



Airway Management in COVID- 19 Patients

**Sonal Dhobe^{1*}, Ruchira Ankar¹, Roshani Dhanvijay¹, Vrushali Dighikar¹
and Pratiksha Thakre¹**

¹*Department of Medical Surgical Nursing, Radhikabai Meghe Memorial College of Nursing,
Datta Meghe Institute of Medical Science, (Deemed to be University), Sawangi (M) Wardha,
Maharashtra, India.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The first case found in 31 December 2019 in China, in Wuhan city but China reported this news to WHO in January 2020 after this corona virus can spread worldwide, and WHO declare this disease as a pandemic. As per survey now over the 4,444,670 cases of Covid-19 can identified in 188 countries globally and 1,588,858 can recovery rate of this disease worldwide. Corona virus can caused by Severe Acute Respiratory Syndrome-Corona Virus-2 (SARS-CoV-2), is a single standard ribonucleic acid that enclose to corona virus and it is very infectious and spreading all over the world. It can be transmitted or spreading by droplets and come to direct contact with the patients compare to airborne spread. There is no any specific treatment strategy for corona virus, only supportive therapies such as respiratory care to the severe or acute patients, it's especially in severe condition.

Aim is to provide airway management to COVID 19 patients and what is the role of airway management in this patient condition. This can provide issues with the person who severely suffering from respiratory diseases in hospital settings. The COVID 19 predominantly causing infection like pneumonia. At the time of giving intervention for managing the patient with severe

respiratory condition are managed by mainly tracheal intubation and forming a controlled ventilation. As far this disease condition can increase, there will be the many community people are not having any symptoms of COVID 19 but after few days or week, they showing symptoms. Then they patients come under the emergency services.

Keywords: China; Wuhan; pandemic; airway management; COVID-19; corona virus.

1. INTRODUCTION

The first case found in 31 December 2019 in China, in Wuhan city but China reported this news to WHO in January 2020 after this corona virus can spread worldwide, and WHO declare this disease as a pandemic. As per survey now over the 4,444,670 cases of Covid-19 can identified in 188 countries globally and 1,588,858 can recovery rate of this disease worldwide. Corona virus can caused by Severe Acute Respiratory Syndrome-Corona Virus-2 (SARS-CoV-2), is a single standard ribonucleic acid that enclose to corona virus and it is very infectious and spreading all over the world. It can be transmitted or spreading by droplets and come to direct contact with the patients compare to airborne spread. There is no any specific treatment strategy for corona virus, only supportive therapies such as respiratory care to the severe or acute patients, it's especially in severe condition.

The corona virus causing the crisis worldwide, the almost every country can suffering for COVID-19 which caused by corona virus, the first affected patient can be found in China (Wuhan) and then it can be spread worldwide. This disease condition is very dangerous because of that all the people can be suffering now, the symptoms can be shown as a breathing difficulty, cold and cough, fever, sore throat and much more. Every country can facing difficulties because all over the world the treatment or vaccine for COVID-19 is not available in first phase of corona virus. This virus can mostly affect the lung causing severe breathing difficulties to the patients so the airway management this is the primary treatment for the patients. There are kinds of methods available to manage the patient respiration and airway management. All about 15 % of individual with coronavirus disease they can develop acute and severe respiratory diseases for that the hospitalization and oxygen therapies are very necessary, out of 15% individual there is 5% is require a care in a critical care unit and various type of oxygen providing therapies including oxygen and intubation. In this

COVID-19 disease condition can occur common complication that is pneumonia, also other complication related to respiratory problems, kidney problem, cardiac problems. In a small proportion of this disease the severe stage is enough to causing death, recent studies shown high prevalence in older people as compare to younger adult [1].

2. AIRWAY MANAGEMENT FOR COVID - 19 PATIENTS

Aim is to provide airway management to COVID 19 patients and what is the role of airway management in this patient condition. This can provide issues with the person who severely suffering from respiratory diseases in hospital settings. The COVID 19 predominantly causing infection like pneumonia. At the time of giving intervention for managing the patient with severe respiratory condition are managed by mainly tracheal intubation and forming a controlled ventilation. As far this disease condition can increase, there will be the many community people are not having any symptoms of COVID 19 but after few days or week, they showing symptoms. Then they patients come under the emergency services [2].

2.1 Staff Safety

Staff safety is very important while managing patient airway pattern, staff should get all the personal protective equipment for their safety. Staff playing a major role in reducing the infection and managing it. Because staff can be a carrier for spreading infection on one place to another place or one person to another person for reducing the contact of spreading infection the proper airway managing technique is very necessary with certain protective equipment and awareness [3].

2.2 Aerosol Generating Procedure

This procedure can increasing the risk of transmission of the infection, it also possible to spread infection by blood and faeces of

infected person, if want to prevent the spread of infection the using of personal protective equipment and proper handling patient waste is very necessary [4].

2.3 Supplemental Oxygen

World Health Organization and Center of disease control and prevention can mostly recommended the oxygen therapy to COVID 19 patients as a first line therapy enclose hypoxia and respiratory distress. When person can't taking oxygen by naturally as their body needed oxygen so the oxygen can provide to the patient as supplemental oxygen to improving the lung capacity and reducing breathing difficulties or other complication. Vital monitoring is also very important while providing oxygen to the patients.

