

Challenges in Rehabilitation of a COVID-19 Patient Outside of the Acute Care Setting: A Case Report

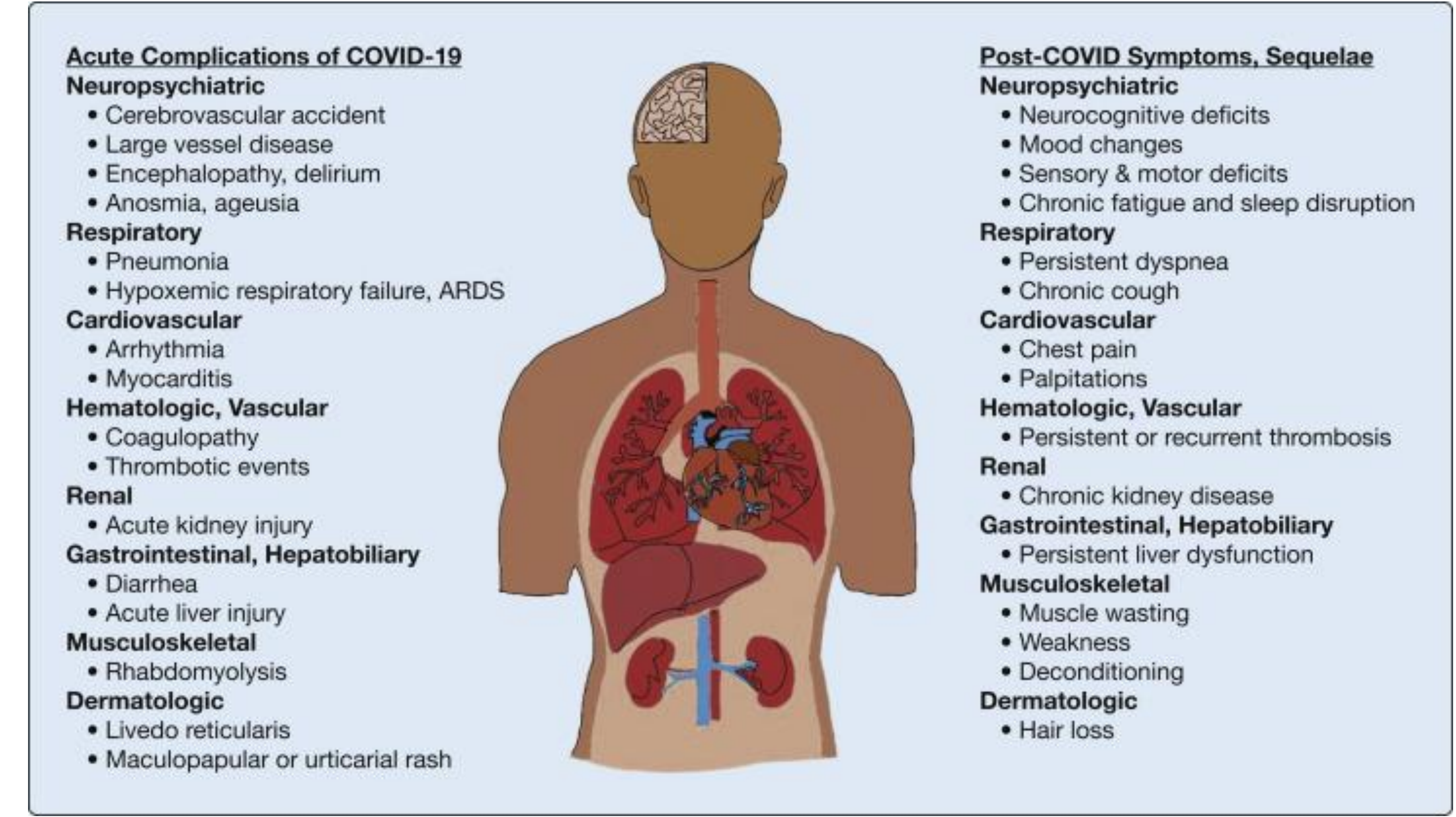
