UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Contrast Media and Radiopharmaceutical

1920-2-H4102D014-H4102D043M

Aims

- The aim of the course is to provide students with the To provide students with the basic principles of general pharmacology and the mechanism of action of some of the major drugs

- Student shoul also learn the basic regulatory and pharmacological aspects of drug used in diagnostic, describe the different class of drugs used in Radiology or Nuclear Medicine; learn the fundamental properties of pharmacokinetic, pharmacodynamics, safety and efficacy of drug used in diagnostic and in particular of CT radiological contrast media

Contents

The fundamental concepts of the principles of pharmacokinetics (fate of drugs in the body) and of pharmacodynamics (molecular targets of drugs); signs of drug-receptor interaction and pharmacological response variability; classification of adverse drug reactions.

The aim of the course is also to provide students with the basic principles of drugs used in diagnostic medicine and the basic principles of *Anesthesiology and* of resuscitation and first aid techniques

Detailed program

Introduction: discovery and drug development; study of drugs. Preclinical phase. Clinical research. Pharmacovigilance.

Pharmacokinetics: routes of drug administration; mechanisms of drug absorption; drug distribution and transport; biotransformation of drugs; elimination: main (renal-biliary) and secondary routes; individual variability of the

pharmacological response (age, gender, ethnicity, conditions and pathologies of patients).

Pharmacodynamics: the different types of receptors: membrane and intracellular receptors; characteristics of the drug-receptor interaction; agonists and antagonists; dose-response relationship; therapeutic index, therapeutic window.

Adverse drug reactions: hypersensitivity, idiosyncrasy, allergy. Iatrogenic diseases.

Drug interactions: synergy, additivity, antagonism, indifference

The autonomic nervous system and the main pharmacological intervention sites: adrenergic and cholinergic transmission

Introduction to drugs used in diagnostic; general classification of medicinal used in Nuclear Medicine or Radiology. Basic pharmacokinetics and pharmacodynamics requirements of drugs used in diagnostic; CT contrast media: classification; fundamental of physic and biology of the signal; safety and interaction with concomitant treatment of CT contrast media; Summary of Product Characteristics of CT contrast media.

Causes and overview of shock states, acute respiratory failure, acute alteration of states of consciousness. Resuscitation Techniques and Basic First Aid Principles (alert the rescue system, implement first aid interventions, and acquire practical intervention skills). Mechanisms of local anesthetic actions, general anesthesia / sedo-analgesia

Prerequisites

Biomedical Sciences

Teaching form

Lectures, exercises

Textbook and teaching resource

Cella, Di Giulio, Gorio, Scaglione, Farmacologia generale e speciale per le lauree sanitarie triennali, ED Piccin

Slide presented during the course

Semester

Second semester

Assessment method

Written and oral exam.

The written test will consist of a single task for the Pharmacology and Anesthesiology modules. 33 multiple choice questions (5 answers each, only one is correct) will be administered, divided proportionally to the credits: 22 on topics related to Pharmacology and 11 of Anesthesiology. For some quizzes, a brief analysis will be required (like open question).

The oral test will focus on main issues presented and discussed with students during the course

For the evaluation of the written and oral test, the following criteria will be taken into account:

- correct answers

- answer relevance and completeness to the questions

Office hours

By appointment required by mail