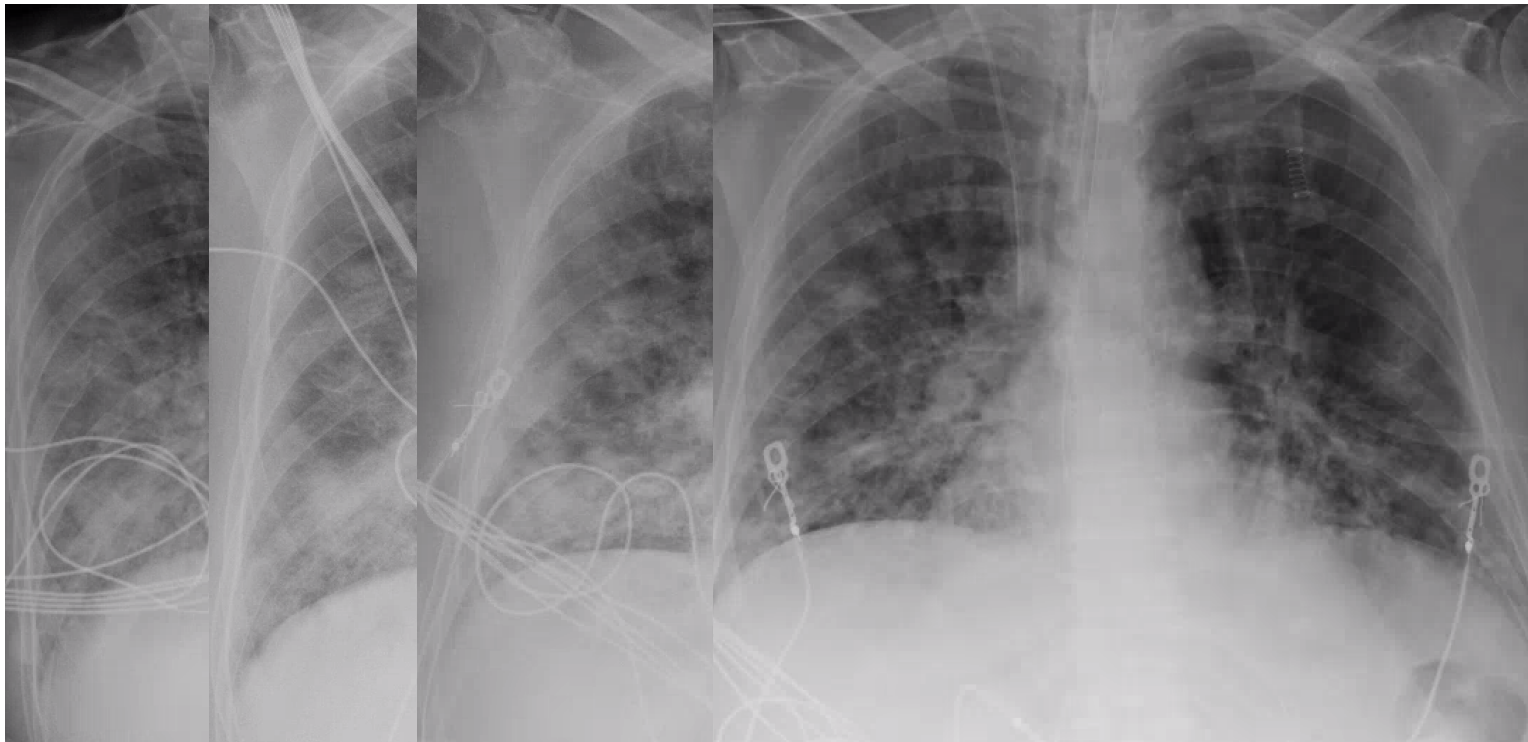


Proned x 1 session



Diuresis: net negative 0-1L per day

Chest x-ray – Progression throughout Hospitalization



Case Presentation – Resolution

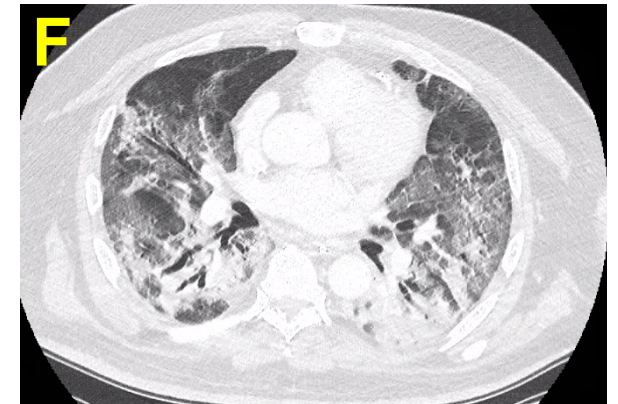
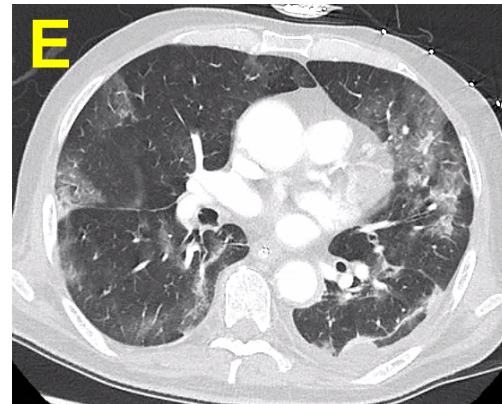
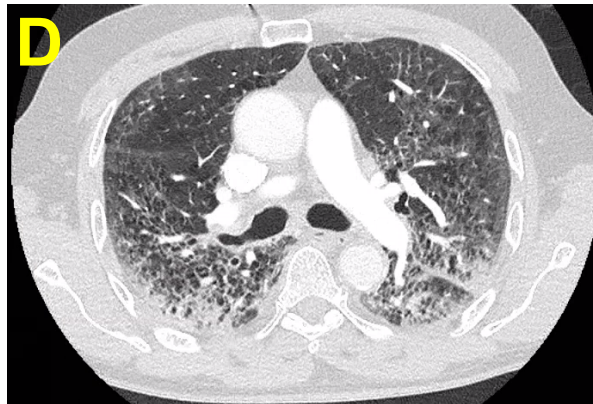
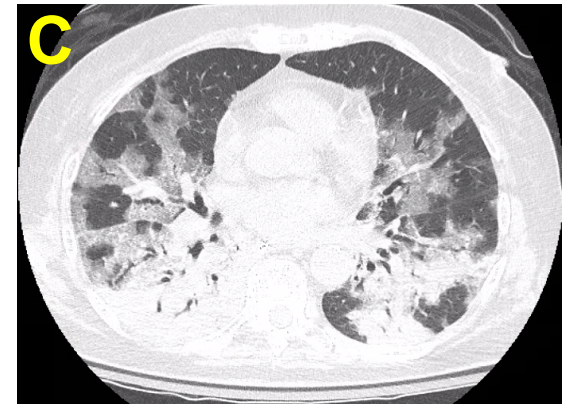
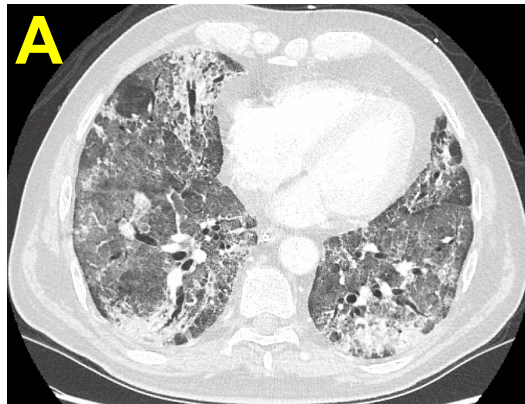
- Extubated on Day 17
- Hospitalization course was complicated by severe ICU delirium
- Downgraded to Medicine
- Planning discharge to skilled nursing facility

Discussion

- “Classic” radiologic manifestations include GGO ± consolidation in peripheral, posterior, and lower lung zone distribution. Also reports of GGO in a “crazy paving” pattern
- Imaging findings depend on the timing of the image. GGO tends to develop between day 0-4 and peaks at day 6-13 with consolidation occurring later in the course of the disease
- Note: Additional imaging findings have also been reported. These manifestations are non-specific and can mimic several disease processes

| Proposed Reporting Language for CT Findings Related to COVID-19 | | | |
|--|---|---|---|
| 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 | | | |
| COVID-19 pneumonia imaging classification | Rationale (6-11) | CT Findings* | Suggested Reporting Language |
| Typical appearance | Commonly reported imaging features of greater specificity for COVID-19 pneumonia. | Peripheral, bilateral , GGO* with or without consolidation or visible intralobular lines (“crazy-paving”) Multifocal GGO of rounded morphology with or without consolidation or visible intralobular lines (“crazy-paving”) Reverse halo sign or other findings of organizing pneumonia (seen later in the disease) | *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.” [Cov19Typ]^ |

Which of these Chest CT images are from intubated COVID-19 patients?



ACR Recommendations for Use of Chest Radiography and CT for Suspected COVID-19 Infection

Based on these concerns, the ACR recommends:

- CT should not be used to screen for or as a first-line test to diagnose COVID-19
- CT should be used sparingly and reserved for hospitalized, symptomatic patients with specific clinical indications for CT. Appropriate infection control procedures should be followed before scanning subsequent patients.
- Facilities may consider deploying portable radiography units in ambulatory care facilities for use when CXRs are considered medically necessary. The surfaces of these machines can be easily cleaned, avoiding the need to bring patients into radiography rooms.
- Radiologists should familiarize themselves with the CT appearance of COVID-19 infection in order to be able to identify findings consistent with infection in patients imaged for other reasons.

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**Expert Discussant:
Dr. Seth Kligerman**

