Anaesthesia

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Lec 4

Postanaesthesia care

The Recovery Area

The majority of patients recover from anaesthesia and surgery uneventfully, but a small and unpredicted number suffer complications. It is now accepted that all patients recovering from anaesthesia should be nursed in an area with appropriate facilities to deal with any of the problems that may arise, and by trained staff. Most patients will recover on a trolley capable of being tipped head-down. Each patient should be cared for in a dedicated area equipped with:

- Oxygen supply with appropriate equipment for administration.
- Suction device.
- ECG monitoring device.
- Pulse oximeter.
- Blood pressure monitoring device.

Discharge of the patient

The anaesthetist's responsibility to the patient does not end with termination of the anaesthesia, the ultimate responsibility remains with the anaesthetist until discharge from the recovery area.

♪ ***A patient who cannot maintain his/her own airway Should never be left alone.***

Minimum criteria for discharge from recovery area:

1. Fully conscious and able to maintain own airway (although patient may still be 'sleepy').
2. Adequate breathing.
3. Stable cardiovascular system, with minimal bleeding from the surgical site.
4. Adequate pain relief.
5. Warm.

Complication and management

A. Hypoxia

This is the most important respiratory complication after anaesthesia and surgery. It may start at recovery and in some patients persist for 3 days or more after surgery. The advent of pulse oximetry has had a major impact on the prevention of hypoxia and should be used in all patients.

Hypoventilation is the commonest cause of hypoxia which is mean: insufficient influx of oxygen into the alveoli to replace that taken up by the blood. Hypoventilation occurs due to:

- *Obstruction of the airway* Most often due to the tongue. Consider vomits, blood or oedema (post-thyroid surgery).
- *Central respiratory depression* The residual effects of anaesthetic drugs decrease the ventilatory response to hypoxia ($\downarrow O_2$) and hypercarbia ($\uparrow CO_2$) and also reduce level of consciousness. Support ventilation until effects have worn off or reversed. Opioid analgesic (in excess) cause respiratory and reduce level of consciousness. If severe, the administration of the specific antagonist (Naloxone) may be required.
- *Hypothermia* Reduce ventilation but, in the absence of any risk factor, it is usually adequate for the body's needs.

- *Cerebral haemorrhage or ischemia* May cause direct damage to the respiratory center. More commonly, a deeply unconscious patient unable to maintain a patent airway.
- *Impaired mechanics of ventilation* Pain especially after upper abdominal and thoracic surgery.

B. Hypotension

This can be due to a variety of factors, alone or in combination, which reduce cardiac output, systemic vascular resistance or both.

Hypovolaemia is the commonest cause of hypotension after anaesthesia and surgery. Although intraoperative blood loss is usually obvious, continued bleeding, especially in the absence of surgical drains, may not be noticed. Fluid loss may also occur as a result of tissue damage leading to oedema, or from evaporation during prolonged surgery on body cavities, e.g. abdomen and thorax.

Diagnosis can be confirmed by finding;

- Poor peripheral perfusion; cold clammy skin.
- Tachycardia; heart rate > 100 bpm.
- Hypotension.
- Inadequate urine output, < 0.5ml/kg/h. best measured by Foley's catheter insertion and collected by urine bag.

♪ ***The commonest cause of oliguria is hypovolaemia; Anuria is usually due to a blocked catheter.***

The extent to which these changes occur will depend primarily upon the degree of hypovolaemia. A tachycardia may not be seen in the patient taking beta blockers and up to 15% of the blood volume may be lost without detectable signs in a fit, young patient.

Mx

- Ensure adequate oxygenation and ventilation.
- IV fluids (2 wide bore cannula or CVL central venous line) either crystalloid or colloid, should be given , using a pressure infusor (inflation bag) to speed administration.
- Request for cross-matched blood units.
- Stop any external haemorrhage with direct pressure.
- Get surgical assistance if internal haemorrhage suspected.

C. Hypertension This is most common in patients with pre-existing hypertension. It may be exacerbated or caused by:

- Pain.
- Hypoxia (hypoxaemia).
- Hypercapnia (hypercarbia).
- Confusion or delirium.
- Hypothermia.

