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, intravenous 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, contraindications)
- 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. spontaneous 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 blood pressure, 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
- Reasons 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 replacement 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

Intensive 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