

Anesthesiology and Intensive care syllabus - Konspekt

1. Anesthesiology and intensive care as a science – basic principles, essential problems and tasks. Basic tasks of the anesthesiologist in the OR.
2. Hemodynamic, respiratory, neurological and temperature monitoring in OR and ICU.
3. Tissue oxygen delivery, oxygen requirements and oxygen consumption. Critical condition concept. Indications and contraindications for intensive care.
4. Definition of anesthesia. Classification. General anesthesia – definition, components, types. Mechanism of general anesthesia. Stages of general anesthesia. Effects of the general anesthetic on the central nervous system.
5. Anesthesia workstation and anesthesia breathing systems – basic components.
6. Preoperative patient assessment and management. Preoperative anesthesia risk assessment. Anesthesia plan and choice of anesthetic technique.
7. Preoperative patient assessment and management. Premedication – definition, types, goals, pharmacological agents.
8. Preoperative evaluation and preparation for patients with co-existing diseases – ischemic heart disease, valvular heart diseases, arterial hypertension, coagulation disorders, COPD, diabetes mellitus.
9. Anesthetic management of patients with “full stomach”. Aspiration syndrome.
10. Definition of general inhalational anesthesia. Inhalation anesthetic agents - anesthetic gases and volatile anesthetics. Pharmacokinetics and pharmacodynamics of the contemporary inhalational anesthetics- nitrous oxide, isoflurane, sevoflurane, desflurane.
11. Inhalational anesthesia techniques. Face mask general anesthesia – techniques, indications, contraindications. Endotracheal anesthesia – indications, techniques, equipment and pharmacologic agents.
12. Physiology of neuromuscular transmission. Neuromuscular blocking agents – definition, classification and mechanisms of action. Reversal of the neuromuscular blockade.
13. Induction of general anesthesia - definition, techniques, pharmacological agents., advantages and disadvantages.
14. Maintenance of general anesthesia and patient monitoring.
15. Emergence from general anesthesia - phases. Criteria for discharge from the OR.
16. Basic techniques and equipment for airway management. Management of difficult airways. Mechanical ventilation-basic principles, types, indications, monitoring and complications.
17. Intravenous Anesthesia - definition. Advantages and disadvantages. Intravenous anesthetics. Pharmacokinetics and pharmacodynamics of intravenous anesthetics. Intravenous anesthesia techniques. Modern multicomponent balanced intravenous anesthesia.
18. Locoregional anesthesia – definition, classification, indications and contraindications. Pharmacology of the local anesthetics – classification, pharmacodynamics and pharmacokinetics. Systemic toxicity of the local anesthetics – clinical picture, treatment.
19. Epidural and spinal anesthesia – definition, comparative characteristics, advantages and disadvantages. Indications and contraindications. Performance technique. Complications – prophylaxis and treatment.

