ANESTHESIA

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History of anesthesia

Early Chinese practitioner used acupuncture and the smoke of Indian hemp to dull a person awareness of pain. Ancient hindu used henben and wine for awareness of pain. In first century the greek physician Dioscorides described the use of wine(plant mandrake) to produce a deep sleep in undergoing surgery. A American doctor Georgia physician Crawfordlong performed first operation under ether anesthesia in 1842.

Definition

Reversible loss of sensation with or without loss of consciousness is anesthesia.

Types of anesthesia

1.Regional anesthesia
To reduce all painful sensation in one region of the body without inducing unconsciousness.

Following types

A. Topical anesthesia-

- 4% of lignocaine for conjunctival and corneal surgery
- Topical spray or patches of lignocaine for sport's injury
- Urethral jelly for placing catheter
- Pharyngeal spray for placing endotracheal tube and bronchoscopy

B. NERVE BLOCK-

In this nerve supplies sensory twig to the operating field is blocked by anesthesia like

- intercostals nerve block
- maxillary and mandibular nerve block is done for upper and lower dental surgery

C. Infiltration anesthesia- In this local anesthetic solution is injected subcutaneously beneath the skin for

-polyp

- dermoid cyst

- lipoma excision

D. Spinal anesthesia- Anesthetic agent is injected in subarachnoid space and that part of the body get anesthetized. It should be done at L2,3-L3,4 interspace. Spinal anesthesia is used for operation on the lower limb,pelvis,lower abdomen,caeserian section,prostectomy and fracture setting.

Advantages

1. It is safer
2. Produce good analgesia and muscle relaxation without loss of consciousness
3. Operative hemorrhage is less due to overall fall in blood pressure

Disadvantages

1. Persistent headache is due to fibrosis in subarachnoid space
2. Fall of blood pressure is due to paralysis of sympathetic nervous system
3. Meningitis
4. Nausea and vomiting

Contraindication of spinal anesthesia

1. Hypotension and hypovolemia
2. Unco-operative and mentally ill patients
3. Infant and children
4. Vertebral abnormalities like kyphosis,lordosis

Epidural anesthesia

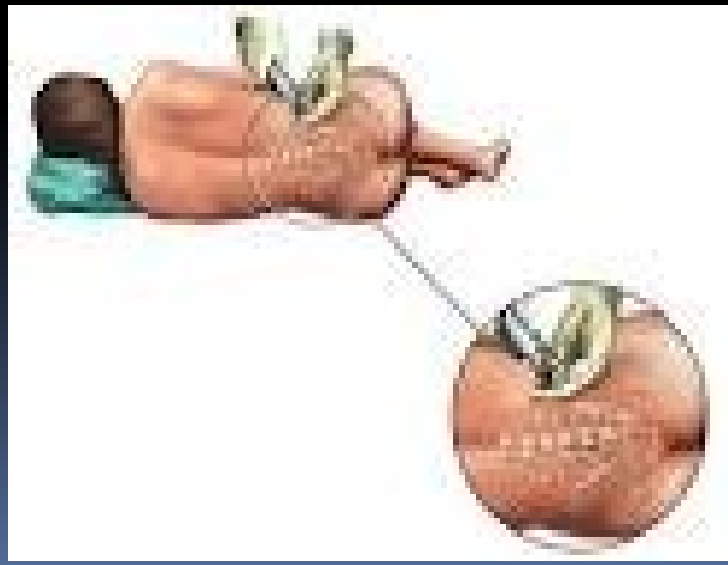
- anesthesia is given outside the duramater to block the emerging nerve.

Epidural anesthesia is given in three regions

1.Caudal region(for lower extremities)

2.Lumbar region(for pelvis)

3.Thoracic region(abdomen)



General anesthesia

stage of unconsciousness and loss of protective reflexes resulting from the administration of one or more anesthetic agents. Overall aim for this GA is

*Sleep and amnesia
*Relaxation of skeleton muscles
*Analgesia
*Abolition of reflexes

Stages of GA

1.Stage of analgesia(induction stage)- during this stage, patient progresses from analgesia without amnesia to analgesia. In this stage minor surgery canbe done.

