LOCAL ANAESTHETICS

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Composition of LA solution

Local anesthetic agent: lidocaine HCl 2%
Vasoconstrictor: adrenaline 1:80000
Reducing agent: sodium metabisulphite 0.5 mg. This act as a preservative for the vasoconstrictor
Preservative: methyparaben 0.1%
Isotonic solution: sodium chloride 6mg
Fungicide: thymol
Vehicle: ringer’s solution—minimize discomfort during injection
Diluting agent: distilled water
To adjust pH: sodium hydroxide
Nitrogen bubble: 1-2mm in diameter and is present to prevent O2 from being trapped cartridge and potentially destroying the vasopressor or vasoconstrictor
What does 1% Lidocaine mean?

The dilute preparations are presented as percentage (%) solutions of LA.

A solution expressed as 1% contains 1g substance in each 100mls

1 g in 100 ml = 1000mg in 100 ml 10 mg in 1 ml

The number of mg/ml can easily be calculated by multiplying the percentage strength by 10. Therefore a 0.25% solution of lidocaine contains 2.5mg/ml of solution (10 * 0.25 = 2.5 mg /ml)

Example: 2% lidocaine ? 2% = 2 gram/100ml = 2000mg/100ml = 20mg/ml

So 2% solution has 20mg/ml
Vasoconstrictors

Vasoconstrictors are the chemical agents added to local anesthetic solutions to oppose vasodilatation caused by these agents and to achieve hemostasis.

Adrenaline is the most commonly used vasoconstrictor in concentrations ranging from 1 in 80,000 to 1 in 300,000
Addition of a vasoconstrictor to a local anesthetic may have several beneficial effects:

1. It decreases the blood flow to the site of injection, because of vasoconstriction.
2. Reduction of the minimum concentration of anesthetic agent needed for nerve block.
3. It lowers the plasma level of local anesthetic agent thereby, decreasing the risk of systemic toxicity of local anesthetic agent.
Addition of a vasoconstrictor to a local anesthetic may have several beneficial effects:

4. Higher volumes of local anesthetic agent remain in and around the nerve for longer periods, thereby increasing the duration of action of most local anesthetic agents.

5. It decreases bleeding at the site of injection because of decreased perfusion.
Contraindications

1. Hypertension >220/110
2. Ischemic heart disease
3. Uncontrolled diabetes
4. Thyrotoxicosis
5. Patients taking monoamine oxidase inhibitors or tricyclic antidepressants
6. Infiltration around end arteries
7. Intravenous regional anesthesia
8. General anaesthesia with halothane
9. pregnancy
Clinical uses of local anesthetics

1. Surface anesthesia: skin and mucous membranes.
2. Infiltration anesthesia: provide anesthesia for minor surgical procedures/ skin biopsy/ wound closure.
THANK YOU