Letter to Editor

COVID-19: Non-Invasive Ventilation in Hypoxemic Acute Respiratory Failure

On December 2019, Dr Li Wenliang, an ophthalmologist in Wuhan, China, recognized seven patients with SARS-like illness and warned his colleagues of a possible viral epidemic. He died on February 7, 2020 from the same illness, when it had been identified as coronavirus or COVID-19 and spread throughout the world.[1] A lesson which can be learned from Dr Li's story is that COVID-19 may be first faced by physicians other than pulmonologists or intensive care units staff. The essential way for transmission is from person to person by respiratory droplets. Health care workers, hospitals, and operation rooms potentially are important sources for viral spreading. The reported fatality rate is 2% to 3%, but in older patients it is as high as 8% to 15%. The death rate could escalate at the presence of underlying diseases such as chronic pulmonary disease, diabetes, systemic hypertension, corticosteroid therapy, and other immunosuppressed conditions.[2] The incubation period for COVID-19 has been estimated from 1 to 14 days after exposure, with approximately 4 to 5 days for most cases. The infection has been shown in all ages, including children with the mean age reported between 49 and 56 years.[3] The major clinical presentation of COVID-19 has been fever (88.5%–99%), fatigue (62%–70%), dry cough (59%–68/9%), anorexia (40%), breathlessness to respiratory distress (21.9%–55%), myalgia or fatigue (35.8%), headache (12.1%), diarrhea (4.8%), and nausea and vomiting (3.9%), and also headache, bone pain, myalgia, and anosmia were reported.[2] The most common finding of COVID-19 pneumonia in chest CT scan is bilateral ground glass opacities. In addition, consolidations and nodules were reported.[4] Serum lymphocytopenia, increasing CRP, and LDH were reported.

The history, past travelling to endemic areas, contacting with infected patients, was suggestive for detecting of COVID-19. Positive real-time poly chain reaction (RT–PCR) for the virus is the definitive diagnostic test; however, a negative RT–PCR is not a ruled out disease.[5] At this time, we passed minimum 5 peaks of COVID-19 in Iran and 2 peaks in other parts of the world. Nowadays, there is no specific and definitive medication.[6] Effective vaccination against COVID-19 is the most important policy to prevent the spread of the virus and the global pandemic.[7] As the COVID-19 epidemic continued and patients died, researchers applied vaccination prevention.[8] Maintaining tissue oxygenation and preventing cell death are an important principle in approaching patients with respiratory failure of COVID-19 pneumonia. However, the late 1980s non-invasive ventilatory support (NIV) has become a standard treatment in acute exacerbation of COPD (AECOPD) with hypercapnia. Nevertheless, NIV is an important device for COVID-19 with mild and moderate acute respiratory distress syndrome (ARDS) and hypoxemia.[8] The lesson that I learned from the visit of the critically ill patients with COVID-19 in the intensive care unite (ICU) is the application of high levels of positive end expiratory pressure (PEEP) in bilevel positive airway pressure (BiPAP) insertion. High expiratory pressure opens collapsed alveoli and decreases lung stiffness.[9]

Conclusion

As a COVID-19 spreads rapidly, many parts of the public world may be involved. We need to know that Corona virus lives with us, and that it could have deadly outbreaks in society. Hypoxemic respiratory failure is a dramatically presentation of COVID-19 with high mortality. NIV such as BIPAP with high expiratory pressure recommends for these patients.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Fariborz Rezaeitalab, Fariba Rezaeetalab, Farzaneh Akbari, Seyyed Mohammad Ata Sharifi Dalooei, Soheila Saberi, Saeedeh S. Mirtouni

Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Address for correspondence:
Dr. Fariba Rezaeetalab, Professor of Pulmonology, Lung Diseases Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.
E-mail: rezaitalabf@mums.ac.ir

Received: 02 Sep 20 **Accepted:** 18 May 21
Published: 18 Jan 22

References

1. Parrish RK 2nd, Stewart MW, Duncan Powers SL. Ophthalmologists are more than eye doctors-in memoriam Li Wenliang. Am J Ophthalmol 2020;213:A1-2.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, *et al*. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395:497-506.
3. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, *et al*. Clinical characteristics of corona virus disease 2019 in China, N Engl J Med 2020;382:1708-20.
4. Shi H, Han X, Jiang N, Cao Y, Alwalid O, Gu J, *et al*. Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: A descriptive study. Lancet 2020;20:425-34.
5. FangY, Zhang H, Xie J, Lin M, Ying L, Pang P, *et al*. Sensitivity

of chest CT for COVID-19 comparison to RT-PCR. Radiology 2020;296:E115-7.
6. Karantzogia G, Lagadinou M, Karela A, Platanaki C, Karantzogiannis G, Velissaris D, *et al*. Management of COVID-19: The risks associated with treatment are clear, but the benefits remain uncertain. Monaldi Arch Chest Dis 2020;90:243.
7. Lurie N, Sharfstein JM, Goodman JL. The development of COVID-19 vaccines: Safeguards needed. JAMA 2020;324:439-40.
8. Dai L, Gao GF. Viral targets for vaccines against COVID-19. Nat Rev Immunol 2021;21:73-82.
9. Zareifopoulos N, Lagadinou M, Karela A, Karantzogiannis G, Velissaris D. Intubation and mechanical ventilation of patients with Covid -19: What should we tell them. Monaldi Arch Chest Dis 2020;90:191.

Access this article online

Quick Response Code:

Website: www.ijpvmjournal.net/www.ijpm.ir

DOI: 10.4103/ijpvm.IJPVM_512_20

How to cite this article: Rezaeitalab F, Rezaeetalab F, Akbari F, Dalooei SM, Saberi S, Mirtouni SS. COVID-19: Non-invasive ventilation in hypoxemic acute respiratory failure. Int J Prev Med 2022;12:5.