

12. General Revision

Done by: Nora Al-Refayi

Team Leader: Nada Al-Madhi

Anesthesiology



■ From slides ■ Doctor's Notes ■ Team's Notes ■ From the book ■ Important

For MCQs we have 50 MCQs and score out of 40

10 scores for the log book

50 scores for the OSCE exam

The doctor said preferably to study for MCQs from both lectures and the book because each lecturer will put his lecture questions and she is only revising.

The doctor said that in this revision she is concentrating on some important lectures in OSCE exam, so, this revision mainly for OSCE while MCQs can come from everywhere either from lectures or the book.

OSCE exam will come from the special booklet the doctor sent "Anaesthesia OSCE" with the respect of what was written in logbook regarding the practical and you should follow each step b/c each step has a mark.

Role of anaesthetist in the preoperative care Lecture: we will have a station on pre-op assessment.

- a) Obtain a full history and physical examination including allergies, current medications, past anesthetic history, family anesthetic history
- b) The medical student will understand how patient co-morbidities can affect the anesthetic plan.
- c) The medical student will be able to understand potential anesthetic options for a given surgical procedure.

You should concentrate on hx of difficult intubation

General anaesthesia technique:

- a) Definition of general Anaesthesia and the difference between GA and regional anaesthesia.
- b) Learn about several agents used on induction of general anaesthesia including intravenous agents, inhalation agents, neuromuscular blocking agents and reversal agents.
- c) Understand basic advantages and disadvantages of these agents e.g.: ketamine we can't give it in hypertensive patient, and propofol we can't give it in a patient with hypovolemia.
- d) Complications commonly encountered during general anaesthesia.

Airway Management and equipment:

- a) Learn about basic airway anatomy
- b) Conduct a preoperative airway assessment
- c) Identify a potentially difficult airway
- d) Understand the issues around aspiration and its prevention
- e) Learn about the management of airway obstruction
- f) Become familiar with airway equipment
- g) Practice airway management skills including bag and mask ventilation, laryngeal mask insertion, endotracheal intubation
- h) Learn about controlled ventilation and become familiar with ventilatory parameters
- i) Appreciate the different ways of monitoring oxygenation and ventilation

Regional Anaesthesia Techniques: either neuraxial or peripheral nerve block ultrasound guided.

- a) What are the risks and benefits of regional (epidural/spinal) anesthesia/analgesia? What is the difference between spinal/epidural or combined spinal epidural?
- b) What are the contraindications to regional anesthesia? What is the indication?
- c) How do you prevent hypotension following epidural/spinal anesthesia?

Spinal Anaesthesia: the doctor said we will be asked to do it

- a) Describe the technique of spinal anesthesia.
 - 1) Take consent.
 - 2) Explain to the patient.
 - 3) How you will proceed in spinal anesthesia.
 - 4) What the needle you have to put in his back?
 - 5) How much you have to inject the drug?
- b) At what level does the adult spinal cord end? L1- L2, you should not exceed L3 – L4 in spinal anesthesia otherwise you will induce conus medullaris injury.
- c) Name some of the surgical procedures that can be done with a spinal anesthetic. Cesarean section, lower abdominal surgery, and lower limb surgery can be done under spinal anesthesia or if it's prolonged surgery we have to go with combined spinal epidural.
- d) What are the contraindications to spinal anesthesia?

- 1) Patient refuse.
 - 2) Coagulopathy.
 - 3) Infection at the site.
 - 4) Patient has obstructive cardiac lesion.
- e) What are the complications? The most common complication of spinal anesthesia intra-op is hypotension, post-op headache.
- f) Describe the patient's perception as spinal anesthetic takes effect. You have to inform the patient after spinal anesthesia first you have to feel warm your lower limb will be warm, then you will feel heaviness, then you will tell him your lower limb is anesthetize, don't worry it will take few hours and it will recover. Because most of them they were found they have paralysis. So, you have to explain to them because they are awake.
- g) What are the expected cardiovascular changes associated with sensory level at T10? T1?
- h) How do you treat post-lumbar puncture headache?
- 1) Ask the patient to take rest, lie on his bed.
 - 2) Get increase oral intake or IV fluid.
 - 3) Encourage the patient to take any drink contain caffeine. Why caffeine not others? Because caffeine will do cerebro-vascular constriction. What is the mechanism of post-dural puncture? There is CSF leak, when the CSF leak the CSF circulation will induce cerebro-vasodilatation, this cerebral vasodilatation will induce headache, so the caffeine will induce cerebro-vasoconstriction and also headache will be decrease. Usually we advice the patient to take Solpadeine available in the pharmacy, it contains codeine, paracetamol, and caffeine.
 - 4) In case if the patient still in pain give him another strong opioiod and you can also give him NSAIDs.
 - 5) If the pain is persistence for more than four days we have to go for epidural blood puncture. Epidural blood puncture means that you should put the patient in sitting position. You will do epidural for him and don't put catheter and at the same time you reach the epidural space ask your colleague to extract around 10ml or 12ml of blood from the patient himself and give it through the epidural tuohy needle so, it will block the area of flow. But before starting with this procedure we have to give him IV antibiotic which will be done in the OR.

