

GENERAL ANESTHESIA I

Parenteral Anesthetics

1- Propofol (Diprivan® , Pofol®): Short-acting, intravenous general anesthetic commonly used in induction of general anesthesia. Continuous infusion of anesthesia can be maintained. In 1986, it entered anesthesia practice. In non-premedicated patients, arterial pressure decreases and bradycardia develops after anesthesia with propofol. Prolonged injection of propofol, which can only be used intravenously, may cause long-term respiratory depression. Therefore, injection should be performed slowly and respiratory support equipment (endotracheal tube, ambu bag, etc.) should be available in case of respiratory arrest. In dogs and cats without premedication, anesthesia induction dose is 6-7 mg / kg. When combined with Acepromazine (0.02-0.04 mg / kg), the dose of propofol is reduced by 30% in dogs. Recovery, 20 minutes after injection. When anesthesia is desired to be continued, an additional dose of half the induction dose is administered or infusion is given at a dose of 0.4 mg / kg / min. In premedicated dogs, the infusion dose is 0.8 mg / kg / min. The maintenance dose for cat is 0.19 mg / kg / min. Horses: followed by 0.5 mg / kg xylazine premedication, i.v propofol injection 2 mg / kg for induction, followed by an infusion rate of 0.2 mg / kg / min.

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2- Chloralhydrate: 5-10% solutions are used. Dose in horse: 8-10 g / 100kg 5-10% sol. i.v, 10 g / 100 Kg 2.5% sol. per os, 16 g / 100 Kg 2.5-3% sol. per rectal way. Cattle dose: Same as horse dose.

Barbiturates

Very short acting barbiturates provide fast and comfortable anesthesia induction. Therefore, their use as a basic anesthetic is limited to small surgical procedures that are short, do not require muscle relaxation, and do not involve organs in large body cavities and especially the abdomen.

- a) Thiopental sodium (Pentothal®): The hypnotic effect is strong and anesthesia occurs rapidly within 20-30 seconds following intravenous injection. Like inhalation anesthetics, very short-acting barbiturates block the reticular activating system in the brain stem and provide alertness, causing loss of consciousness. Although 2.5-5% solutions are used according to the animal species and size, its widespread use is 2.5% solution. For continuous administration in humans, it is given by IV drops of 0.4%. For induction of anesthesia, the initial is administered in the form of fast drops and the speed of the drops for maintenance

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is slowed down. For intermittent applications, a diluted solution of 2-2.5% is used. Denser solutions are irritating to veins and tissues. After an iv test dose of 25-75 mg administered by administration of 1-3 ml of a 2.5% solution, induction of iv anesthesia is achieved by slow injection over a period of 30-45 seconds. If the patient will be intubated; intubation is facilitated by a muscle relaxant applied iv. The continuation of anesthesia is maintained by volatile liquid and gas anesthetics.

Indications:

- 1-In the induction of anesthesia, before the administration of other anesthetics,
- 2- In addition to regional anesthesia,
- 3- Control of convulsive conditions during and after inhalation anesthesia, local anesthesia and other reasons.
- 4- In narco-analysis and electroconvulsive treatment in psychiatry in humans.

Advantages:

- 1- Anesthesia induction is fast and comfortable.
- 2- Used for maintenance of anesthesia.
- 3- It does not cause secretion.
- 4- No vomiting effects.

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5- Does not sensitize the autonomic tissues of the heart to catecholamines.

Disadvantages

1- May cause respiratory depression and apnea.

2- Analgesic effects are minimal.

3- Muscle relaxation is weak.

4- It increases the risk of laryngospasm.

5- Cardiovascular depression occurs especially in hypovolemic and weak animals.

6- Tremors may occur

7- Parasympathomimetic.

8- They do not have antagonists. Once given, the effect cannot be reversed.

Dose: Horse: 10 mg / kg iv and is given with 0.03-0.04 mg / kg acepromazine. If premedication is given 1 mg / kg Xylazine or 15-20 mcg / kg detomidine before induction, the dose decreases to 5.5mg / kg. After 20-25 seconds, the horse lies. Cattle: 11 mg / kg iv and if xylazine premedication is done, 5-6 mg / kg dose is sufficient. Sheep-Goat: 10 mg / kg iv but; apnea is often observed. Endotracheal intubation is required. Dog: 7-10 mg / kg iv., Maximum total dose 25 mg / kg iv. Cat: It is used iv in doses up to 10 mg / kg from a solution of 1.25%.

