Tutorial "Anesthesiology and surgical Critical Care Medicine"

Training items katalogue

Basics of general anesthesia

- Definition of anesthesia
- Subjects of general anesthesia
- Differences between general anesthesia and regional anesthesia/blocks
- Differentiation of sedation, hypnotism and anesthesia
- Difference between analgesia and anesthesia
- Susceptibility of human cells to anesthetics
- Anesthesia phases (e.g. during inhalational induction)
- Specific and non-specific impacts of anesthetics
- Importance / meaning of inhalative anesthesia, intravenousl anesthesia (incl. total intravenous anesthesia) and balanced anesthesia
- Criteria for the advantages of a combination of different anesthesia techniques
- Pharmacokinetics of total intravenous anesthesia (TIVA)
- Sequence of action of an intravenous anesthesia induction
- Intravenous vs. inhalational anesthesia induction
- Causes and symptoms of the phases of excitation
- Clinical signs and tools for measuring the depth of anesthesia
- Reasons for blood pressure changes during anesthesia

Pharmacology of general anesthesia

Characteristics of substances used for general anesthesia:

Barbiturates
Propofol
Etomidate
Opiates
Muscle relaxants (depolarising, non-depolarising)
Inhalational anesthetics (gaseous, vaporous)

Respiration during general anesthesia

- Influence of general anesthesia on respiration
- Tools for retaining the upper airways (masks, guedel tube, endotracheal tube)
- Usage of masks and guedel tube (indications, practice, risks, contraindicatons)
- Endotracheal intubation
    - Advantages
    - Indications
    - Structure of the tube
    - Techniques
    - Positioning of the tube, position monitoring

- Anesthesia ventilation
    - Ventilation modes (assisted, manual, controlled)
    - Assembly of a ventilation machine
    - Principle of pressure controlled ventilation vs. spontaneuous breathing
    - Colour coding of gas ports
    - Function of the stickoxydul safety lock
    - Varieties of different anesthesia breathing systems (open, half-open, closed)
    - Volume controlled vs. pressure controlled ventilation modes
    - Basic setting of the ventilator

Regional Anesthesia

- Definition of regional anesthesia
- Differences between peripheral and spinal/epidural anesthesia

Preoperative Patient Management

- Aims of premedication
- Value of common screening tests (ECG, chest x-ray, blood tests)
- Pre-examinations in adults
- Factors influencing the anesthesia risc
- ASA-classification
- Urgency of surgery
- Soberness
- Principles of education of the patient
- Premedication
    - Primary aims
    - Profile of benzodiazepines
    - Application routes
    - Long-term medication

Instrumentation

- Venous access
- Structure of canulas
- Skin desinfection
- Puncture technique (direct/indirect)
- Workflow of the punction
- Complications
- Position monitoring (intra-arterial, para-vasal)
- Injection pain
- Central venous catheter
    - Insertion sites
    - Indications
    - Control of the catheter tip

Monitoring

- Clinical signs and tools for measuring the depth of anesthesia
- Reasons for blood pressure changes during anesthesia
- Intraoperative awareness
- Parameters of basic monitoring (ECG, noninvasive bloodpressure, pulse oximetry, capnography, respiratory therapy)
- Central venous pressure (CVP)
    - Definition
    - Principle
    - Interpretation
    - Influencing factors
    - CVP and ventricular compliance

Perioperative Fluid- and Volume therapy

- Basics of perioperative fluid and volume homeostasis
- Reeasons for perioperative volume deficit
- Fluid balance
- Physiology of fluid spaces
- Fluid and volume replacement
    - Cristalloids
    - Kolloids
- Isovolemic hemodilution
- Blood replacement with synthetic colloids
- Blood and volume replacemet strategies

Basics of post-operative pain therapy

- Post-operative monitoring
- Agitation, hypertension, prolonged sedation
- Dangers and intensity of postoperative pain
- Principles of post-operative pain therapy (application routes, balanced analgesia, pre-emptive analgesia)
- Characteristics of substances used for postoperative pain therapy:
    - Opiates
    - NSAID
    - Paracetamol
    - Metamizol
    - Local anesthetics
- Principle of patient controlled analgesia

Intenive Care Medicine

- Blood pressure stability
    - Influencing physiological variables
    - Diagnostic tools
    - Therapeutic tools

- Respiratory Insufficiency
    - Clinical signs
    - Ethiology
    - Difference between oxygenation and ventilation, partial and global insufficiency
    - Therapeutic tools
- Enteral and parenteral nutrition
- Analgesia and sedation
    - Principles
    - Indications
    - Drugs
    - Risks and scores