

Nursing Management of Covid 19 in an Elderly Female Patient

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Abstract

The ongoing outbreak of COVID 19 that began in Wuhan, China, became an emergency of International concern when thousands of people were infected around the world. During this period the World Health Organization issued a global alert about COVID 19. COVID 19 has been described as a rapidly progressive, sometimes fatal pneumonia with high case fatality rate requiring intensive care. This study, reports a case of COVID 19 Pneumonia and the role of nursing care involved in the care of patient. It highlights the importance of considering vigilant assessment and monitoring of patients with COVID 19. The purpose of this paper is to share our experience in caring for critically ill patients with COVID 19 in the intensive care unit to nurses globally in order to reduce COVID 19 morbidity and mortality as well as to protect nurses and other healthcare workers from this disease that is so far threatening the community at large.

Date of Submission: 26-05-2020

Date of Acceptance: 13-06-2020

I. Introduction

Novel corona virus disease (COVID-19), caused by infection with severe acute respiratory syndrome coronavirus-2 (SARSCoV-2), was identified in late 2019 in Wuhan, China. It has rapidly spread around the world, and was named a pandemic by the WHO on March 11, 2020.^{1,2} The first case of the COVID-19 pandemic in India was reported on 30 January 2020, in the state of Kerala. As of 11 May 2020, the Ministry of Health and Family Welfare have confirmed a total of 67,152 cases, 20,917 recoveries (including 1 migration) and 2,206 deaths in the country.³

Interestingly, COVID-19 seems to be strangely and tragically selective. Only some infected people become sick. Although most critically ill COVID-19 patients are either elderly or have underlying medical problems such as cardiovascular disease, hypertension, diabetes mellitus, or cancer, some previously healthy and even relatively young individuals have died from COVID-19.⁴

As the number of confirmed COVID-19 cases accelerates, nurses on the front lines of the health care response find themselves making high-stake decisions for patients and their own personal lives.

We report a case of COVID 19 with multiple comorbidities, being stable, deteriorated and succumbed to the illness in part teaching us many new lessons in managing COVID 19 patients.

II. Case Report

A 62 year old obese female patient, resident of suburban Pune, a known case of CKD, COPD, Diabetes Mellitus Type II was admitted with complaints of fever with chills in female medical ward. She was diagnosed to have culture positive UTI and was managed on culture sensitive antibiotics. During her stay, she developed shortness of breath and dry cough. A SARS-CoV-2 reverse transcriptase-polymerase chain reaction (PCR) test was positive. With progression of dyspnea, she was shifted to the COVID ICU diagnosed as a case of COVID positive Pneumonia with multiple comorbidities.

Patient was stable on admission, conscious, oriented and alert maintaining saturation between 94-98% at 2l/min via NRB mask. All parenteral therapy was administered through a peripherally inserted central line. She was nourished orally on protein and calorie rich diet. Urinary catheter was in situ. During her stay she continued to have high grade fever (max temp-102.4°F) which was relieved by anti-pyretics. Laboratory parameters showed Anemia (Hb- 6gm/dl) for which she was transfused with 2 units PRBC without any adverse reaction.

Patient started gradually desaturating on second day of admission to ICU. Chest radiograph showed signs of ARDS (Acute Respiratory Distress Syndrome). The oxygen was delivered through nasal cannula increased to 6 l/min. The CARP Protocol (COVID Awake Repositioning/Proning Protocol) which aims at

avoiding intubation and improving saturations in COVID19 patients was used. As per this protocol every 2 hourly the patient was switched between the following positions, Left lateral Recumbent, Right Lateral Recumbent and Sitting Upright 60-90 degrees. The patient had improved saturation with CARP protocol throughout the day, prone position was found to be very effective in improving saturation. Fever and tachypnea and intermittent dyspnea persisted.

Patient was nourished on high protein and low residue diet through nasogastric tube. Feeding the patient through nasogastric tube in semi fowler position showed to improve the tolerance of the feed. The residual amount was less and there was no sign of feed intolerance and aspiration.

The patient was nursed with frequent position change to reduce the incidence of pressure ulcers. The use of assistive devices like pillow and head rings helped in preventing the risk of pressure sores. The DVT prophylaxis steps were included in nursing care which included the use of graduated compression stockings and intermittent compression stockings helped to reduce the risk of Deep Vein Thrombosis.