2.4 Nasal Cannula

Nasal cannula use as supplemental oxygen therapy given by nasal cannula and it can provide oxygen about five to six liter per minute with the oxygen level which increase FiO_2 near by 45%. Those patients need to respiratory help in that condition the device called nasal cannula can help those client taking needed amount of oxygen support. With the help of this cannula the oxygen providing to the cannula according to the need to the client, as low or medium as per patient need[3].

2.5 Simple Mask

Supplementary oxygen provided using simple mask nearby five to ten liter per minute. Patient's breathing rate and exhalation can managed by itself by using simple mask and the FiO_2 providing to patients. When the patients need higher amount of oxygen and nasal cannula does not fulfill the need of the client that time doctor take the simple mask to providing the oxygen to the clients. This mask basically made with the simple plastic and this mask providing only those patients who can take breath by themselves, those are unable to breath that patient is not requiring such a type of oxygen therapy, this mask is described as a low flow oxygen delivering mask.

2.6 Air-Entrainment Mask

When the doctors want to precisely delivering the oxygen to the individual that time they supply oxygen to the patient by venture mask it also called an air-entrainment mask. Supplementation

of FiO_2 is done in a distress level, in level between the 30% to 60% oxygen. This mask help to providing and controlling the concentration by patients, also this device having problem with air system and sometimes happening the ratio of oxygen can be decreases.

2.7 Non-Rebreather Masks

The safest method to providing needing amount of oxygen to the patients of corona positive by using a Non-rebreather mask because this mask help to limit the droplets made at the time of dispersion. This type of mask mostly using to check the delivery of oxygen that supplying to the patients, also it help the individual to taking high concentration amount of oxygen. This mask allows the patient to taking breath without any high concentrating oxygen with using of the low oxygen providing the nasal cannula. This mask have the capacity to deliver 60 to 80 percent of the oxygen, this can help those patient who severe respiratory problrms and the level of oxygen which is very low in the body as such condition can be handle by using this mask[3].

2.8 High Flow Nasal Oxygen (HFNM)

World wild the opinion is different on the use of high flow nasal mask because of their aerosol generating procedure but now this can be based on the some countries experiences, the high flow nasal mask which is beneficial in early stage, in some particular categories of patients with severe respiratory failure but there is not having evidence about the such conditions can definitely treated be the providing oxygen and doing patients intubation. This type of oxygen therapy help to providing the 100% oxygen with 100% humidified oxygen and heated oxygen and this mask having those flow rate is 60 l/m.in this oxygen therapy the client get the high level of oxygen as compare to other therapies and it providing the high support to the respiratory problems, this mask use also use after the extubation and prevent patient for reintubation. The use of this mask can do carefully at the time of high risk patients, post extubation that is the very crucial period of the patients and unappropriated use of this mask and bad monitoring leads to chances of mortality rate in the critical patients[3].

2.9 Ventilatory Support

These machine help with the tightly fitting mask or breathing tube, the warm and air with

extra oxygen can providing through the ventilator to the clients. Mechanical ventilation can needed patients those can come with acute and chronic respiratory distress or hypoxemia and admitted in intensive care unit mostly. There are types of refinement in mechanical ventilation or it can be adjust according to expected outcome and need of the clients. The ventilator support the patient's lung and helping the moving air in and out of the lung in case of respiratory failure [5].

2.10 Non-Invasive Ventilation (CPAP/NIV)

Aerosol generating procedure is called as Non-mechanical ventilation is used when the client need oxygen support or breathing support by using various types of oxygen methods, and also use of evidence- based intervention which can include the treatment of the patients with hypercapnic respiratory failure. This method use for providing breathing support by using face mask, helmet or nasal mask, during this method the oxygen can added into the positive pressure, generally the amount of positive pressure is quite depend upon the patient is taking breath or not. Basically noninvasive ventilation having two types that is noninvasive positive pressure and noninvasive negative pressure. The noninvasive ventilation do work as providing the needed amount of oxygen for breathing and remove unwanted gases from the lungs [5].

2.11 Invasive Ventilation

When the Lung going to collapse that time invasive ventilation is used to protect the Lungs. Invasive ventilation also called Lung protective mechanical ventilation (MV) and it help to treat or manage the acute respiratory failure. It called invasive when the instrument go inside of the trachea or the mouth to prevent patient from breathing difficulties such as endotracheal tube and tracheostomy tube. In conscious patients the supplementary oxygen provided by mask or the nasal cannula for the better performance of the patients lung [5].

Advances in emergency airway management have allowed intensivists to use intubation techniques that were once the province of anesthesiology and were confined to the operating room [6]. Airway management is unequivocally the most important responsibility of the emergency physician. No matter how prepared for the task, no matter what

technologies are utilized, there will be cases that are difficult [7]. Maintaining oxygenation is the most critical task performed by airway professionals. Difficult airway management requires a rapid and co-ordinated team response to prevent patient harm. This response can be challenging due to cognitive overload in a highly stressful environment [8].

3. CONCLUSION

The airway management in COVID 19 patients is very necessary because the corona virus can directly attack to the lungs and causes severe respiratory diseases which need to provide attention on reducing the complication and treatment of the COVID 19 patients using various methods of oxygen therapy.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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