Anaesthesiology

Phenothiazine derivatives

By

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Tranquilizers

- Primary uses is to relieve anxiety
- As pre-anesthetic sedative
- To restrain the animals during examination or large animals during transport
- To prevent animals from licking would or chewing bandages and splints
- Used as an antiemetic

Tranquilizers commonly used in veterinary practice are

(i)Phenothiazine derivative

(ii) Benzoidiazepines

(iii) Butyrophenone.

Phenothiazine derivatives include:

(i) Chlorpromazine hydrochloride
(ii) Trifluprомazine hydrochloride
(iii) Promethazine hydrochloride
(iv) Propiopromazine hydrochloride
(v) Acetyl promazine
(vi) Promazine

Acetyl Promazine is most commonly used phenothiazine derivatives in small animals, horse and wild animals.

Effect of phenothiazine derivatives on different systems

CNS effect:

Phenothiazine derivatives produce CNS depression by affecting several part of brain like hypothalamus, basal ganglia, Limbic system, brain stem and reticular activating system.

Block dopamine, alpha 1-adenergic and serotonergic receptor

They produce peripheral anticholinergic, antiadrenergic and antigangliotic activities.

Cardiovascular effects:

- Phenothiazine derivatives produce hypotension.
- Hypotension may cause a reflex sinus tachycardia in patients receiving a thenothiazine derivative.
- They inhibit myocardial sensitization to catecholamines.
- Hypotension produced is somewhat dose independent and is due to α_1 adrenergic blockade and direct vasodilation action.
- They produce a (-) ve inotropic effect.

Respiratory effect:

- At therapeutic dose, the phenothiazine derivatives produce negligible respiratory effect.
- They may cause a decrease in respiratory rate, but this is usually compensated for by an increase in tidal volume, resulting in a normal minute ventilation.
- Large dose can depress respiration.
- Respiratory depression occurs when used in combination with hypnotics or narcotics. This respiratory depression is due to an additive effect.

Other Physical effect:

- The phenothiazine derivatives produce some skeletal muscle relaxant activity.
- They cause delayed gastric emptying.
- Decreases in PCV and total plasma proteins and increases in plasma volume due to hypotension and subsequent shifts of extra vascular H_2O into the vascular space.
- Phenothiazine caused reduction in body temp.

Advantage

They may help prevent cardiac arrhythmias

Disadvantage

Persistent paraphimosis and priapism may occur in large male animals following administration of phenothiazine agent.

Chlorpromazine

Chlorpromazine used extensively for premedication in dogs.

Dog/Cat	=	0.5 to 1 mg/kg B.W. I/M or I/V
Cattle	=	0.5 to 1 mg/kg B.W. I/M
Sheep/Goat	=	1 to 1.5 mg/kg B.W. I/M

Trifluprомazine hydrochloride:

Trifluprомazine hydrochloride has about 10 times antiemetic effect than chlorpromazine and 3-5 times the frazquilizing potency.

Dog = 1 to 2 mg/kg B.W. I/V, 2 to 3 mg/kg B.W. I/M

Cat = 3 to 5 mg/kg B.W.I/M

Cattle = 0.1 to 0.2 mg/kg B.W. I/V or I/M