UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE

Study program: Integrated Academic Studies in Medicine

Course title: Clinical Toxicology

Teacher: Velibor M. Vasović, Vesna M. Mijatović Jovin, Isidora N. Samojlik

Course status: elective

ECTS Credits: 3

Condition: -

Course aim

The main objective of training in clinical toxicology is to introduce students with ways of intoxication, basic physical and chemical properties of venoms, toxicokinetics and toxicodynamics of poisons, prevention and treatment of acute and chronic poisoning. Development of critical thinking and scientific research.

Expected outcome of the course

Students gain knowledge about the basic properties of venoms, methods of intoxication, interaction between the toxin and organism, basic measures aimed at prevention and treatment of poisoned patients. Students gain skills in this field: resuscitation of patients with acute poisoning, preventing penetration of toxins into the body, natural and artificial methods of detoxification, symptomatic treatment and antidote therapy.

Course description

Theoretical education

Toxicology - brief historical review, importance of toxicology today, definition of poison, chemical compounds and toxicity, exposure to toxins and routes of entry. Absorption, distribution, metabolism, excretion of toxins. Types of poisoning, toxic and lethal doses, accumulation of toxins, adoptation to poisons, factors that influence toxicity. Toxicity mechanisms. Genotoxicity. Carcinogenesis. Acute poisoning with drugs used in the treatment of mental and nervous disorders and poisoning with neurotoxins. Acute poisoning with drugs used in the treatment of cardiovascular diseases and cardiotoxins. Acute poisoning with drugs used in the treatment of respiratory, gastrointestinal and endocrine diseases. Acute poisoning with drugs and toxins used in hematological diseases, diseases of blood-forming organs, metabolic diseases, immunediseases, infectious and parasitic diseases. Effects of poisons and drugs on the reproductive system and skin. Acute poisoning by opiates and drugs, acute intoxication with drugs used in the treatment of musculo-skeletal, connective tissue diseases. Pesticide poisoning - terminology, general characteristics and measures of protection, classification of pesticides, biological experiments examining residue contamination of food through packaging. Ethanol, methanol, trichlorethylene, benzene, chloroform, phenol, aniline, carbon disulfide, cyanides. Carbon monoxide poisoning, carbon dioxide, hydrogen sulfide, sulfur dioxide, chlorine, nitrogen, oxides, ozone. Poisoning with acids and alkalis, heavy metal poisoning.

Practical education

CPR - cardiopulmonary resuscitation of patients with acute poisoning. Airway management (deflexion, triple grip, placement of the oropharyngeal tube, cleaning the airway manually or by aspiration, placing the patient in coma position, *Heimlich* maneuver, orotracheal intubation. Mechanical ventilation (mouth-to-mouth, mouth-to- nose, mouth-to- mask, Ambu balloon, mobile respirator. Artificial circulation methods (cardiac massage, defibrillator in cardiac arrest, CPR techniques – one rescuer, two rescuers CPR, CPR in children with acute poisoning, practicing techniques of peripheral and central venous lines. Medications in resuscitation of patients with acute intoxication. Prevention of toxin's through the mouth - inducing vomiting, nasogastric suction, charcoal treatment, laxative treatment. Natural detoxification - forced diuresis, forced ventilation, hyperbaric oxygenation. Artificial detoxification - peritoneal dialysis, hemodialysis, hemoperfusion, plasmapheresis. Prevention of toxin entry through breathing, skin, iatrogenic means, adequate detoxification methods. Antidote therapy in acutely and chronic intoxication. Symptomatic and infusion therapy in acute and chronic intoxication. Diagnosis of poisoning - medical history, clinical and laboratory algorithms. Toxicology databases and importance of forensic toxicology.

Literature

Compulsory

1. True BV, Dreisbach RH. Dreisbach's Handbook of Poisoning: Prevention, Diagnosis and Treatment, CRC Press; 13th ed, 2001.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	-

Practices	30	Oral	50
Colloquium	-	.....	
Essay	2x5		