Epidural Anaesthesia: the doctor said we will not be asked to do it. If it comes in the exam it will be a sort of discussion but also we need to know the tuohy needle and how it looks like.

- a) Discuss the differences between spinal and epidural anesthesia.

In epidural anesthesia we have to reach the epidural space and we have to induce local anesthetic at the level of the nerve root and it is good for either surgery intraoperatively or postoperatively or for labor pain analgesia.

- b) What are the advantages and disadvantages of epidural compared to spinal anesthesia?
- c) Study the size and tip of the epidural needle. The name of epidural needle is tuohy needle.
- d) Name some of the surgical procedures that can be done with an epidural anesthetic. Like labor pain analgesia, lower limb surgery, bilateral total knee replacement ,or lower abdominal surgery we can do it with epidural and postoperatively will provide the patient postoperative analgesia
- e) What role does epidural has for post-operative pain control? We can continue epidural infusion or patient control epidural analgesia. Epidural analgesia is an excellent for patient for post-arthroplasty surgery because next day after surgery they will start physiotherapy for the patient. When the patient on epidural he will be more cooperative if the patient on PCA or other painkiller he will feel pain but with epidural he will never feel pain and the outcome will be excellent.
- f) Local Anesthetics Pharmacology and toxicity (Lidocaine, Bupivacaine). What is the major difference between Lidocaine and Bupivacaine? Lidocaine we can give it intravenously and we can use it for some types of arrhythmias like ventricular tachycardia. Bupivacaine is toxic if given intravascular the patient will have severe arrhythmia and he will die due to cardiac arrest. So, if there is inadvertent injection of Bupivacaine intravascular what you have to do? Lipid emulsion.

Case scenario:

- ž A 26 year old female patient is admitted to the emergency department diagnosed to have perforated appendix for urgent emergency appendectomy. Last meal 2hours ago.→ This means the patient is full stomach and she had appendicitis.
- ž Vital signs: BP 120/70mm Hg and HR 90/min.
- ž The patient was previously healthy.
- ž PE: patient currently looks ill. and CVS normal .last meal 2hours ago
- ž

Professional behavior:

- Introduce yourself,
- Greeting the patient,
- Take permission to examine her.
- Explain to the patient what you will do.
- don't be tough, no misbehavior.
- What is your preoperative assessment?
- Anesthesia plan.

Preoperative assessment:

1) History:

- Age • present illness • drugs • allergies
- Past history (operations and anesthetics) • anesthetic family history
- Social (smoking, alcohol)

2) Examination:

- **Airway (mandatory).** • Teeth (loose teeth). • General examination

3) Specific assessment.

4) Investigations.

5) Consent. (Usually for surgery, general anesthesia, and blood transfusion).

6) Premedication.

ž

ž The patient was previously healthy.

ž PE: patient currently looks ill. and CVS normal last meal 2hours ago

- Surgical Hx: no previous Hx

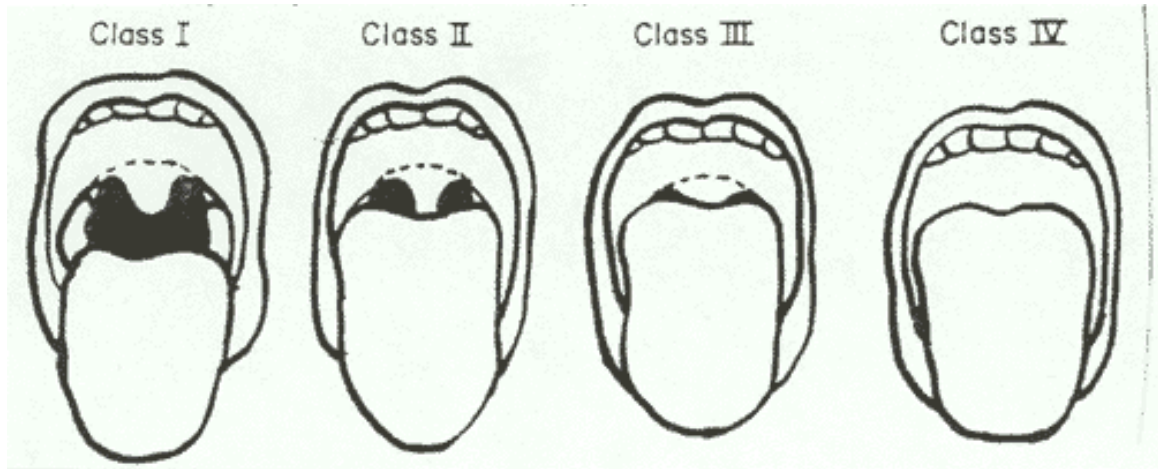
- Allergy Hx.: not known to have any allergy .

- Family history :not significant .

- Review investigation: all within normal range.

