Chapter 14 - Lesson 3

Anesthesia

Introduction

Eliminating the patient’s pain with the use of anesthetics is an essential part of humanely performing veterinary surgery. Adequate anesthesia blocks the patient’s sense of pain and permits the animal to be restrained and managed in a manner allowing efficient surgery.

Anesthesia is a controlled, reversible intoxication of the nervous system. Since any anesthetic alters the physiology of the animal, the following principles of veterinary anesthesia should always be remembered.

- Various species of animals react differently to the same anesthetic agent.
- Animals differ in size and temperament even within the same species.
- Animal species differ in anatomy as well as physiology.
- The veterinary patient must be properly restrained, physically and/or chemically, for smooth, effective, and safe anesthetic delivery.

The first consideration in anesthesiology is always the safety of the patient. No matter how spectacular the...
procedure being performed, no surgery is successful when the patient suffers an anesthetic death!

Anesthetic agents can be grouped in accordance with the part of the nervous system they affect. Local anesthetics deaden the sensory nerves in a relatively small area. General anesthetics influence the entire central nervous system and produce unconsciousness. Spinal anesthesia interrupts the function of nerves within the spinal cord.

Volatile anesthetics are administered in the air mixture the animal breathes. These inhalation agents include isoflurane and sevoflurane. Non-volatile anesthetics such as propofol, ketamine, and dexmedetomidine are injected intravenously.

The choice of anesthesia is determined by several factors:

- Anesthetic agents available for use
- The species of animal
- The size of the animal
- The location of the operation
- The extent of the operation
- The overall health condition of the animal
- The temperament of the animal
- The cost of the anesthetic agent
- Familiarity of surgeon and staff with the anesthetic agent
- Availability of trained personnel and equipment to monitor the patient under anesthesia

Not all patients require the calculated or expected dosage of anesthetic. The patient must be closely monitored during anesthetic administration. The anesthetist must be prepared to interrupt the administration of indicated anesthesia and to exceed the calculated dose, if necessary.

The stages of anesthesia:

Stage 1: Voluntary Movement
Stage 2: Involuntary Movement
Stage 3: Surgical Anesthesia
Stage 4: Paralysis

The following observations of the patient indicate the stage, or depth, of anesthesia:

1. Opposition by patient to flexing and extending the legs (stage 1)
2. Decrease and loss of reflexes (stage 2)
3. Respiration rate and depth and muscle tone (stage 3)
4. Color of blood in the surgical site (stage 4)

Learn to recognize these stages with the help of the veterinarian. Overdoses of general anesthetics cause depression, and eventual paralysis of respiration. Mild over-doses observed early can be managed with artificial respiration and other resuscitative measures.

Specific agents, combination anesthetic protocols, dose calculations, and administration methodologies should always be considered on an individual case-by-case basis by the veterinarian.

Reference


Questions

1. List two major reasons for using anesthetics during veterinary surgery.
2. List four principles to remember concerning veterinary anesthesia.
3. Identify the first consideration in anesthesiology.
4. Group anesthetics by the portion of the nervous system they affect.
5. Give an example of differential volatile and non-volatile anesthetics.
6. What observations of the animal indicate the depth of anesthesia?
7. List four stages of anesthesia.
8. If the patient’s normally bright red blood is turning dark in the surgical wound, what stage of anesthesia is the animal approaching?

Activities

1. Talk with a veterinarian about what he/she uses to induce these different physiologic states in various species.
2. Define the following:
   a. Anesthesia
   b. Sedation
   c. Analgesia