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## Background

- Coronavirus disease 2019 (COVID-19) is a novel virus and our understanding of the infection is still evolving
- Even though 30% of infected individuals may remain asymptomatic, the severity of disease can vary from mild symptoms to multi-organ failure
- Cardiac involvement has been demonstrated in about 60-80% of infected patients, independent of preexisting conditions and severity of illness
- African-Americans have had higher infection and death rates
- We report a case of a 67-year old African-American female who survived severe multi-organ failure secondary to COVID-19

## Case Presentation

67-year-old female with past medical history significant for severe aortic stenosis status post TAVR, HTN and CAD presented to the emergency department for one week of dry cough and one day of shortness of breath

### Initial Physical Exam

Vitals: T 38.2 C, BP 91/61, HR 101, RR 22, O2 sat 56% on room air  
General: Labored breathing, alert and oriented x 3  
Cardiac: S1/S2, regular, systolic murmur at right 2<sup>nd</sup> intercostal space.  
Respiratory: Bilateral Crackles, symmetrical chest expansion,  
Abdomen: Non-tender, non-distended and normal bowel sounds  
Extremities: No edema or cyanosis. Pulses palpable bilaterally

### In the Emergency Department

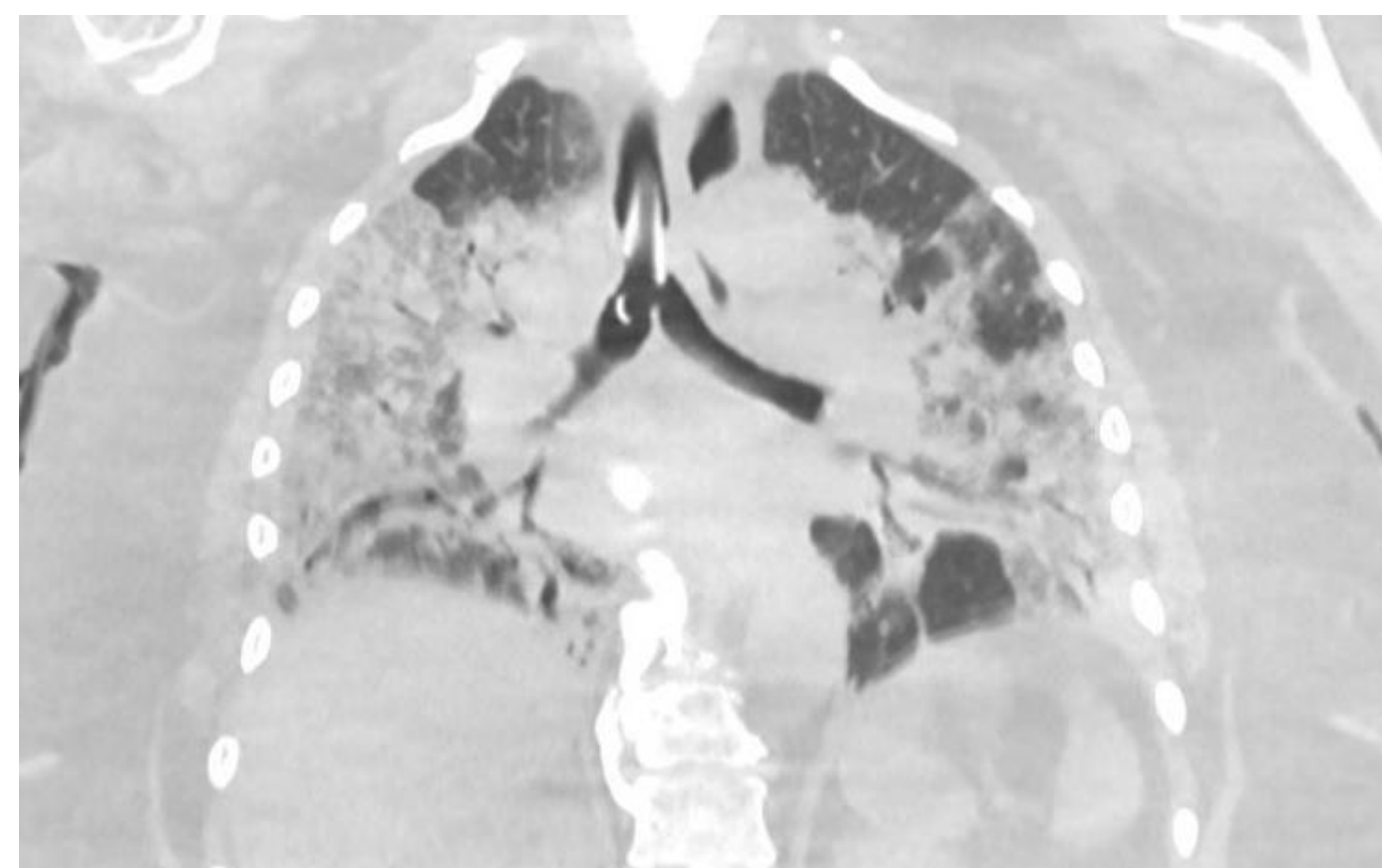
She was placed on a non-rebreather with minor improvements of her oxygen saturations. Initial ABG 7.49/33/49/25. She was subsequently intubated for Acute hypoxic respiratory failure.

