UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Biochimica Clinica e Biologia Molecolare Clinica - 1

2526-1-I0102D005-I0102D018M-T1

Aims

Understand the meaning of the laboratory tests and their clinical relevance.

Contents

Learn the meaning of the examination laboratory, his scientific and clinical relevance; the contribution of the laboratory in disease prevention, diagnosis, especially in assessments of organ function and patients monitoring; the foundation for interpreting laboratory tests; the influence of the way to collect, transport and storage biological samples on results of the laboratory tests.

Detailed program

Role, purpose and limits of Laboratory Medicine. How to ask for a laboratory test. Characteristics of a laboratory examination: biological materials on which are performed laboratory tests; quantities and units; reference values; critical values. Features of laboratory methods. Pre-analytical, analytical and post-analytical mistakes. Precision. Accuracy. Sensitivity. Specificity. Predictive value. Patient preparation, identification collection and preservation of samples for the transportation to the laboratory. Sources of variability in sample collection: patient position, location and type of sampling, disinfectants, tourniquet application, blood amount taken, anticoagulants and preservatives, sample types, time of harvesting. Physiological factors that alter the composition of body fluids. Biological variables controllable: posture, hospitalization and immobilization, exercise, circadian rithym, influence of food, tobacco smoking, alcohol consumption, drug therapies, patient's medical condition. Uncontrollable biological variables: age, sex, race, environmental factors. Interferences: hemolysis, lipemia, jaundice. The laboratory diagnostic in organ and metabolic functions, in monitoring drug therapies and some process of the desease. Liver: the main laboratory tests used to assess liver function; definition, classification and clinical significance of the aspartate

aminotransferase, alanine aminotransferase, alkaline phosphatase, gamma-glutamyl transferase, bilirubin, albumin, ammonium, lactic dehydrogenase, alpha-fetoprotein. Kidney: the main laboratory tests used for the evaluation of renal function; definition classification and clinical significance of plasma creatinine, creatinine clearance, estimation of glomerular filtrate by MDRD, Urea plasma, serum uric acid, chemical-physical examination of urine. Carbohydrate metabolism: the main laboratory tests used for the evaluation of glucose metabolism; definition, classification and clinical significance of fasting plasma glucose, postprandial plasma glucose, plasma glucose after oral load (OGTT), glycated hemoglobin, Fructosamine, plasma insulin, Peptide C. Examples of indices of acute phase assayed in the laboratory: speed ??of erythrocyte sedimentation rate (ESR); C-Reactive Protein. Monitoring of drug therapies and dosing an overuse of substance: INR and prothrombin activity; measurement of ethanol. The markers of organ failure: tumor markers; markers of myocardial necrosis. Principles of Immunology: the blood groups; finding Antibodies Irregulars; blood components; outline of transfusion reactions.

Prerequisites

None.

Teaching form

The 8 hours of lessons are held in presence. Some lessons are held through the Distance Learning mode Teledidattica.

Textbook and teaching resource

Learning material (slides of the lessons) is available at the e-learning platform of the course.

Recommended textbooks:
Rossi A., Biagiotti S., De Francesco D. (1993) Elementi di immunologia, immunoematologia e pratiche trasfusionali, Milano, Sorbona
Melzi D'Eril G. V., Chelazzi G. (1999) Biochimica clinica e immunologia, Milano, Sorbona

Semester

I year, II semester

Assessment method

Written test composed by multiple choice quizzes and open-ended questions. The exam is passed by obtaining a passing grade in all 4 modules.

Office hours

By appointment (email request).

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY