MONITORING IN ANAESTHESIA

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OUR OUTLINES

- Definition
- Anaesthetic Depth
- Guidelines to the practice of anaesthesia & patient monitor
- What & how we monitor the oxygenation, ventilation, circulation & temperature
- Monitoring ECG
DEFINITION

- Means to be aware of the state of a system, to observe a situation for any changes which may occur over time, using a monitor or monitoring device.

- Monitoring aids to know when to make therapeutic intervention and to guide the assessment of those interventions.
MONITORING IN THE PAST

- Visual monitoring of respiration and overall clinical appearance.
- Finger on pulse
- Blood pressure
**ANAESTHESIA DEPTH**

- The degree to which CNS is depressed by an anaesthetic agent depending on the *potency* of the agent and the *concentration* in which it is administered.

- Patients with local or regional anaesthesia provide verbal feedback regarding well being.

- Onset of general anaesthesia signalled by lack of response to verbal command, in addition to loss of blink reflex to light touch.
Inadequate anaesthesia can be signalled by: facial grimacing, movement of arm or leg and intra-operative awareness, but with muscle relaxants (fully paralysis) it can be signalled by: hypertension, tachycardia, tearing or sweating.

Excessive anaesthesia can be signalled by: cardiac depression, bradycardia & hypotension, also may result in hypoventilation, hypercapnia & hypoxemia when muscle relaxants not given.
GUIDELINES TO THE PRACTICE OF ANAESTHESIA AND PATIENT MONITORING:

- Qualified anaesthesia personnel present in the room throughout the conduct of all general anaesthetic, regional anaesthetic & monitored anaesthesia care.

- Completed pre-anaesthetic checklist (history, physical exam & lab investigations)

- An anaesthetic record. In general, regional anaesthesia or monitored IV conscious sedation, HR & BP should be measured every 5 min. Also time, dose & route of drugs and fluids should be charted.
During all anaesthetics, the patient’s oxygenation, ventilation, circulation, and temperature are continually evaluated (monitored).
Inspired Oxygen

Clinically monitored by patient colour & pulse oximetry (Hg saturation).

Quantitively monitored by using oxygen analyser equipped with an audible low oxygen concentration alarm.
VENTILATION

- Clinically monitored through a correctly positioned endotracheal tube, also observing chest excursions, reservoir bag displacement & breath sounds over both lungs.

- Quantitively by capnography – End-tidal CO2 (exhaled CO2) analysis, equipped with an audible disconnection alarm.

- Arterial blood gas analysis for assessing both oxygen & ventilation.
CIRCULATION

- Clinically monitored by pulse palpation, heart auscultation & monitoring intra-arterial pressure (MAP normally between 70 - 100 mmHg) or oximetry.

- Quantitively using ECG & blood pressure measurements every 5 min.
TEMPERATURE

- Continuous temperature measurements monitoring (Thermometry) is mandatory if changes in temperature are suspected.
- Detect/prevent hypothermia & adjunct to diagnosing MH.
- Monitoring sites include oesophageal, tympanic membrane & nasopharyngeal. Peripheral sites axilla & rectal.
ECG MONITORING

- 3 or 5 lead electrode system is used for ECG monitoring in operating room.

- The 3 lead system has electrodes positioned on the right arm, left arm & chest position (placed in the left anterior axillary line at the 5th intercostal space referred as V5). Lead 2 is usually monitored by this system.

- The 5 lead system adds a right leg & left leg electrodes which allows monitoring V1, V2, V3, AVR, AVF & V5.
Identification of P waves in lead 2 & its association with QRS complex is useful to distinguish a sinus rhythm from other rhythms.

Analysis of ST segment is used as an indicator of MI (depression: ischemia // elevation: infarction).

Over 85% of ischemic event can be detected by monitoring ST segment of lead 2 & V5.
GOOD LUCK!

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