## Initial Labs

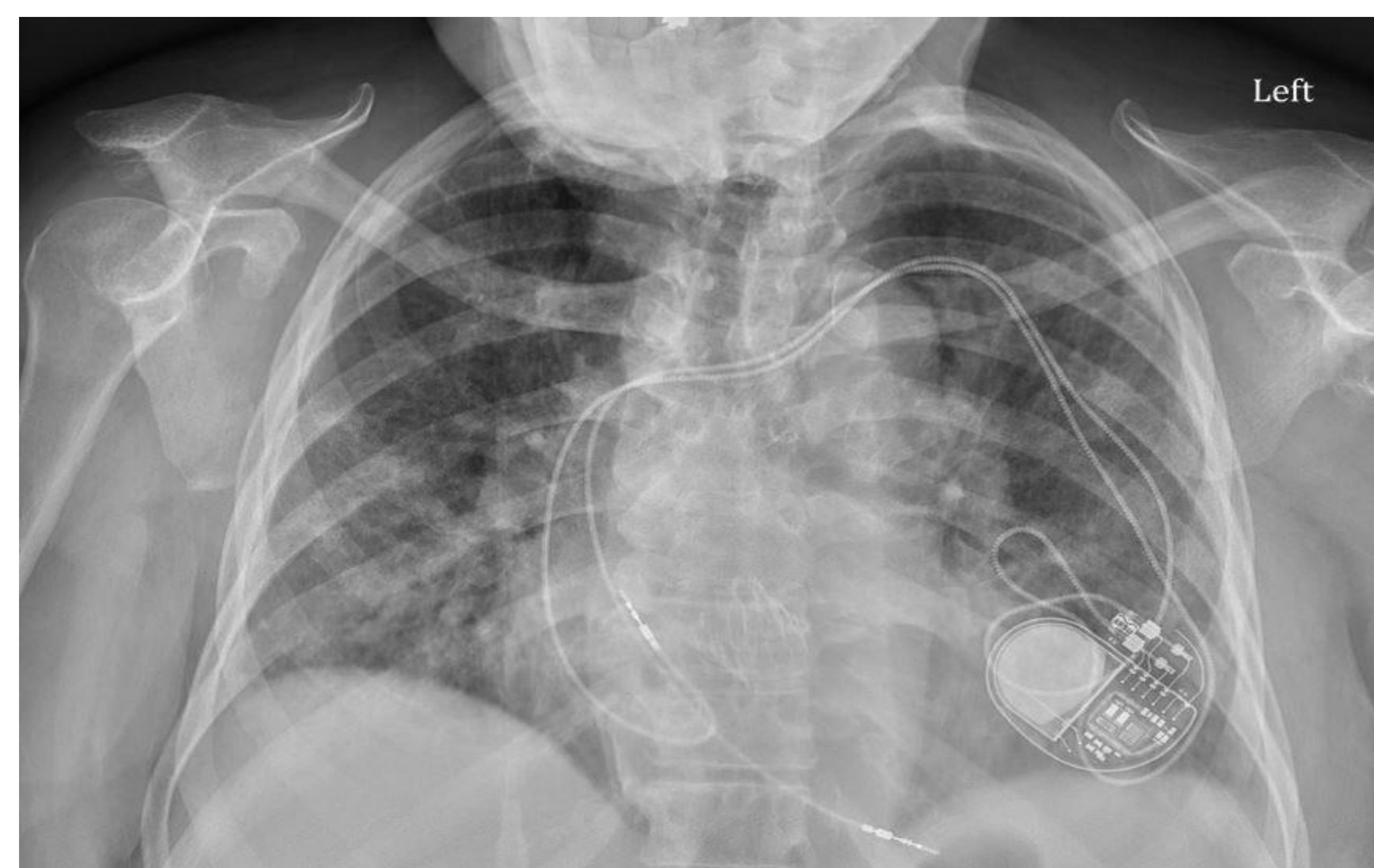
Lab Test	Results	Reference Range
WBC	11.7 k/mm <sup>3</sup>	4 – 10 k/mm <sup>3</sup>
Cr	1.9mg/dl (baseline ~ 0.7)	0.5 – 1.3 mg/dl
HCO <sub>3</sub> <sup>-</sup>	22mmol/L	20 – 31 mmol/L
AST	92u/L	0 – 31 u/L
ESR	42mm/hr	0 – 30 mm/hr
CRP	397mg/L	0- 8 mg/L
Ferritin	3,807ng/dL	4.6 – 204 ng/dL
D-dimer	8,112ng/mL	< 230 ng/dL
Fibrinogen	467 mg/dl	165 – 434 mg/dL
COVID-19 PCR	POSITIVE	+/-