A coexisting tachycardia is particularly dangerous in the presence of ischemic heart disease as this may cause an acute myocardial infarction. If the blood pressure remains elevated after correcting the above, a vasodilator or beta blocker may be necessary. Senior help should be asked.

D. Post-operative nausea and vomiting PONV.

This occurs up to 80% of patients following anaesthesia and surgery.

Risk factors:

- Age and sex: more common in young females and children.
- Site of surgery: abdominal, middle ear or posterior cranial fossa.
- Giving opioids pre, intra and post-operatively.
- Anaesthetic drugs.
- Hypotension associated with spinal anaesthesia.
- Patients prone to travel (motion sickness).

Mx:

Before administration of drugs to treat nausea and vomiting, it is essential to make sure that the patient is not hypoxaemic or hypotensive.

1. Antihistamines: Cyclizine.
2. 5-HT_3 (5 Hydroxytryptamine) antagonist: Ondansetron.
3. Dopamine antagonist: Metoclopramide.
4. Phenothiazine derivatives: Prochlorperazine.
5. Anticholinergics: Hyoscine.
6. Steroids: Dexamethasone.

Post-operative Analgesia

After injury, acute pain limits activity until healing has taken place. Modern surgical treatment restores function more rapidly, a process facilitated by the elimination of postoperative pain. A good example is the internal fixation of fractures, followed by potent analgesia allowing early mobilization. Ineffective treatment of postoperative pain not only delays this process, but also has other important consequences:

1. Reduced cough: sputum retention and pneumonia.
2. Muscle wasting, skin breakdown and cardiovascular deconditioning.
3. Thromboembolic diseased: deep vein thrombosis and pulmonary embolism.
4. Delayed bone and soft tissue healing.
5. Prolonged hospital stay and increased medical complications.
6. Development of chronic pain syndrome.
7. Psychological complications; especially in children and young age group females.

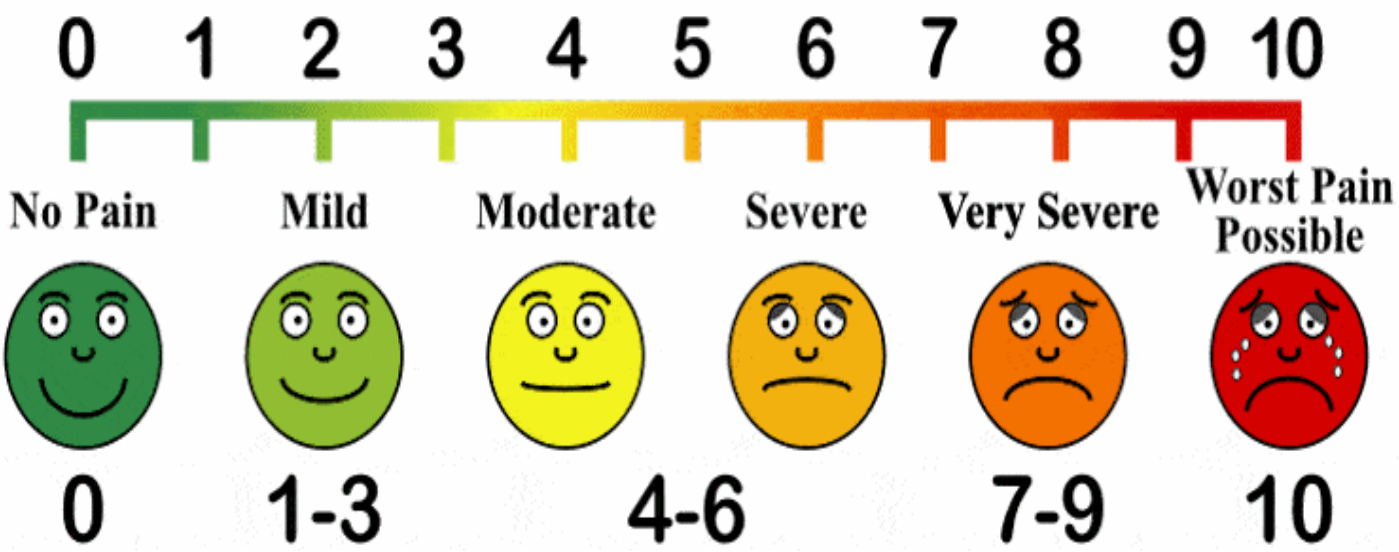
♪ ***Any patient who complains of pain that unexpectedly increases in severity, changes in nature or site, or is of new onset should be examined to identify the cause rather than simply be prescribed analgesia.***