2.Stage of excitement- In this satge loss of consciousness and delirium occurs. During this stage, respiration and HR become irregular. There may be uncontrolled movement,vomiting,breath holding and papillary dilation also occurs.

3.Surgical anesthesia- In this stage, skeleton muscles relaxes and patient's breathing become regular, eye movements slow and then stop. Surgery can be done at this stage.

4.Stage of overdose or irreversible medullary paralysis- due to much medication has given relative to amount of surgical stimulation the patient has severe brain stem or medullary depression. In this stage patient go into coma.

Indication of GA

- Major surgeries like cholecystectomy
- Appendectomy
- caeserian section
- hernia
- renal stones
- various abdominal surgeries.

Contraindications

-Hypertensive patients
-IHD
-MI
-Hyperthyroidism
-Intracranial tension
-Psychotic disorders

Complication of GA

*Laryngeal spasm and asphyxia
*Hypotension
*Cardiac arrhythmias
*Respiratory depression
*Convulsion
*Salivation and respiratory secretions
*Fire and explosion

Pre-anesthetic medication before GA

To use of drug before GA to make it more pleasant and safe.

The aims are

*Relief anxiety and facilitate smooth induction

*Amnesia for pre and post operative events

*Supplement analgesic action of anesthetic and to potentiate them so that less anesthetic agents needed.

*Decreased secretions and vagal stimulation caused by anesthetics.

*Decrease acidity and volume of gastric juice.

Preanesthetic drugs-

1.Opoids-morphine 10 mg or pethidine 50-100mg im

A.Remove anxiety

B.Pre and post- operative analgesia

2.Sedatives(antianxiety drugs)- BZPs groups(diazepam 5-10mg oral, lorazepam 2 mg im)

3.Anticholinergics- atropine and hyoscine 0.6mg im or iv

4.H2 blockers- to prevent gastric regurgitation and prevent stress ulcers. Ranitidine 150mg oral bd or femotidine 20mg bd

5.Antiemetic drugs like domeperidone,metoclopromide,ondansetron is effective for post-operative vomiting.

Anesthetic agents

*Local anesthetic agents

1.Procaine- first synthetic local anesthetic introduce in 1905, Practically not used now.

2.Lignocaine- introduced in 1948 currently most widely used LA. It is versatile LA good both for surface application(jelly) as well as injection. Injection around nerve blocks conduction within 3 minutes.

3.Dibucaine(cinchocaine)- most potent, most toxic and longest acting LA. It is used as a surface anesthetic on less delicate mucous membranes(anal canal) occasionally for spinal anesthesia. It's duration of anesthesia is 120 minutes.

General anesthetic agents

Inhalation-nitrous oxide(gas)

Liquid- ether

Halothane

Influrane

Isoflurane

Desflurane

Intravenous- thiopentone sodium
Propofol

Thiopentone sodium- ultra-short acting barbiturate highly soluble in water injected iv as 2.5% solution. It produce unconsciousness within 15 to 20 sec. It is poor analgesic and weak muscle relaxant. It does not irritate air passage. Large dose of thiopentone causes severe BP fall.

It is due to vasodilation but recover rapidly.

Cardiovascular collapse may occur if hypovolemia,sepsis or shock present.

Dose-3-5 mg/kg

Adverse effects

*Laryngeospasm

*Restlessness

*Hypotension

Propofol- oily liquid used 1% emulsion for iv induction. It is for short duration anesthesia. Unconsciousness occurs after 15-45 sec. And last in approx. 10 min. it does not cause airway irritation. Hypotension is due to vasodilation,bradycardia is also frequent.

Dose- 2mg/kg

Thank

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