UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Fondamental of in Vivo Diagnostic Agents

2627-2-I0303D034-I0303D083M

Aims

The course aims to provide students with the basic principles of general pharmacology and the mechanism of action of medicines for diagnostic use with particular reference to radiopharmaceuticals and iodinated contrast agents. Students will have to learn the regulatory and pharmacological bases of medicines for diagnostic use, describe the different classes of diagnostic medicines used in Radiology and Nuclear Medicine, the pharmacokinetic properties, the mechanism of action and safety with particular reference to CT contrast agents .

Contents

Basic principles of pharmacology and regulatory requirements of diagnostic medicinal products in general with a more detailed description of iodinated contrast agents

Detailed program

Introduction: introduction to medicines for diagnostic use, regulatory aspects, general framework, introduction to contrast agents and radiopharmaceuticals and to diagnostic medicines used in myocardial perfusion tests.
Pharmacokinetics and chemical structure: nephrotropic iodinated contrast agents, chemical structure, chemical-physical properties (osmolarity and viscosity), classification, pharmacokinetic properties: compartments and half-life of distribution and excretion, protein binding, in vivo stability. Infuser management and infusion speed and acquisition times for vessel imaging.
Pharmacodynamics: physical-diagnostic mechanism of action of iodinated contrast agents, definition of dosage by type of examination.
Adverse reactions to iodinated contrast agents: classification, frequency and identification of patients at risk; procedures, medicines and devices for risk mitigation.

Drug interactions: interactions between iodinated contrast agents and drugs, interference of contrast agents in blood chemistry tests

Prerequisites

Biomedical Sciences

Teaching form

The frontal lessons will be held in mixed mode in presence with occasional remote sessions (synchronous mode): the majority of the lessons will be held in delivery mode with a part in interactive mode. In the context of interactive lessons, the Wooclap platform will be used. This tool offers various features, such as polls, quizzes and real-time discussions, in order to make lessons more engaging and participatory for students and encourage active interaction during teaching sessions, allowing students to receive immediate feedback on their learning. In addition, audiovisual materials will be used, which constitute a valid support to facilitate the understanding and memorization of the concepts covered. The integration of these tools aims to make the learning process more dynamic and accessible for students.

Textbook and teaching resource

Lecture slides, scientific society guidelines on the presence and management of adverse events, self-assessment quizzes

Semester

Second semester

Assessment method

Oral exam to evaluate preparation on the teaching programme, the ability to organize knowledge in a short discussion and communication skills in a disciplinary context.

Office hours

By appointment required by mail

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION