UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Scienze Biomediche 2

1920-1-I0102D005

Aims

Know the basic mechanisms of the onset of disease and the means of defense. Understand the meaning of the laboratory pharmacology. Acquire the basics of microbiology.

Contents

Know the underlying causes and pathogenic mechanisms of human diseases, as well as the etiology of the fundame mechanisms at different levels of integration and acquire the basic knowledge to understand and deal with functional alterat lecturers and, in perspective, with the multidisciplinary team and with patients to meet their health needs. Use the acc advancement in clinical disciplines.

Learn the basics of drug administration, their absorption and distribution in the body and their elimination. Know how a comp into the body.

Learn the meaning of the examination laboratory, his scientific and clinical relevance; the contribution of the laboratory in di of organ function and patients monitoring; the foundation for interpreting laboratory tests; the influence of the way to collect the laboratory tests.

At the end of this course, the student will be able to know: concept of acute and persistent infection, pathogenicity and virule way of transmission of infections and their spread. Concept of carrier (eg. HBV). The correct way to collect, stor laboratory. Approaches to laboratory diagnosis of bacterial and viral infections: direct and indirect diagnosis. Essential feature

Detailed program

Concept of disease (acquired, congenital hereditary); areas of general pathology (etiology, pathogenesis). Chronic-degenera
cells, antibodies. Concept of self and non-self. Complement. Immune reaction, primary and secondary. Hypersensitivity type
etiological agents. Diseases from radiation and from high temperatures. Burns, characteristics and pathogenic mec
inflammations, vascular phenomena in exudate development. The cells involved in inflammation acute, diapedesis, chemo
transudate. Classification of exudates, evolution and complications of acute inflammation. Chronic interstitial inflamm
inflammation. Formation and structure of the granuloma. Examples of granulomatous inflammation (TBC, Lue, silicosis,
manifestations of inflammation: fever, leukocytosis, acute phase proteins. Repair processes. Wound healing. Regeneration, r
Scar tissue. Healing by first and secondary intention. Factors conditioning healing. Complications in wound healing. P
atherosclerosis. Vessels affected by atherosclerosis. Structure of the altered arterial walls. Plaques distribution in the
complications. Thrombosis, embolism. Functional adaptation. Hypertrophy, hyperplasia, homeostasis, balance and functiona
failure. Growth desease. Pre-neoplastic lesions. Tumors: definition, classification (benign, malignant), nomenclature, mali
chemical, physical and viral (general concepts). Genes involved in neoplastic transformation (general concepts). Concepts o
metastasis, metastatic stages of the process. Biology of cancer cachexia.

Discovery and drug development. Study of drug. Preclinical phase. Clinical research. Evidence-based medicine (EBM). Pharm
know about a drug. Pharmaceutical forms. Ways of administration of drugs. Dosage and influencing factors. Mechanisms o
biotransformation. Elimination: main (kidney-biliary) and secondary ways. Main pharmacokinetic parameters (bioavaila
redistribution, half-life, clearance). Drug binding to plasma proteins. Individual variability in drug response (age, sex, ethn
Adverse drug reactions: hypersensitivity, idiosyncrasy, allergy. Iatrogenic diseases. Tolerance, dependence. Agonists, partial
and non-competitive. Dose-response relationship. Therapeutic index. Synergy, additivity, antagonism, indifference. Milk and
elderly. Drugs in pregnancy and lactation. Sanitizing skin and environmental. Antiseptic-disinfectant. Pesticides.

Role, purpose and limits of Laboratory Medicine. How to ask for a laboratory test. Characteristics of a laboratory examination
tests; quantities and units; reference values; critical values. Features of laboratory methods. Pre-analytical, analytical and po
Specificity. Predictive value. Patient preparation, identification collection and preservation of samples for the transportat
collection: patient position, location and type of sampling, disinfectants, tourniquet application, blood amount taken, ant
harvesting. Physiological factors that alter the composition of body fluids. Biological variables controllable: posture, hospita
influence of food, tobacco smoking, alcohol consumption, drug therapies, patient's medical condition. Uncontrollable biolo
Interferences: hemolysis, lipemia, jaundice. The laboratory diagnostic in organ and metabolic functions, in monitoring drug
main laboratory tests used to assess liver function; definition, classification and clinical significance of the aspartate
phosphatase, gamma-glutamyl transferase, bilirubin, albumin, ammonium, lactic dehydrogenase, alpha-fetoprotein. Kidney: th
function; definition classification and clinical significance of plasma creatinine, creatinine clearance, estimation of glomer
chemical-physical examination of urine. Carbohydrate metabolism: the main laboratory tests used for the evaluation of gl
significance of fasting plasma glucose, postprandial plasma glucose, plasma glucose after oral load (OGTT), glycated h
Examples of indices of acute phase assayed in the laboratory: speed ??of erythrocyte sedimentation rate (ESR); C-Reacti
overuse of substance: INR and prothrombin activity; measurement of ethanol. The markers of organ failure: tumor m
Immunology: the blood groups; finding Antibodies Irregulars; blood components; outline of transfusion reactions.

Diagnosis of microbial infections: specimen collection, direct and indirect clinical diagnosis. Bacterial and viral infections of
virus, bacterial and viral pneumonia. Urinary tract infections: cystitis and pyelonephritis. Reproductive diseases: syphilis, g
Bacterial and viral infections of the central nervous system: bacterial and viral meningitis, polio, viral encephalitis. Diseas
salmonella, E. coli gastroenteritis, pseudomembranous colitis caused by Clostridium Difficile, Helicobacter and peptic ulcers,
infections of the skin and eyes: Bacteria (staphylococcus, streptococcus, pseudomonas), viruses (HPV, herpes virus), fungi (C

Prerequisites

Positive evaluation in Biomedical Sciences 1.

Teaching form

Lectures through presentations in electronic form of drawings and diagrams explaining concepts and functions of the organisr

Textbook and teaching resource

Pontieri G.M. (2007) Patologia generale e Fisiopatologia generale per le professioni sanitarie, II ed., Padova, Piccin; Spect generale, II ed., Milano, Casa Editrice Ambrosiana; Quaglino E., Cavallo F., Forni G. (2010) Le difese immunitarie, I ed., Pad

Page C.P., Curtis M.J., Sutter M.C., Walker M.J.A., Hoffman B.B. (1999) Farmacologia integrata, Milano, Casa Editrice Amb F. (2010) Farmacologia generale e speciale per le lauree sanitarie, Padova, Piccin; Neal M.J. (1999) Farmacologia medica in

Rossi A., Biagiotti S., De Francesco D. (1993) Elementi di immunologia, immunoematologia e pratiche trasfusionali, Mi Biochimica clinica e immunologia, Milano, Sorbona;

Cevenini R., Sambri V. (2004) Microbiologia e microbiologia clinica - Per i Corsi di Laurea in professioni sanitarie, Padova, Pi

Semester

II semester

Assessment method

Written examination: 60 closed quiz with multiple choice answer and one open ended question. The 60 quiz are subdivided pharmacology, 10 for clinical biochemistry, 10 for microbiology. The examination will be passed with 36 exact answers.

Office hours