جامعة الملك سعود
King Saud University

PBL Case 6
(anesthesia course)
Group C

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Case 6: Local Anesthetic Infiltration

A 25-year-old, 75-kg man presents for open appendectomy. The surgery is performed under general anesthesia, without complications. After the specimen is removed, the attending surgeon leaves the operating room to dictate the operative report, leaving the intern and medical student to close the skin. Upon leaving, the surgeon asks them to "inject some local anesthetic into the wounds." The intern turns to you and asks

Question 1: What are the benefits of local anesthetic infiltration?

- **Single-dose local anaesthetic infiltration:**
- Reduce postoperative nausea and vomiting by a reduction in opioid requirements.
- Infiltration with local anaesthetics before surgical incision, as opposed to infiltration at the end of the procedure, has the advantage of reducing the amount of analgesia and anaesthesia required intraoperatively.
- Low cost.
- **Continuous local anaesthetic wound infiltration (pumps and catheters)**
- Provide continuous analgesia, eliminating the peaks and troughs in analgesic effect that occur with intermittent local or systemic analgesic.
- Reduced requirement for postoperative opioids with subsequent reduction in postoperative nausea and vomiting.
- Quicker return to normal bodily function and ambulation.
- Reduced length of hospital stay, especially in cardiothoracic and orthopaedic populations.
- In general :
- Immediate anesthetic effect
- Safely provides adequate analgesia
- Produces relief of pain with less interruption in the sense of touch or temperature and without muscle paralysis in most children and adults.
- Less systemic effect
- Less risk of aspiration
- No hypoventilation

Question2

What attributes are you looking for in a local anesthetic in this case?

- Its actions must be reversible.
- It should be non irritating to the tissues.
- It should not produce any local or allergic reactions.
- Potency which reflects the ability of the local anesthetic molecule to permeate lipid membranes.
- Onset of action: less lipid-soluble agents generally have a faster
- onset.
- Duration of action: high lipid-soluble local anesthetics have a
- longer duration because they more slowly diffuse from a lipid-rich environment to the aqueous bloodstream.
- The central nervous system is vulnerable to local anesthetic toxicity and is the site of premonitory signs of rising blood concentrations in awake patients.
- It should have a low degree of systemic toxicity.
- Reduces postoperative pain.
- The patient medical history → Nil in this case “specifically liver or kidney disease”

Question3 Which agent would you choose and what is the maximum dose?

- Lidocaine, Marcaine
- 3.5 ml/kg.
- **- lidocaine alone: max dose 4.5 mg/kg**
- **- lidocaine WITH epinephrine: max dose 7 mg/kg**

Question4 What are the complications might be expected from overdose?

CNS:

Muscle twitching
Convulsions
Unconsciousness
Coma
Respiratory depression and arrest
Cardiovascular depression and collapse

Cardiovascular:

Myocardial depression
Arrhythmias: widened PR interval, widened QRS duration, sinus tachycardia, sinus arrest, and partial or complete atrioventricular dissociation.
Cardiac arrest: reported after intraurethral administration of lidocaine
The range of signs and symptoms of cardiovascular toxicity include the following:
Chest pain
Shortness of breath
Palpitations
Lightheadedness
Diaphoresis
Hypotension
Syncope

Question4: What are the complications might be expected from overdose?

Hematologic:
Methemoglobinemia

Allergic:
Rash
Urticaria
Anaphylaxis (rare)

Local tissue manifestations:
In addition to numbness and paresthesias, which is expected with normal doses of local anesthetic, very high doses can produce irreversible conduction block.
Peripheral neurotoxicity, such as prolonged sensory and motor deficits.

Thank You

Reference:

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