Case Presentation: Radiologic Manifestation of COVID-19

Erica Lin, PGY5
Pulmonary & Critical Care Fellow, UCSD
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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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
“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.
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.
Expert Discussant: Dr. Seth Kligerman