

MUSCLE RELAXANTS

What Is Meaning The Following

1. General anesthesia

2. Local anesthesia

3. Analgesia

4. Triad of anesthesia

5. Muscle relaxants



General Anesthesia

Definition

General anesthesia is the induction of a state of unconsciousness with the absence of pain sensation over the entire body, through the administration of anesthetic drugs. It is used during certain medical and surgical procedures.

The bottom of the slide features a decorative design with overlapping geometric shapes. On the left, there is a blue triangle pointing towards the center. To its right is a larger green triangle. The background of the bottom right section is a solid light blue.

Purpose Of GA

General anesthesia has many purposes including:

- Pain relief (analgesia)
- Blocking memory of the procedure (amnesia)
- Producing unconsciousness
- Inhibiting normal body reflexes to make surgery safe and easier to perform
- Relaxing the muscles of the body

Stages Of GA

- 1. Stage One: Analgesia: loss of pain**
- 2. Stage Two: Excitement: delirium**
- 3. Stage Three: Surgical Anesthesia.**
- 4. Stage Four: Medullary Paralysis.**

Local Anesthesia

Definition

Local or regional anesthesia involves the injection or application of an anesthetic drug to a specific area of the body, as opposed to the entire body and brain as occurs during general anesthesia.

The bottom of the slide features a decorative design with overlapping geometric shapes. On the left, there is a blue triangle pointing towards the bottom right. Overlapping this is a larger orange triangle pointing towards the bottom left. The right side of the slide is filled with a solid light blue color.

Purpose of LA

Local anesthetics are used to

- 1. prevent patients from feeling pain during medical, surgical, or dental procedures.**
- 2. local anesthetics are also available to provide temporary relief from pain, irritation, and itching caused by various conditions, such as cold sores, canker sores, sore throats, sunburn, insect bites, poison ivy, and minor cuts and scratches.**

Types of surgery or medical procedures that regularly make use of local or regional anesthesia include the following:

1. Biopsies in which skin or tissue samples are taken for diagnostic procedures
 2. Delivery (childbirth)
 3. Surgeries on the arms, hands, legs, or feet
 4. Eye surgery
 5. Surgeries involving the urinary tract or sexual organ
- 

Analgesia

Definition

absence of sensibility to pain, particularly the relief of pain without loss of consciousness; absence of pain or noxious stimulation.

Triad of General Anesthesia

- 1. Unconsciousness**
- 2. Analgesia**
- 3. Muscle Relaxation**



Muscle Relaxants

Muscle relaxants are a group of anesthetic adjuncts administered to improve relaxation of skeletal muscle during surgical or diagnostic procedures



The more general term muscle relaxant refers to any drug having relaxant properties and would include centrally acting agents such as :

- 1. Benzodiazepines .**
 - 2. α_2 adrenergic receptor agonists .**
 - 3. Guaifenesin .**
- 

Side Effects

No matter what kind of muscle relaxer you take, you'll experience one or more side effects. Some muscle relaxants, however, can have potentially serious side effects, like liver damage.

- Tiredness, drowsiness, or sedation effect
 - Fatigue or weakness
 - Dizziness
 - Dry mouth
 - Depression
 - Decreased blood pressure
- 

SYNTHESIS MUSCLE RELAXANTS

Benzodiazepine:

It's a spinal cord depressant that affects polysynaptic reflexes at the supra-spinal level and inhibits pre-synaptic acetylcholine release. Diazepam, a type of benzodiazepine, is used as an adjunct to anesthesia for short procedures.

DIAZEPAM (VALIUM)

It addition to treating muscle spasms, diazepam relieves symptoms of anxiety and alcohol withdrawal and is used in seizure disorders such as epilepsy. Diazepam is usually limited to one to two weeks of use. This limitation is due to its habit-forming potential and because it alters sleep cycles, leading to sleep difficulties once the drug is stopped. Patients should also realize that diazepam is a depressant and can worsen depression associated with chronic pain. Diazepam is not advised for those who are pregnant (it is rated D by the FDA for safety during pregnancy), have myasthenia gravis, severe liver disease, sleep apnea (oral tablet only), serious breathing troubles, or some forms of glaucoma. It is sold as a tablet, liquid, injection, and a rectal gel.

