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Review Article

Infection Control in Operating Rooms during COVID 19 Viral Pandemic. A Narrative Review

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Abstract

Health care workers and in specific Anesthesiologists are prone to the risk of infection particularly during aerosol-generating procedures as air way management or high flow nasal oxygen therapy for very sick patients. Personal protective equipment (PPE) and appropriate face masks are essential when managing COVID 19 virus infected patients. Droplet and aerosol

transmission is considered the main method for contracting this virus infection. Decontamination of disposables and the proper donning and doffing of PPE will help reduce future viral outbreaks in the medical facilities.

Keywords: COVID-19; Anesthesiologists; Infection control; Airway; Personal protective equipments; Face masks

1. Introduction

Coronavirus disease 2019 (COVID-19) is a coronavirus that is highly contagious and is spreading globally, which lead the World Health Organization (WHO) to name it a pandemic. The incubation period ranges from 2 to 14 days and the fatality rate is up to 3.4% globally [1,2]. The main viral load is in the nasal cavity which means that droplet transmission is possible during coughing. This represents a risk for healthcare workers during aerosol-generating procedures as tracheal intubation or extubation and during rescue ventilation [3]. Symptoms ranges from mild flu-like symptom in majority of infected patients to acute respiratory distress syndrome (ARDS) in the minority [4]. Symptomatic and asymptomatic patients are capable of transmitting the disease which lead to adopting the social distancing behavior as a protective practice. Elderly health care workers or patients with multi-morbidities are more likely to develop ARDS and multiorgan failure when infected [5, 6]. Taking all the measurement to limit the transmission to health care workers during clinical practice is essential. The aim of this review is to explore the risks of disease transmission to health care workers in operating rooms and intensive care and how this can be reduced.

2. Methods

A narrative review of published literature focusing on the clinical features, risks and consequences of the new COVID-19 infection concerning the Anaesthesia related working staff and the required infection control measures. Articles were retrieved from the online databases mainly from Google Scholar and PubMed searching engines utilizing the following keywords COVID-19, Anaesthesia health care workers, infection, risks Personal Protective Equipment (PPE), Publications from February to June 2020 were included.

3. Discussion

During this Pandemic the elective surgeries are suspended and only urgent procedures are allowed to reduce the risk of exposure to infection for both patients and medical staff. Precautions are essential during any clinical intervention, which includes wearing personal protective equipment (PPE) and surgical masks [7]. The one size fits PPE helps to decrease the shortage in PPE quantities. The laryngoscopy procedure and intubating the trachea for a COVID-19 infected patient is considered a high-risk procedure and subjects the healthcare worker to a high risk of infection. Public Health England's (PHE) and the World Health Organization (WHO) recommend strongly the use of surgical masks, while the European Centre for Disease Prevention and Control (ECDC) suggests that class 2 or 3 filtering face piece (FFP) masks are more appropriate and that surgical mask should only be used in case of shortage. Only in high-risk aerosol generating procedures as during positive pressure lung ventilation the WHO recommends FFP2 or N95 respirators masks, while UK National Guidance recommends only FFP3. Another important point to

avoid transmission of infection among the health care workers is the proper donning and doffing of PPE, as self-contamination can happen during doffing [8]. Many centers have this process of donning and doffing of PPE under observation and monitoring with the help of an extra medical staff.

The anesthesia machines and related monitors should be protected with plastic covers and all anesthesia ventilation circuits should be fitted with viral filters. Strict precautions during endotracheal intubation includes wearing appropriate face masks and PPE. Recently national guidelines in UK recommend avoiding high flow nasal oxygen in view of lacking evidence to support survival compared to conventional oxygen administration. This will reduce any potential wide spread of the virus to other patients and medical staff [9]. Other precautions as limiting the number of persons in the room during endotracheal intubation and the use of video laryngoscopy with disposable covers for the blades and covering the patient airway clear plastic drape or a surgical mask immediately after extubation [7].

The worldwide limited number of isolation rooms with negative atmospheric pressures in the medical facilities dealing with this pandemic is an environmental challenge. Operating rooms are generally designed with positive atmospheric pressure to reduce infection. This can contribute to the spread of COVID-19 virus in operating room suite if an infected patient requires surgery [8].

Developing guidelines to avoid spreading infection need to be developed in each country based on each region and country available resources which can vary from video laryngoscopes and negative isolation room pressure to less sophisticate infection control measures and PEE, but most important these guidelines must monitored and practiced [10].

4. Conclusion

Anesthesiologists recommend to follow the guidelines for infection control to reduce the of contracting risk the infection. The availability of suitable PPE and the development of protocols to safely manage COVID 19 patients particularly during aerosol-generating procedures are crucial to avoid droplet and aerosol transmission. Decontamination of disposables and proper donning and doffing of PPE is essential to help reduce any future viral outbreaks. Anesthesiologists are urgently need to participate in developing guidelines to improve infection control measures and protect lives.

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