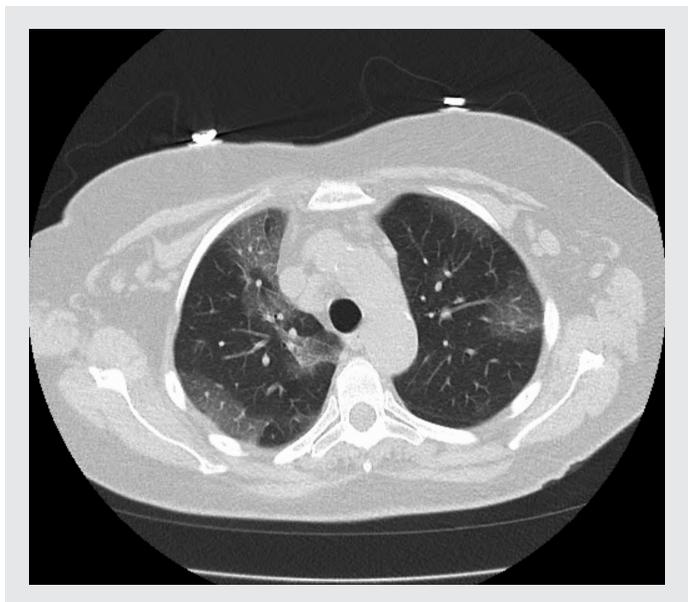
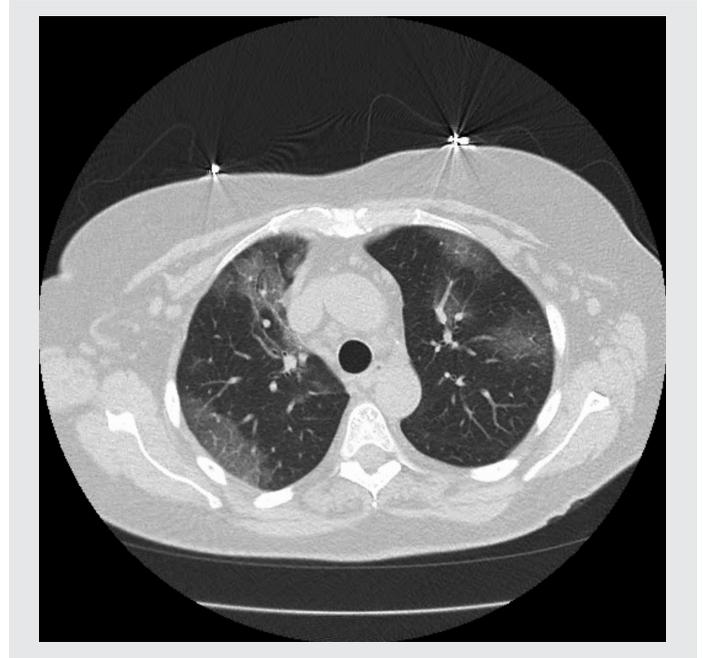


The radiographic features of COVID-19

Hawa Edriss MD, Emhemmid Karem MD

CASE

A 67-year-old woman with a history of hypertension presented to the emergency department with worsening shortness of breath (SOB). The patient reported a one-week history of intense fatigue, SOB, fever, and cough with scanty clear sputum. She also had nausea, vomiting, and diarrhea. She was hypoxic and required oxygen supplementation by nasal cannula at 3L per minute. Her vital signs included respiratory rate 26 breaths per minute, heart rate 62 beats per minute, and temperature 98.9°F. Laboratory tests revealed a positive nasopharyngeal COVID-19 PCR, WBC $4.8 \times 10^3/\mu\text{L}$ with an absolute lymphocyte count of $0.78 \times 10^3/\mu\text{L}$, CRP 8.9 mg/dl, procalcitonin $<0.25 \text{ ng/mL}$ (normal 0-2), and ferritin 869.4 ng/mL (normal 26-388). Over the next 2 days, she developed worsening acute hypoxemic respiratory failure



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and a profound cytokines storm syndrome with persistent high grade fever of 103°F, encephalopathy, shock requiring vasopressor support, metabolic acidosis, acute kidney injury and worsening laboratories results, including increased levels of D-dimer, ferritin, and CRP, an elevated IL-6, and new thrombocytopenia. She was intubated and placed in the prone position. Computed tomography (CT) of the thorax (Figure 1) on presentation and a follow-up chest x-ray (Figure 2) 9 days after symptom onset show the extent of her disease.