METHOCARBAMOL

It's a common muscle relaxer that works as a therapy for acute inflammatory and traumatic conditions of skeletal muscles, and reduces muscle spasms. Over-dosage of methocarbamol is characterized by central nervous system (CNS) depression, emesis, salivation, weakness and ataxia.



GUAIFENESIN

Also called glyceryl guaiacolate, it's a muscle relaxant that blocks the nerve impulse transmission at critical parts of the brain, brain stem and spinal cord; that works as a support when the dog is put on anesthesia for minor surgeries. Guaifenesin is used for treating strychnine intoxication in dogs and relaxes both laryngeal and pharyngeal muscles, without causing much effect on the diaphragm and respiratory function.



DANTROLENE (DANTRIUM)

- It's a hydantoin (crystalline compound) derivative that has a direct effect on the muscle, by interfering with the release of calcium from the sarcoplasmic reticulum. It has no observable effects on the respiratory and cardiac function, but may lead to dizziness and sedation. As a veterinary medicine, dantrolen is used to treat malignant hyperthermia and porcine stress syndrome in different species.
- Serious side effects are more likely in those with asthma, emphysema, bronchitis, or other lung diseases. It may cause sensitivity to light.
- Drowsiness is the most common side effect. The FDA has given dantrolen a C rating for safety in pregnancy.

Phenytoin, Diazepam, Tramadol HCL

are some other muscle relaxers meant for dogs, that can be used to cure moderate to severe muscle pain. Although they are highly effective and apparently have no side effects, it's recommended to consult a veterinarian before giving these medications to your dog.



Skeletal Muscle Relaxants

Drug	Dosage
Methocarbamol	Dogs, cats: 44 mg/kg, IV, up to 330 mg/kg/day for tetanus or strychnine poisoning; 132 mg/kg/day, PO, divided
	Horses: 4.4–5.5 mg/kg, IV
Guaifenesin	Dogs: 44–88 mg/kg, IV
	Horses, ruminants: 66–132 mg/kg, IV
Diazepam	Cats: 2–5 mg, PO, tid, for urethral obstruction
Dantrolen	Horses: 15–25 mg/kg, slow IV, qid; 2 mg/kg/day, PO, for prevention of exertional rhabdomyolysis
	Swine: 3.5 mg/kg, IV
Phenytoin	Horses: 6–8 mg/kg/day, PO, increase by 1 mg/kg every 3 days until rhabdomyolysis is prevented or the horse appears sedated
Baclofen	Dogs: 12 mg/kg, PO, tid

Natural Muscle Relaxers

1. **Massage:** Anxiety and restlessness that accompany muscle pain can be treated at home with a therapeutic massage with aroma therapy, which is very effective. While lavender is a natural home remedy for anxiety that will result into calming down your pet, the ginger-flavored therapy works as an anti-inflammatory agent.
2. **Ice:** Just like we use ice on a swollen muscle, it can be equally effective for your pet to decrease the soft tissue swelling that occurs with muscle pain.
3. **Warm Compresses:** These can be used to the same effect as caused by ice, to provide comfort, relief from pain and swelling.
4. **Valerian Root:** This is a natural herb that acts as an anti-inflammatory and relaxes spasms. It can be very effective as a pain reliever for your pet.
5. **Licorice Root:** The anti-inflammatory agents in this natural herb are beneficial for skin, liver or the immune system of your pet.
6. **Chamomile Tea:** This is an herbal tea that can be used as a muscle relaxer in combination with other herbs.
7. **White Willow Bark:** This works wonders as a muscle relaxer that provides pain relief, reduces inflammation, and can also reduce fever and act as a blood-thinner, much like an aspirin. It is often used for treating arthritis in dogs.
8. **Passiflora:** This natural herb helps in relaxing the nervous system and calms down the nerves.

Neuromuscular Blocking Agents

The term of NMBA's is a cumbersome but descriptive name that refers to the fact that this class of drugs produce their effects by action at the neuromuscular junction.



Beneficial Effects Of NMBA's

Beneficial Effects Of NMBA's administration during general anesthesia include :

- 1.Facilitation of tracheal intubation**
 - 2.Reduction of skeletal muscle tone**
 - 3.Prevention of patient movement during delicate surgery**
- 