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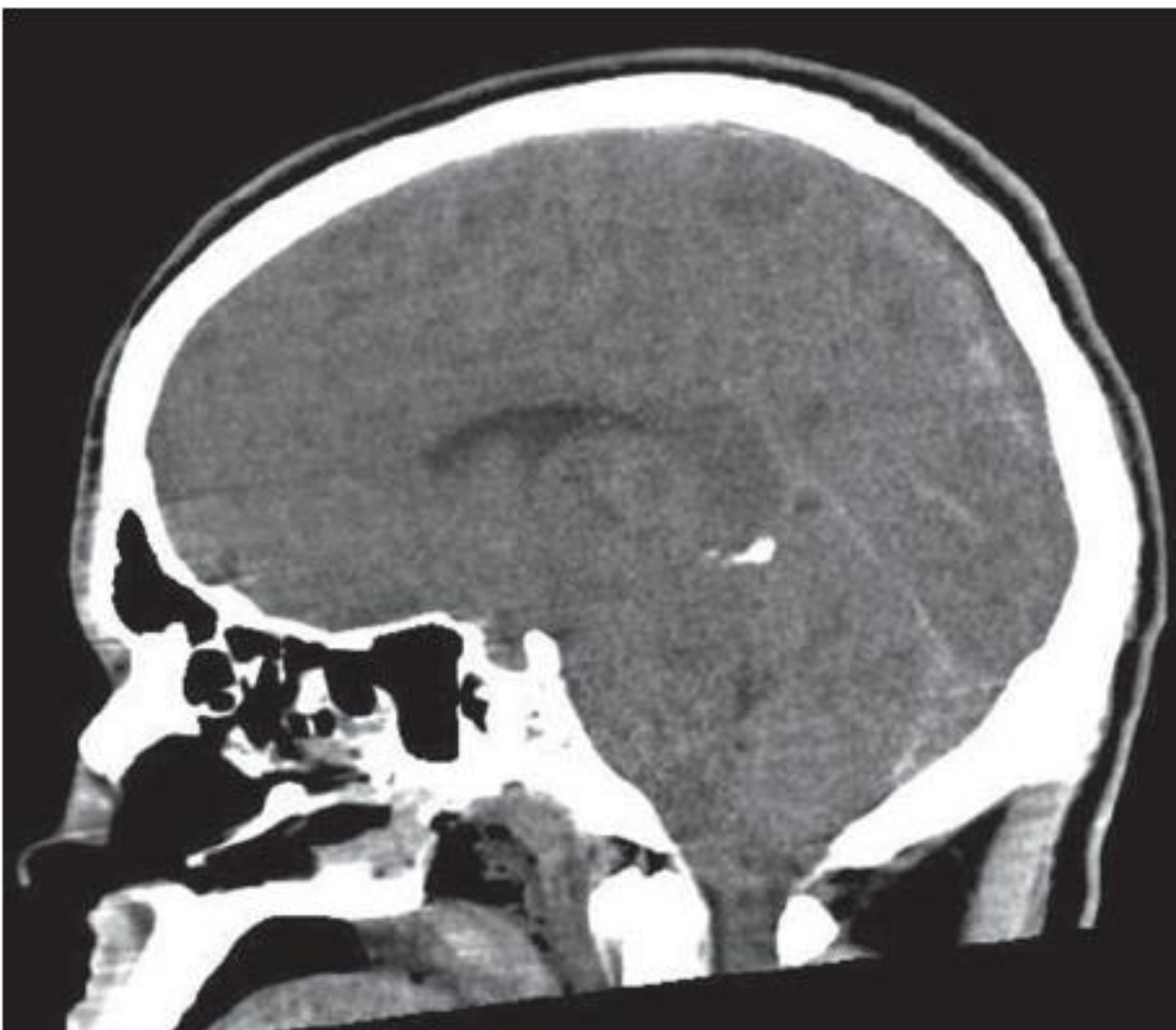
Background