20. Locoregional anesthesia. Peripheral nerve blocks. Upper extremity nerve blocks – performance technique of axillary brachial plexus nerve block. Complications of peripheral nerve blocks – prophylaxis and treatment.
21. Ambulatory anesthesia – characteristics, special requirements, choice of anesthetic agents and techniques. Criteria for discharge. Anesthesia for invasive diagnostic and therapeutic procedures.
22. Balance of the internal environment of the organism. Fluid-electrolyte balance. Basic concepts - osmolarity, osmolality, tonicity. Distribution of body water in the compartments of the body.
23. Disturbances of the metabolism of sodium, potassium, calcium, magnesium and phosphorus and their treatment.
24. Acid-base balance. Basic concepts and definitions of acids and bases. Hydrogen exponent. Conjugated pairs and buffers.
25. Definition, classification, mechanisms, criteria for diagnosis and treatment of acidosis.
26. Definition, classification, mechanisms, criteria for diagnosis and treatment of alkalosis.
27. Nutritional and metabolic support in the critically ill patients. Malnutrition in critically ill - definition, pathogenesis, significance, diagnosis and treatment.
28. Basic principles of nutritional and metabolic support in critically ill patients. Parenteral, enteral and mixed nutrition - definition, indications, contraindications, techniques, formulas, monitoring and complications.
29. Circulatory shock - definition, classification, etiology and pathogenesis, stages of evolution, clinical presentation, criteria for diagnosis - hypovolemic, cardiogenic, obstructive and distributive shock.
30. Circulatory shock – principles of treatment. Purpose, tasks and means of treatment of circulatory shock. Principles of fluid infusion, vasopressor and inotropic therapy.
31. Hemorrhagic shock – definition, etiology, pathogenesis, clinical presentation, patient monitoring, principles of treatment.
32. Transfusion therapy - indications, risks and iatrogenic events.
33. Cardiogenic shock – definition, etiology, pathogenesis, clinical presentation, patient monitoring, principles of treatment.
34. Sepsis and Septic Shock. Basic concepts and definition. Multiple-Organ Failure Syndrome Classification. Etiology and pathogenesis. Rating scales. Diagnostic criteria. Clinical presentation, patient monitoring.
35. Sepsis and Septic Shock- principles of treatment.
36. Acute respiratory failure - definition, classification, etiology, pathogenesis, clinical picture, diagnosis and monitoring, principles of treatment.
37. Acute Respiratory Distress Syndrome in adults (ARDS) - definition, etiology, pathogenesis, phases of evolution, criteria for diagnosis, patient monitoring, clinical presentation and treatment.
38. Multiple trauma – definition, pathogenesis, strategies and phases of treatment. Principles of prehospital and advanced trauma life support (ATLS). Triage. Damage control resuscitation – basic principles.
39. Chest trauma – classification, pathogenesis, initial assessment and resuscitation. Diagnosis and treatment of life-threatening complications – tension pneumothorax, open pneumothorax, cardiac tamponade, massive hemothorax, flail chest.
40. Severe Traumatic Brain Injury – definition, etiology, pathogenesis, assessment scales, patient monitoring. Treatment - basic principles of management of intracranial hypertension.
41. Preeclampsia and eclampsia – etiology, pathogenesis and treatment.

42. Acute kidney injury – definition, classification, etiology, pathogenesis, diagnostic criteria, principles of treatment.
43. Acute liver failure – definition, classification, etiology, pathogenesis, diagnostic criteria, principles of treatment.
44. Acute CNS disorders. Specifics of the diagnostic and treatment process in coma, traumatic brain injuries and cerebrovascular accidents. Management of intracranial hypertension – basic principles. Brain death. Intensive care for organ and tissue donors.
45. Clinical death, cardiac arrest – definition, signs, symptoms, time limits. Indications and contraindications for cardiopulmonary resuscitation. Basic and advanced life support – techniques for airway management, mechanical ventilation and extra thoracic compressions of the heart.
46. CPR algorithm in asystole, pulseless electrical activity, pulseless ventricular tachycardia, ventricular fibrillation
47. Pharmacological treatment in cardiopulmonary resuscitation. Electrical therapy. Post resuscitation syndrome treatment.

Bibliography

Textbooks:

1. Sikka P., Beaman Sh., Street A. Basic Clinical Anesthesia. Springer, 2015. ISBN: 1493917366
2. Barash P., Cullen B., Stoelting R. Clinical Anesthesia Fundamentals, 1st ed. LWW, 2015. ISBN: 978-1451194371
3. Pardo M., Miller R. Basics of Anesthesia, 7th ed. Elsevier, 2017. ISBN: 978-0323401159
4. Butterworth J., Mackey D., Wasnick J. Morgan and Mikhail's Clinical Anesthesiology, 6th ed. McGraw-Hill Education, 2018. ISBN: 978-1259834424
5. Marino P. Marino's ICU Book, 4th ed. LWW, 2013. ISBN: 978-1451121186
6. Parrillo, Joseph E., Dellinger, R. Phillip. Critical Care Medicine: Principles of Diagnosis and Management in the Adult, 5th ed. Elsevier, 2019. ISBN: 978-0323446761
7. Mitchell P. Fink, Jean-Louis Vincent, Frederick A. Moore. Textbook of Critical Care 7th ed. Elsevier, 2017. ISBN: 978-0323376389

Handbooks:

1. Keith Allman, Iain Wilson, and Aidan O'Donnell. Oxford Handbook of Anaesthesia, 4th ed. Oxford University Press, 2016. ISBN: 978-0198719410
2. Mervyn Singer, Andrew Webb. Oxford Handbook of Critical Care Anaesthesia, 3rd ed. Oxford University Press, 2009. ISBN: 978-0199235339

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