**Monash Practice Exam 2021.2 – Question 10 (18 marks)**

A 78 year old woman presents with SOB in the setting of respiratory sepsis.

She has a past history of COAD, Type 2 diabetes, Hypertension, Hypothyroidism.

On arrival, she looks unwell with increased work of breathing. Her obs are:

A – patent

B – RR 32, Sa02 94% on room air, creps at right base, expiratory wheeze bilaterally

C – HR 125, BP 105/70

D – GCS 15/15

E – Temp 39.3, BSL 18

She has no epidemiological risk factors for COVID-19 but precautions are taken given she has respiratory symptoms.

Early in her presentation, she receives IV antibiotics, slow IV fluids, bronchodilators and steroids

While in the department, her oxygenation deteriorates and she looks more unwell

**Question 1 – 9 marks**

List 3 methods for improving oxygenation in this patient with one pro and one con for each

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| --- | --- |
| Method | Pros/cons |
| Nasal Prongs | Pro: Comfortable for patient. Low flow available and can titrate 02 to try and prevent hypercapnia if a CO2 retainerCon: Unlikely to improve oxygenation sufficiently in this patient |
| Non rebreather mask | Pro: Able to deliver flow up to 15L/min without being uncomfortableCon: Potential for hyperoxygenation with disruption to respiratory drive if patient is a known CO2 retainer. May lead to CO2 narcosis  |
| High Flow Nasal Prong Oxygen | Pro: Able to deliver higher flow rates and Fi02 than NRB. Due to humidified air, more comfortable for patient. May avoid intubationCon: May lead to delays in decision making regarding intubation due to “waiting for improvement”. Is an aerosolising procedure so requires single room/negative pressure room which can be challenging resource wise.  |
| Non invasive ventilation | Pros: Improve removal of CO2 as well as oxygenation. May prevent need for intubation and the potential complications of that. Cons: May worsen hypotension. May cause claustrophobia and agitation for patient. Is an aerosolising procedure so requires single room/negative pressure room which can be challenging resource wise.  |
| Intubation/Invasive ventilation | Pros: Provides oxygenation and ventilation control as well as takes over work of breathing Cons: May not be appropriate level of care for patient. Risks posed due to induction agents – predmoninantly haemodynamic instability, potential for failed procedure |

**Question 2 – 5 marks**

She continues to deteriorate with worsening hypoxia and hypotension. You feel that she requires intubation.

List 5 things you would do in preparation for intubation

1. Establish patient’s wishes/goals of care and gain consent – relies on patient’s level of competence. If not able to provide this herself, check with MPOA or with prior Goals Of Care form from previous visit
2. Optimise oxygenation – keep patient sitting up till last minute, utilise most comfortable means of oxygenation that ensures compliance
3. Optimise BP in anticipation of post induction hypotension – use IV fluids judiciously along with vasopressors (can start Metarminol peripherally as a bridge to central access and Noradrenaline). Choose more cardiac stable induction agent eg Ketamine, Fentanyl.
4. Assemble team and ensure all in full PPE for aerosol generating procedure. Most experienced team member to carry out intubation
5. Prepare equipment and medications – video laryngoscope, bougie, equipment for direct laryngoscopy, LMA, surgical airway equipment, vasopressors, induction agent, paralysing agent, ongoing sedation. Utilise checklist.

**Question 4 – 4 marks**

Post intubation, her BP drops to 85/50.

List two potential causes and what management you would carry out in response

|  |  |
| --- | --- |
| Cause for hypotension | Management |
| Vasodilatory shock due to sepsis | VasopressorsJudicious boluses of IV fluids, titrated to effect |
| Decreased Venous return due to auto PEEP | Disconnect from ventilator and manually assist patient to expireAlter ventilator settings to allow for hypercapnia and prolong I:E ratio |
| Tension Pneumothorax | Finger thoracostomy followed by formal ICC |
| Side effect of Induction agent | VasopressorsIV fluids |
| Anaphylaxis | AdrenalineIV fluidsIf due to paralysing agent, reversal agent as appropriate |