- The coronavirus pandemic has challenged the way providers assess and manage their patients not only in the acute setting, but in other specialties of medicine across the country as well
- COVID-19 is still poorly understood in the context of short and long-term complications after hospitalization
- Complications of COVID-19 infection include (but are not limited to):
 - Pulmonary
 - Pneumonia
 - Acute Respiratory Distress
 - Cardiac
 - Acute Cardiac Injury
 - Arrhythmia
 - Left Ventricular Dysfunction
 - Neurologic
 - Anosmia
 - Peripheral Neuropathy
 - Stroke
 - Cerebral Edema
 - Encephalitis
 - Musculoskeletal
 - Critical illness myopathy
- Guidelines and management strategies concerning COVID patients in the context of outpatient rehabilitation are currently under development
 - Pulmonary rehabilitation has previously been used in survivors to H1N1 and Ebola with success in improving overall physical and mental function

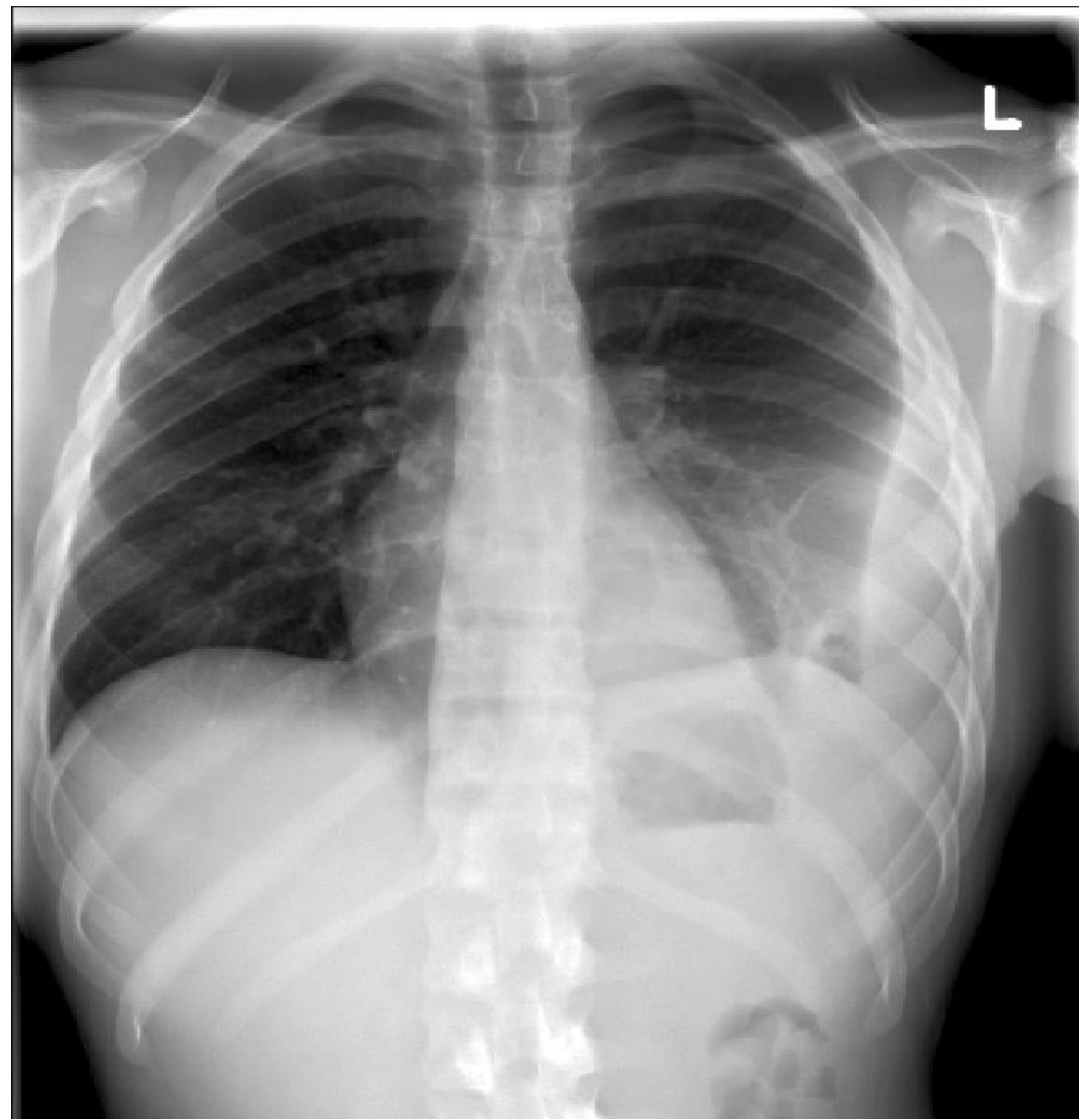


Hospital Course

- 3/31: Patient is a 56 year old female who presented with SOB, AMS, and a non-productive cough
- 4/1: Admitted to ICU for respiratory failure secondary to COVID-19 pneumonia
- 4/28: Discharged to inpatient rehab for critical illness myopathy
- 5/18: Completion of inpatient rehabilitation and hospital discharge following treatment for septic shock secondary to COVID-19 complicated by ARDS
- 5/27: Outpatient rehab follow-up
 - O2 Saturation 87%
 - Improving weakness
- 5/30: Presents to the ED for asymptomatic hypoxia, COVID-19 positive
 - O2 Saturation 66%
 - Elevated white blood cell count
 - CXR: cardiomegaly, left lower lobe consolidation with a cavitary lesion
 - CT thorax: Loculated left pleural effusion, left lower lobe lesion with multiple small locules of air
- 6/5: Chest tube placed
 - Code blue called for cardiac arrest with PEA and ventricular fibrillation
 - Return of spontaneous circulation achieved and the patient was transferred to ICU
 - D-dimer: 36.2 mg/L FEU (normal: < 0.60 mg/L FEU)
 - CT Brain: slight indistinction of gray-white matter junction, no hemorrhage, mass effect, or shift
 - CT Chest: enlarging cavitary lesions, enlarging bilateral pleural effusions
 - Patient was subsequently transferred to the ICU
- 6/7: Patient had a GCS of 3 and code status was changed to DNR due to poor prognosis
