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Case Report Describing Mobility Progression of a “Happy Hypoxic” COVID-19 Patient Requiring Prolonged Non-Invasive Fio2>60%

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Case Report Describing Mobility Progression of a "Happy Hypoxic" COVID-19 Patient Requiring Prolonged Non-Invasive Fio2>60%

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Background/Purpose

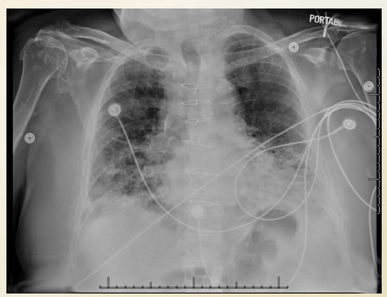
- Since 2019, millions have been diagnosed with COVID-19. While health care professionals establish effective treatment measures for those hospitalized, distinct characteristics of the virus have been identified, leading to more specific treatment approaches.[1,2]
- Patients labeled "happy hypoxic" demonstrate clinical markers of severe hypoxemia, require supplemental oxygen (O2) support, but deny symptoms of respiratory distress.[1,2]
- They can be considered clinically unstable from standard definitions (requiring fraction of inspired O2 (FiO2) greater than (>) 60%) for prolonged periods, leading to increased rates of hospital related weakness and mortality.[3-6]
- This case report details the role physical therapy (PT) plays in treating these patients by promoting early, progressive mobility to increase functional endurance to advance to the next level of care.[6]

Case Description and Examination

- 83-year-old known COVID-19 positive male with a history of hypertension, type 2 diabetes, and obesity presented to the hospital with shortness of breath (SOB) and low oxygen saturation (SpO2)
  - Admitted and placed on 4 liters (L) of supplemental O2
  - Chest radiographs demonstrated bilateral lower lobe infiltrates suggestive of COPD
  - Patient was independent for functional mobility on room air at baseline
- On hospital day 6 the patient was evaluated by PT and now required 10L O2 via high flow nasal cannula
  - PT noted intolerance to prone positioning secondary to positional discomfort
  - Patient required moderate assistance for bed mobility and transfers with a rolling walker (RW) and tolerated 5 feet of ambulation
  - Gait was unsteady and SpO2 decreased to 83% with no reports of SOB
  - PT reported functional endurance, activity tolerance, strength, and balance deficits

Radiographs

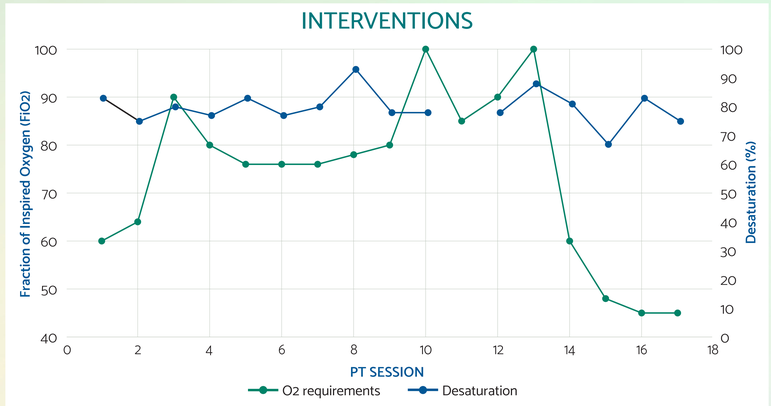
Hospital day 0 (4L O2 via NC)

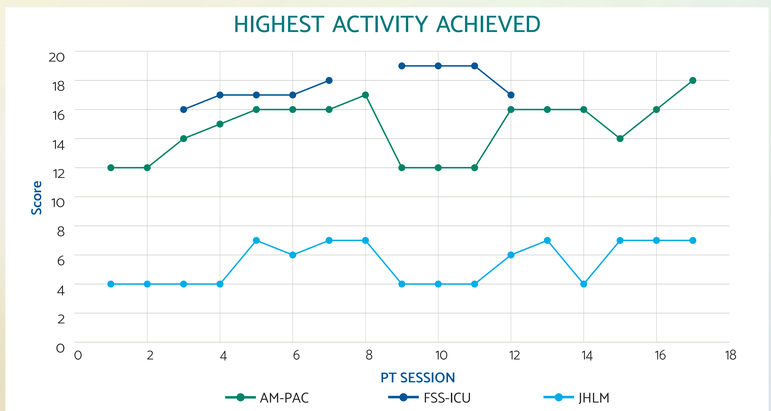


Hospital day 19 (55L O2 at 100% FiO2)

Interventions

- 17 PT session over a 39-day admission with FiO2 requirements up to 55L O2/ 100% FiO2 during PT sessions
  - 11 of the 12 PT sessions in the intensive care unit (ICU) on FiO2 >60%
- The medical team supported progressive mobility despite high levels of noninvasive support (FiO2 >60%) with termination of mobility following desaturations below 80% or symptoms above mild SOB[3-5]





AM-PAC = Activity Measure for Post Acute Care; FSS-ICU = Functional Status Scale for the Intensive Care Unit; JHHLM = Johns Hopkins Highest Level of Mobility

Outcomes

- Outcome measures included the AM-PAC, FSS-ICU, handgrip strength, 5 times sit to stand, and 2-minute step test

Regular desaturations to the low 80s despite denial of symptoms during activity

- Ambulation progressed once he could comfortably tolerate bed to chair transfers
- Discharged to acute rehab on 5L O2 via NC, required a RW and minimal assistance for mobility, and remained below age matched normal on all outcome measure[7,8]

	First Collection	Final Collection	Age-Matched Norms[7,8]
AM-PAC	12/24	18/24	24/24
Handgrip strength	R= 38.4 lbs., L= 36.2 lbs.	R= 36.6 lbs., L= 40.8 lbs.	R= 70.6 lbs., L= 63.1 lbs.
5 times sit to stand	30 sec.	25 sec.	14.8 sec.
2-minute step test	Not tolerated	Not tolerated	80 steps

Discussion

- Treatment of COVID-19 patients with persistent silent hypoxemia can be challenging, especially with oxygen requirements higher than 60% FiO2 and when patients are unable to determine clinical signs of hypoxemia
- This case demonstrates the importance of interprofessional collaboration to improve patient outcomes, progress functional endurance, and reduce hospital acquired weakness in patients with COVID-19 and the inability to prone
  - Safe progression of mobility is possible with support from a multidisciplinary team and with close monitoring of vital signs
- Further exploration into the safety and efficacy of progressive mobility on FiO2 >60% may be beneficial in improving functional and perceived outcomes during prolonged admissions

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