**Chest X-Ray on presentation**  
Bilateral infiltrates, typical of COVID-19



**Chest CT day three of hospitalization**  
Development of ARDS



**Chest X-Ray at two months outpatient follow-up visit**  
Improvement of infiltrates / Left sided dual-chamber pacemaker

## Hospital Course

- She received a course of methylprednisolone, azithromycin, hydroxychloroquine, and convalescent plasma
- While intubated, she progressed to severe ARDS, requiring prone position, neuromuscular blockade for ventilator synchrony, and low tidal volume. Despite lung protective strategies, plateau and driving pressures remained above 30 cm H<sub>2</sub>O and 15 cm H<sub>2</sub>O respectively
- Her course was complicated by acute renal failure requiring hemodialysis and septic shock requiring pressor support. She developed central line-associated bloodstream infection requiring long courses of antibiotics, cardiac arrest requiring advanced cardiac life support, disseminated intravascular coagulopathy, and upper gastrointestinal bleeding.
- She received 30 units of packed red blood cells, 8 units of platelets, and 4 units of cryoglobulin transfusions
- She developed recurrent episodes of sustained bradycardia and sinus pauses for up to 1 minute for which she received a pacemaker
- After two months, she underwent tracheostomy and percutaneous endoscopic gastrostomy (PEG) tube placement. Her course was further complicated by peritonitis secondary to PEG tube dislodgement, requiring exploratory laparotomy and gastrostomy repair
- She was discharged to a subacute rehabilitation facility after four months of hospitalization where she was successfully liberated from the ventilator. She is now finally home on 1L NC Oxygen, steadily recovering and regularly following up at Pulmonology outpatient clinic

## Discussion/Conclusion

- This case highlights severe COVID-19 infection in an African-American patient with multiple comorbidities
- Anticipated clinical course for this patient was initially grim as she endured a complicated hospital course. The case demonstrated the difficulty of prognostication in a novel disease, such as COVID-19
- COVID-19 prominently affects the cardiopulmonary system, as was seen with this patient. The long-term cardiopulmonary consequences of this disease remains unknown; thus, there is a need for ongoing investigation
- Physicians should be aware that the care for critically ill COVID patients on prolonged mechanical ventilation (PMV) should be multidisciplinary
- The goal should be to optimize these patients for successful weaning of ventilation
- Mortality in general for patients on PMV is high; however, without understanding the disease and its long-term effects, it is important to realize the potential for recovery even against all odds as this case illustrate.

## References

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- Berlin, D., Gulick, R. and Martinez, F., 2020. Severe Covid-19. *New England Journal of Medicine*.