 - Brain CT: diffuse cerebral edema, possible tonsillar herniation
- 6/8: Patient expired



Head CT (sagittal view) showing cerebral edema and tonsillar herniation and chest radiograph showing a left-sided, loculated pleural effusion



Discussion

- This case provides the opportunity to discuss the role of physiatrists in the management of COVID patients post-hospitalization and measures that can be taken to prevent readmission
- This case also advocates for not only close cardiopulmonary follow-up, but neurologic follow-up of COVID patients as well to assess cerebral hypoxia
- This case raises the question whether this patient's final hospitalization was due to primary COVID-19 infection or reinfection
 - The patient never tested negative upon initial discharge and the lab was unable to identify either positive strain
- The case also poses the question for the need of a confirmed negative COVID-19 test before discharge for patients that required ventilation or had severe symptoms during the course of their illness
 - Current CDC guidelines suggest a symptom-based strategy over a test-based one
- The decision to send patients to the ED with asymptomatic hypoxia should be considered on a case-by-case basis. In hindsight, our patient should have been sent due to the severity of her initial hospitalization.
- This case highlights the severe complications associated with COVID-19 infection
 - Complications highlighted in our patient include asymptomatic hypoxia, pleural effusion, cardiac arrest, and cerebral edema
 - Neurologic status should be monitored frequently along with cardiopulmonary symptoms
 - Pulmonary rehabilitation should be considered when managing COVID patient post-hospitalization

Conclusion

- Thorough follow-up of COVID-19 patients is imperative in order to effectively prevent serious complications and identify potential red flags of major sequelae
- There is a need to develop rehabilitation protocol in COVID-19 patients to ensure proper recovery and decrease readmission
- Continued research of COVID-19 patient's recovery will provide additional insight into the common short-term and long-term consequences of the infection and aid in developing strategies to combat them

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