DISCUSSION

Coronavirus disease 2019 (COVID-19) was recognized as a pandemic on March 11, 2020. The typical CT chest features of COVID-19 include bilateral multifocal peripheral ground glass opacities and/or consolidation in the lower lung zones, mostly in the posterior regions. However, isolated consolidation and bronchovascular thickening may occur. Pleural effusion, pneumothorax, and cavitation are rare findings.

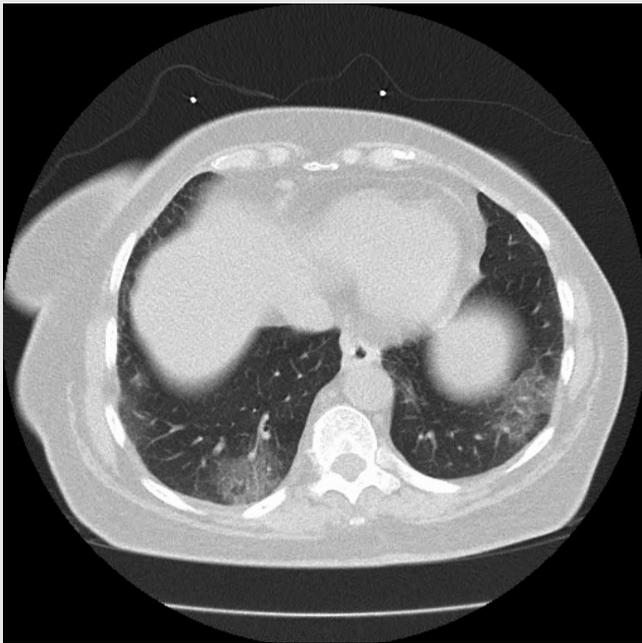


Figure 1. CT images reveal focal ground glass opacities in all lung fields, mostly in the periphery. These are the initial admission images when patient was mildly ill.

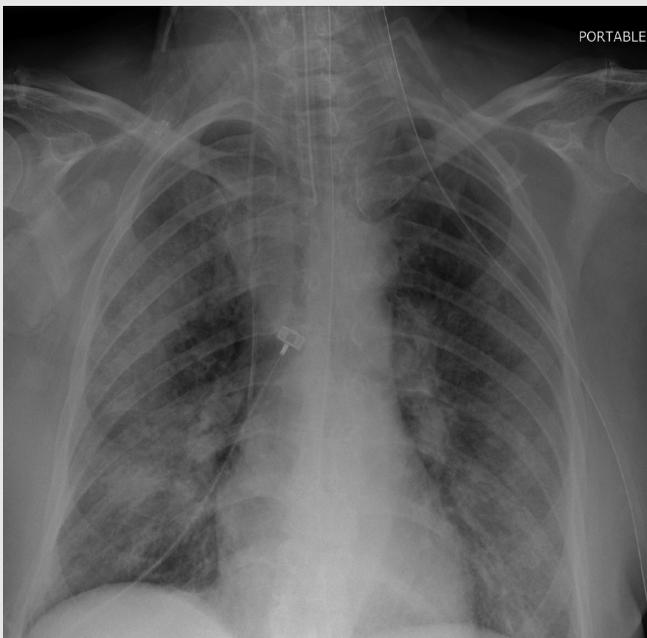


Figure 2. Chest x-ray nine days after presentation after intubation. This film reveals bilateral alveolar infiltrates.

In mild or early disease, up to 18% of patients have normal chest radiographs or CT scans. Approximately 80% of patients have extensive radiographic changes 10–12 days from onset of symptoms. A study conducted to compare the diagnostic value and consistency of chest CT with initial reverse-transcription polymerase chain reaction (RT-PCR) in COVID-19 indicated that the sensitivity of chest CT in suggesting COVID-19 was 97%. Chest CT had higher sensitivity for the diagnosis of COVID-19 than RT-PCR.

Keywords: COVID-19, computed tomography of the thorax, chest radiography

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