UNIT-X

Introduction To Drugs Used In Anesthetics

Anesthesia is insensitivity to pain, especially as artificially induce by the administration of gases or drugs before a surgical operation.

General Anesthesia
General anesthesia is a total unconsciousness of the body achieved by the drugs that affects the whole body. It is used for major surgical operations.

Local Anesthesia
Anesthesia that affects a limited area of the body and is used for minor surgical operations e.g. dental procedures.

For patients undergoing surgical and other medical procedures, anesthesia provides these five important benefits…

1. **Sedation And Reduction Of Anxiety**
2. **Lack Of Awareness And Amnesia**
3. **Skeletal Muscle Relaxation**
4. **Suppression Of Undesirable Reflexes**
5. **Analgesia**

Stages Of Anesthesia

Anesthetic drug effects can be divided into four stages of increasing depth of central nervous system depression.

1. **Stage Of Analgesia**
2. **Stage Of Excitement**
3. **Stage Of Surgical Anesthesia**
4. **Stage Of Medullary Depression**

Drugs Used In Anesthetics

General Anesthetics
Inhaled (Halothane) and **Intravenous (**Benzodiazepines)

Local Anesthetics
➔Lidocaine

Halothane (General Anesthetics, Inhaled)

Mechanism Of Action

No specific receptor has been identified as the locus of general anesthetic action. General anesthetics increase the sensitivity of the GABA receptors at clinically effective concentrations of the drug. This causes a prolongation of the inhibitory chloride ion current after a pulse of GABA release. Postsynaptic neuronal excitability is, thus, diminished.

Halothane induces the anesthetic state rapidly, and quick recovery made it an anesthetic of choice.

Therapeutic Uses

Halothane is a potent anesthetic but a relatively weak analgesic. It is a potent bronchodilator. Halothane relaxes both skeletal and uterine muscle.

Pharmacokinetics

Halothane is oxidatively metabolized in the body to tissue. Halothane anesthesia is not repeated at intervals of less than 2 to 3 weeks.

Adverse Effects

Bradycardia, Malignant hyperthermia, Isoflurane, Desflurane, Sevoflurane

Benzodiazepines (General Anesthetics, Intravenous)

IV anesthetics cause the rapid induction of anesthesia. This is often described as occurring within one "arm-brain circulation time or the time it takes the drug to travel from the site of injection (usually the arm) to the brain, where it has its effect. Anesthesia may then be maintained with an appropriate inhalation agent.

(for detail, see in Anxiolytic And Hypnotic Drugs)

Lidocaine (Local Anesthetics)

Pharmacokinetics

Local anesthetics are usually administered by injection into dermis and soft tissues located in the area of nerves. Thus, absorption and distribution are not as important in controlling the onset of effect. Local anesthetics abolish sensation and, in higher concentrations, motor activity in a limited area of the body.

Mechanism Of Action

The primary mechanism of action of local anesthetics is blockade of voltage-gated sodium channels.

Therapeutic Uses

Lidocaine is probably the most commonly used. Local anesthetics cause vasodilatation, which leads to rapid diffusion away from the site of action and results in a short duration of action when these drugs are administered alone. By adding the vasoconstrictor epinephrine to the local anesthetic, the rate of local anesthetic diffusion and absorption is decreased. This both minimizes systemic toxicity and increases the duration of action.

Adverse Effects

Neural toxicity, allergic reactions, depresses cardiac pacemaker activity, excitability, and conduction.