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Lecture title: CNS Drugs

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CNS Stimulants

Methylxanthines derivatives

Types

Caffeine, Theophylline and Aminophlline.

Mechanism of action

Antagonism of adenosine receptors in the brain leading to CNS stimulation.

Pharmacological effects

1. Stimulates CNS, decrease fatigue and increases motor activity.

2. Stimulate the heart and causes vasodilation.

3. Relaxation of smooth muscle therefore theophylline is used in asthma.

4. Diuretic effect through increasing renal blood flow.

5. Stimulation of gastric acid secretion.

Amphetamine

Mechanism of action

It increases the release of Norepinephrine and Dopamine from the nerve endings leading to CNS stimulation.

Medullary Stimulants

Doxapram

Mechanism of action

It stimulates the respiratory center in the medulla and causes respiratory stimulation.

Clinical uses

1. Antagonizes the respiratory depressant action of Barbiturates.

2. Antagonizes the sedative action of xylazine.

Pentylenetetrazole

It is a respiratory stimulant. It increases respiration. High doses produce convulsion and it is used as respiratory stimulant.

4-aminopyridine

It is used as respiratory stimulant and antagonizes the sedative effect of xylazine.

Nikethamide

It is a short acting respiratory stimulant.

Spinal Cord Stimulants

Strychnine

Mechanism of action

Antagonizes glycine receptors in the spinal cord.

Indications

1. Improves appetite in very small quantity.

2. Used as tonic.

3. Kill the stray dogs.

Anesthetics

Anesthetics are drugs that used to induce anesthesia in whole body (general anesthetics) or local area of the body (local anesthetics). It is divided into:

1. General Anesthetics

A. Inhalational Anesthetics

B. Injectable Anesthetics

2. Local Anesthetics

1. General Anesthetics

Drugs used to induce general anesthesia which is characterized by loss of sensation that achieved by reversible depression of the brain.

Clinical characteristics of general anesthesia:

1. Loss of sensation.

2. Unconsciousness.

3. Muscle relaxation.

4. Inhibition of reflexes.

Ideal anesthetics:

1. Nonirritant and without bad odor.
2. Potent with smooth induction and recovery.
3. Wide margin of safety.
4. Good muscle relaxation.
5. Does not damage the CNS with minimal side effects.
6. Inexpensive and non-explosive.
7. Ease of administration.