As Most of the COVID positive cases have low immunity and are at increased risk of catching Hospital Acquired Infections, meticulous hygiene was maintained while catering for the hygiene needs of the patient. Routine oral care, eye care and bed bath were provided. As the patient was catheterized, catheter care was strictly practiced to reduce the rates of CAUTI (Catheter Associated Urinary Tract Infections).

The early mobilization of the patient was aimed to achieve early recovery subsequently early discharge from the hospital. The patient was assisted with early mobilization and increased patient activities when patient condition permitted. The patient was first made to sit on the bed dangling the legs and gradually made to stand on legs. Patient was also ambulated on wheel chair aiding in early mobilization.

Patient had repeated episodes of desaturation on the following days. She was placed on Non-Rebreather mask at high flow oxygen of 10l/min with CARP protocol. Patient's condition improved with prone position and saturation gradually improved between 94-98%. After about 8 hrs of intervention, patient had desaturation associated with severe breathlessness. An ABG revealed respiratory acidosis. The patient was repositioned to prone position and the oxygen flow was increased through NRB mask. Oxygen Saturation continuously dropped despite high flow oxygen therapy. During this event in about 30 minutes, the patient had a sudden cardiac arrest. In spite of all resuscitative measures, patient could not be revived. Patient's dead body was packed in triple layer spill proof body bags and sent to mortuary. The relatives were counselled.

DISCUSSION

Since the 2019 novel coronavirus disease (COVID-19) outbreak originated from Wuhan, Hubei Province, China, at the end of 2019, it has become a social and clinical threat to the population worldwide. The intensive care management of people infected with the novel coronavirus (2019-nCoV) needs substantial medical resource.

The latest version of diagnosis and management shows that the main transmission route is droplet transmission and close contact transmission. In addition, there are risks of airborne spread of 2019-nCoV during aerosol-generating medical procedures in specific circumstances. The mode of transmission in this case was not very clear.^{5,6}

The patient in our case study presented with respiratory symptoms similar to those of patients described in reports from China and US, which indicates a common host response to SARS-CoV-2. Cough was the most common presenting symptom associated with shortness of breath and the mean duration of symptoms before ICU admission was 1 week which strongly correlates with the findings in our patient. Fever may not be a priority criteria to determine the severity of illness and diagnostic algorithms that require fever for Covid-19 testing may delay the diagnosis. Majority of patients admitted to the ICU had chronic illnesses before their admission, most commonly diabetes mellitus and chronic kidney disease. Lymphocytopenia was common at the time of admission, as it is in reports from China. The case fatality rate was higher in persons 60 years of age or older.⁷

According to the latest version of diagnosis and treatment guidelines, confirmed cases infected with 2019-nCoV are classified to have severe illness once complying with one of the following symptoms: (1) anhelation, respiratory rate ≥ 30 times/min; (2) oxygen saturation at rest $\leq 93\%$; (3) $\text{PaO}_2/\text{FiO}_2 \leq 300$ mmHg; and classified to be the critical/life-threatening illness once complying with one of the following symptoms: (1) respiratory failure, mechanical ventilation needed; (2) shock; (3) other organ dysfunction syndrome and requirement of intensive care unit admission. Early identification and timely treatment of critical cases is of crucial importance.⁸ The patient qualifies as a critically ill COVID 19 patient with tachypnea, desaturation and impending respiratory failure.

High-flow nasal cannula has emerged as an alternative to non-invasive ventilation to prevent intubation and reduce mortality in patients with acute hypoxemic respiratory failure.⁹ Hui et al. have shown that the breath dispersion distance is limited with nasal cannula therefore reducing the risk of air borne transmission. However, the loose connection of the cannula with nasal obstruction can significantly increase the dispersion distance. Our patient was treated with high flow oxygen using face mask and rebreather mask to provide higher concentrations of oxygen. Wearing masks (particularly N95) can effectively reduce the breath dispersion distance during high-flow nasal ventilation to prevent nosocomial transmission.^{10,11} Noninvasive oxygen therapy still carries the risk

of increased virus transmission due to aerosol generation. Therefore, staff protection of health care workers with adequate PPE is critical.⁸PPE for prolonged duration also brings problems like dehydration and increased fatigue among staff. High calorie diet, adequate rest and rooms with appropriate temperature helped to reduce this stress.