Airway Evaluation:

- Oropharyngeal visualization
- Mallampati Score
- Sitting position, protrude tongue, don't say "AHH"



- Take very seriously history of prior difficult intubation difficulty
 - Short immobile neck especially in patient with rheumatoid arthritis because they have many medical problems.
 - Full set of teeth, buck teeth
 - High arch palate
 - Poor mouth opening – less than three fingers gap between upper and lower teeth
 - Receding mandible (may be hidden by a beard)
 - Inability to sublux the jaw (forward protrusion of the lower incisors beyond the upper incisors). This means we can't manipulate the mandible with the laryngoscope if the patient cannot sublux the lower incisor with the upper incisor.

-Modified Mallampati scoring system:

- Grade 1: faucial pillars, soft palate and uvula visible
- Grade 2: faucial pillars, soft palate visible, but uvula masked by the base of the tongue.
- Grade 3: soft palate and hard palate only visible
- Grade 4: hard palate not visible

-Head and neck movement:

Flexion and extension are greater than 90° in normal people.

-Jaw movement and mandible:

Check that the patient's mouth opens normally. It should have an interincisor gap of greater than 5 cm (about three finger breadths)

-Thyromental distance:

If the distance is more than 6.5 cm, problems should not occur with intubation.

Other tests

Indirect laryngoscopy and various x-ray procedures are occasionally used.

Example:

An 80 years old patient booked for TURP under spinal anesthesia

What I should expect from you:

Performance Steps correctly:

- Taking Consent from the patient
- Assessment (indications and contraindications)
- Connect monitors SPO2, ETCO2, ECG, non invasive blood pressure.
- check your equipments.
- Start IV fluids
- Mask, cap, gown and gloves
- Prepare the back with antiseptic
- Place a sterile Drape Over The Area
- Identify the anatomical landmarks
- Inject local anesthetic into the skin and deeper tissue
- Insert the large introducer needle into the selected spinal interspace
- Direct the spinal needle through the introducer and into the subarachnoid space.

- Free flow of CSF confirms proper placement
- Aspirate for CSF if clear inject the proper anesthetic
- Remove the needle, introducer and drape sheet
- Have the patient lie down

Example:

39 years old patient booked for emergency CS due to fetal distress

How you will manage? general anesthesia because there is no time for spinal anesthesia.

What I should expect from you: (steps of rapid sequence induction)

1. first when the patient in the OR just asks him quickly about the previous medical problem or if there is any cardiac problem you have to convert your intravenous anesthesia to etomidate quickly. Then ask her about symptoms of cardiac disease. You have to concentrate about cardiac disease because undiagnosed cardiac disease may induce risk to the patient during cesarean section especially if the patient has obstructive lesion like cardiac stenosis, aortic stenosis, or severe mitral stenosis or if the patient has pulmonary hypertension.

Then, the patient should be lying down on the table and she is maintaining her vital signs and not complaining of shortness of breath.

Do auscultation for the chest to see if there is basal crepitation, pulmonary hypertension, if there is pansystolic murmur you have to consider it. Then you have to review quickly the cardiography or ask somebody to identify it to you while you are preparing your medications.

Preoxygenate with 100% oxygen by non-rebreather mask for at least 3 full, deep breaths. Preoxygenate four minutes if situation allows. And your suction should be ready under the patient below because in case if there is full stomach and vomiting you can suction quickly.

2. Administer propofol OR etomidate.

3. Apply cricoid pressure (you have to wait 1 minute and you have to open the mouth widely with cross finger technique, put the laryngoscope and intubate the patient) and hold until patient has been intubated, balloon of ETT has been inflated, position of tube tip has been assured, and ETT has been secured in place. Don't remove the cricoid pressure unless there is ECO_2 is coming.

If the endotracheal tube in the esophagus and the patient has full stomach and the patient start to desaturate. What will you do? Keep it inside, inflate the cuff and do

laryngoscopy put another tube gently and ask your assistance to deflate the cuff from the esophageal tube then fix your ETT and do suction from the esophageal tube and take it out.

5. Administer succinylcholine 1 mg/kg IVP (100 mg for average 70kg patient) and wait for paralysis to occur.

6. Intubate.

7. When successfully intubated, confirm placement by: the first confirmative method you will see the tip of tube going through the glottis

a. Bilateral breath sounds. (5 zones: apex, bases, and epigastric)

b. Chest wall rise.

c. Absence of gastric sounds.

d. End tidal CO₂ measurement.

e. the water vapor coming from the tube.

8. fixed

Anesthesia OSCE:

The exam will be 5 stations, with clinical scenarios in each station. Each station will take around 5 minutes.

In clinical skills session the doctor said the most imp. thing is the technique. So, if the blood or the CSF is not coming out don't panic.

Objectives:

-Pre-operative assessment (General and anesthesia specific questions)

- Airway examination:

Malampati classification

Atlanto-occipital joint extension

Thyro-mental distance

X-ray in case of difficult airway.

-Prolonged apnea *IMP*

