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Understanding COVID-19

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Understanding COVID-19

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Topic

- Provided are materials for safety and education on COVID-19 for the anesthesia provider
- SARS-CoV-2 causes COVID-19 (Coronavirus Disease 2019 (COVID-19), 2020)

Why COVID-19

- COVID-19 has grown to impact new lives each day
- Empowerment of knowledge to combat virus
- Remain healthy to serve and educate others
- 43% of infected with 2003 SARS (similar to COVID-19) in Canada were healthcare providers (Peng et al., 2020)
- Many anesthetic procedures have potential to transmit the disease
- Anesthetists will be exposed to the viral plume

Signs and Symptoms

- Many patients are asymptomatic per Jacofsky et al. (2020)
- Those with symptoms per Jacofsky et al. (2020) identified
 - dry cough
 - sore throat
 - fever
- Transmission via viral shedding can occur 2 days prior to reported symptoms (He et al. 2020)

Underlying Patho

- Transmission entry points per Kowalik et al. (2020)
 - Upper respiratory tract
 - Gastrointestinal tract not ruled out
- Once inside host COVID-19 response includes per Kowalik et al. (2020)
 - Large amounts of inactive CD8+ T cells produced
 - Amount of inactive cells block active immunity
 - Viral particles switch on the apoptosis of macrophages

- Extensive proinflammatory cytokines release (cytokine storm)
- Cytokine storm present in those with immune risk lead to acute respiratory distress syndrome (ARDS)
- Fatal complications per Jacofsky et al. (2020)
 - ARDS
 - severe pneumonia
 - organ failure
 - septic shock

Viral, Antigen-Antibody Response

- Viral and antibody testing combined per Jacofsky et al. (2020)
 - reliable source of information
 - (-) viral, (-) IgM, (-) IgG
 - Does not rule out recent exposure
 - If symptoms present, retest at later date
 - Recommend self-isolation
- (+) viral, (+) IgM, (-) IgG

Figure 1
Reduce Exposure While Performing Tracheostomy

C O R O N A	Tracheostomy for ✓ Cap ✓ Shoe cover ✓ Mask (FFP2 or FFP3 covered with surgical mask) ✓ Goggles/Face shield ✓ Gown (Double gown if available) ✓ Gloves ✓ Buddy check.	
	Operating Room setting ✓ Correct planning in timing ✓ Tracheostomy Team with expertise ✓ Limited number of people involved during the procedure ✓ Surgical kits & different size of cannula ready	
	Open the trachea ✓ Deep neuromuscular blockade ✓ Check SatO2 before opening the trachea ✓ Push tube cuff caudally to avoid air leakage ✓ Hyper-inflate tube cuff	
	Nursing & Airway management ✓ Safe suction of secretions ✓ Regular cuff-pressure check ✓ Planned cannula change ✓ Wound closure when possible	

Note: Utilized for tracheostomy procedure to reduce exposure of COVID-19 (Pichi et al., 2020)

- Early stage, likely to be transmittable
- Recommend self-isolation
- (+) viral, (+) IgM, (+) IgG
 - Early to mid stage, likely transmittable
 - Recommend self-isolation

- (-) viral, (-) IgM, (+) IgG
 - Late stage, unlikely to be transmittable

COVIDs Significance

- Due to impact on immune system per Kowalik et al. (2020)
 - Healthy children and adults combat virus

- Elderly, Immuno-compromised have difficulty combating disease
- When complications arise, procedures to maintain airway may be indicated
- Viral shedding and transmission via the respiratory tract pose risk for anesthesia providers due to aerosol plume of procedures (Peng et al., 2020)
 - Intubation
 - Tracheostomy

Nursing Care

- To reduce exposure Peng et al. (2020) posed
 - Personal protective equipment (PPE)
 - Double gloving
 - Room prep
 - Airway management
 - Air purifying respirators
- Due to direct exposure Sommers et al. (2020) advises
 - Avoid tracheostomy if possible

- Pichi et al (2020) finds early tracheostomy reduced mortality rates over last 30 years.
- Figure 1 shows acronym with steps for successful tracheostomy (Pichi et al., 2020)
 - C – Cover self
 - O and R – utilize the OR
 - O – Open the trachea with deep neuromuscular blockade
 - N – Nursing, schedule cannula change
 - A – Airway management, safe suction management
- Pichi et al (2020) found a designated team utilized for tracheostomy reduced complication

Conclusion

- COVID-19 continues to complicate lives
- Symptoms may or may not be present during the transmission period

- Viral and antibody testing combined give information on progression of disease
- Immunocompromised and elderly at risk for severe complications
- Anesthetists are at risk for exposure due to respiratory plume
- Use of PPE reduces chance of exposure
- Tracheostomy should be avoided if possible
- If not possible to avoid tracheostomy remember CORONA to guide care
- A specialized team for tracheostomy reduces issues and exposure

References