Prone positioning ventilation/CARP is a technique that often improves oxygenation in ARDS, possibly through improvements in ventilation–perfusion matching, the uniformity of ventilation, and gravity-related atelectasis. The patient showed signs of improvement and it might be beneficial for patients with severe ARDS.¹² Generally speaking, prone positioning ventilation for no less than 12 h daily is a safe intervention that seldom worsens a patient’s respiratory status. It can therefore be strongly recommended for the management of 2019-nCoV-induced severe ARDS.⁸The patient initially responded to CARP protocol during desaturation but was resistant to it during terminal stages of illness.

According to the latest epidemiological report, the incidence for the critically ill patients to develop multiple organ dysfunction syndrome is up to 11%.¹³COVID-19 may be combined with other organ injuries, including liver injury, cardiac dysfunction, coagulopathy, which may need the routine functional support for critically ill patients in ICU.⁸The patient had evident thrombocytopenia which was normal on admission and later decreased.

Patients with COVID 19 Pneumonia undergo frequent invasive procedures (such as endotracheal intubation and insertion of central venous access devices) are frequently on antibiotics for a prolonged period. These factors put them at high risk for healthcare associated factors put them at high risk for healthcare associated infections such as VAP or fungal infections. Thorough and meticulous nursing care measures were adopted to reduce the incidence of infection like elevation of the head of the bed at least 30 degrees to reduce the patient’s risk of aspiration and VAP. Interventions to prevent skin breakdown and venous thromboembolism (VTE) like use of graduated compression stockings or intermittent pneumatic compression were used.

Interventions for early mobilization and increased patient activities, pressure ulcer risk assessment and use of pressure relieving devices contribute to decreased morbidity. Regularly positioning the patient laterally can also reduce fluid accumulation and consolidation in dependent lung regions.

For patients with ARDS, restrictive and calculated fluid resuscitation is associated with better oxygenation and lower mortality. Excessive fluid administration may deteriorate oxygenation and ventricular function. Conservative fluid administration while maintaining adequate mean arterial pressure and organ perfusion is of importance.¹⁴The patient was managed with soft diet orally as tolerated and isotonic fluids @100 ml/hr was administered with hourly urine output monitoring. Moreover, all the critically ill patients with COVID-19 admitted into ICU have negative nitrogen balance and malnutrition which has been considered as a contributing factor to the emergence of viral infectious diseases.^{15,16} Therefore, appropriate nutritional strategy is pivotal for the treatment of critical illnesses when necessary.

Reducing the risk of nosocomial outbreak amplification through transmission of virus to other patients and health care workers is of critical importance. Maintaining appropriate distancing of at least 2 m between patients with suspected or confirmed to have COVID-19, consideration of use of medical masks for symptomatic patients, and, ideally, admission of patients with suspected disease to private rooms are important considerations. Ensuring hospital staff are well trained in standard, contact, and droplet infection prevention and control precautions, including the use of relevant personal protective equipment, is an imperative.

Besides enhancing the host immune responses against viral infection, appropriately respiratory supportive strategies, monitoring and support of multiple organ function, strict volume management modulating the immune status and inflammatory responses individually, as well as the prophylaxis for DVT and treatment of complications are all important guarantee for the recovery of critically ill patients with COVID-19. For a better understanding of this novel virus, more research needs to be done to get optimal strategies for the treatment of COVID-19.

III. Conclusion

Nursing a COVID patient has emerged as a challenge in health care with an increased surge in patients and increased mortality across the world with limited resources in terms of manpower, supplies and finances. Each patient unfolds a better description of nursing strategies which can be utilized in evidence based practices in future. It is always difficult to prepare for the unknown; but at least nursing has started the decade on the right path, thanks to the World Health Organization’s (WHO) designation of 2020 as the International Year of the Nurse and Midwife.

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Anjali.V, et. al. “Nursing Management of Covid 19 in an Elderly Female Patient .” *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 9(3), 2020, pp. 26-29.