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- b- Thiomytal sodium (Surital) It is similar to pentothal in terms of pharmacological effects and is generally defined together. 2% solution is equivalent to 2.5% pentothal. Cumulative effect is less. It is widely used in America.
- c- Methohexiton Sodium-Methohexital (Brevital): Fast-acting and very short-lasting barbiturate group and differs from others in its absence of sulfur. It has similar pharmacological properties with thiopental and other barbiturates. Methohexiton's 1% solutions (10 mg / ml) are 2.5 times stronger than thiobarbiturates, and the patient's recovery is faster. Dose: Horse: Xylazine (Rompun) 1 mg / kg iv or detomidine 15 mcg / kg iv premedication 4-5 minutes. then 2.8 mg / kg iv. Anesthesia lasts for 5 minutes and the horse stands up after 25 minutes. Cattle: Recovery is much faster than thiopental. The dose is the same as in horses, or 2.5 g iv total dose. It is 1 mg / kg iv in young people. Sheep-Goat: 2.5% sol. 4 mg / kg iv dose creates anesthesia in 5-7 minutes. The dog will stand up in 10-14 minutes. Dog: 4-6 mg / kg iv 1% or 2 left. Cat: 0.5% left. 5 mg / kg iv d- Pentobarbital sodium (nembutal): Dose: Horse: Slowly 1.5 g / 50 kg iv. Cattle: 1-1.45 g / 50kg iv slowly. Sheep-Goat: 20-30 mg / kg iv. Pig: 10-25 mg / kg iv. Dog: 29-30 mg / kg iv. Cat: 20-25 mg / kg iv.

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Dissociative Anesthetics

Dissociative anesthetics have different effects compared to other known anesthetics. They do not affect the limbic and reticular system, and even stimulate the reticular system. It depresses the corticothalamic system. This leaves the animal unconscious and under analgesia. Reflexes remain largely unchanged. Briefly, since these anesthetics block the association pathways in the brain before performing sensory blockage, anesthesia created is called dissociative anesthesia.

a- Ketamine HCl: A phencyclidine derivative from arylcyloalkylamine group which is not a barbiturate derivative.

Indications:

- 1- As an induction agent for general anesthesia
- 2- Used for diagnostic purposes or alone during surgical procedures.

Contraindications:

- 1- In intraocular surgery,
- 2- Cases with high CSF pressure and cardiovascular disorders,
- 3- They are not used in hypertension.

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Advantages:

- 1- It does not irritate the veins and tissues.
- 2- Provides deep analgesia.
- 3- It weakens the laryngeal and pharyngeal reflex, but reflexes do not disappear. Therefore, the respiratory tract can be maintained without endotracheal intubation.
- 4- Muscle tone is preserved.

Disadvantages:

- 1- Increases heart rate, blood pressure and intraocular pressure.
- 2- Diplopia and nystagmus may occur.
- 3- There are no antagonists.

Dose: Horse: Xylazine (1.1mg / kg) i.v. slow administration or 20 mg / kg iv detomidine, 2 minutes later 2.2 mg / kg ketamine iv is given rapidly. Bovine: Xylazine and ketamine use provides complete anesthesia in cattle. Induction is comfortable, good muscle relaxation and anesthesia is associated with uncomplicated recovery. Xylazine is given 0.2 mg / kg im or 0.1 mg / kg iv, followed by deep sedation and sleep. Sheep: 20 mg / kg im., 4 mg / kg ketamine + 0.05 mg / kg xylazine iv or 4 mg / kg ketamine + 2 mg / kg diazepam iv. In goats: 11 mg / kg

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ketamine + 0.22 mg / kg xylazine im or 4 mg / kg ketamine + 2 mg / kg diazepam after premedication with 0.4 mg / kg atropine iv. In dog: 20-25 mg / kg im. Adverse effects similar to convulsions, it should be used in combination with various agents that produce deep sedation and mild anesthesia (e.g. xylazine, acepromazine, promazine and diazepam). Often 5.5 mg / kg ketamine or 2 mg / kg xylazine or 2.75 mg / kg promazine im combination should be preferred. Cat: 20-22 mg / kg Ketamine im. 35 mg / kg im usually less than 4 weeks old are used in combinations. E.g.: Midazolam 0.2 mg / kg +10 mg / kg ketamine im. Xylazine 1mg / kg + 22mg / kg ketamine im. xylazine 1 mg / kg + 5-10 mg / kg ketamine im combination is preferred. On the other hand; Xylazine 0.5 mg / kg + 20-25 mg / kg ketamine im combination gives more successful results. The other proposed combination is; 80 mcg / kg Medetomidine + 5 mg / kg ketamine im.