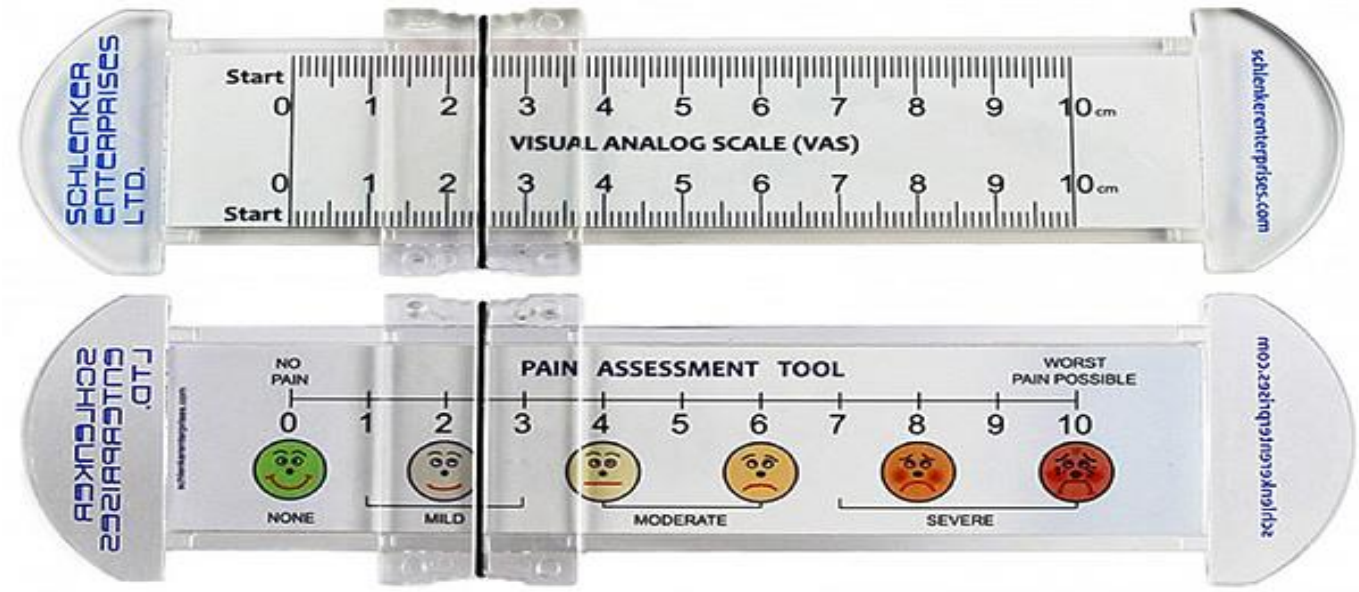
Mx of Postoperative Pain

This can be divided into a number of steps:

i. Assessment of pain.
ii. Analgesic drug used.
iii. Technique of administration.
iv. Difficult pain problems.

Assessment of pain: Verbal and numerical Visual Analogue Scale (VAS) and Wong-Baker scale for children.





Drugs used for analgesia

1. Weak opioids: Codeine and Tramadol, used for mild to moderate pain.
2. Strong opioids: Pethidine (Meperidine) and Morphine, used with precaution, under control and monitoring the patient. Usually for moderate to severe pain.
3. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

- Paracetamol; an analgesic and antipyretic with little anti-inflammatory action, but usually classified with NSAIDs. Inhibits Prostaglandin (PG) synthesis, mainly in the CNS. It is used to treat mild to moderate pain. Well absorbed orally, may cause a little irritation of the gastro-intestinal tract. IV preparation is also available given by infusion over 15 mins. May be used incorporation with opioids. It is the safest of all analgesics (unless the patient from hepatic impairment).
- Other NSAIDs: Ibuprofen, Indomethacin, Mefenamic acid, Diclofenac, Meloxicam and Piroxicam. (keep in mind the side effects and contraindications of these drugs.