



UNIVERSITÀ DI PISA

GENERAL PATHOLOGY AND MEDICAL TERMINOLOGY

VINCENZO DE TATA

Academic year	2021/22
Course	PHARMACEUTICAL CHEMISTRY AND TECHNOLOGY
Code	117FF
Credits	6

Modules	Area	Type	Hours	Teacher(s)
PATOLOGIA GENERALE E MED/04 TERMINOLOGIA MEDICA		LEZIONI	42	VINCENZO DE TATA ALDO PAOLICCHI

Learning outcomes

Knowledge

The final aim of the course is to allow the student to acquire the fundamental principles of Pathology, linking basic science with the fundamental pathogenetic and pathophysiological mechanisms underlying disease.

At the end of the course the student will also have achieved a detailed knowledge of the use and interpretation of the main laboratory test for diagnosing and monitoring human diseases in a clinical context.

Assessment criteria of knowledge

The lectures will be interactive, and written tests will be performed when appropriate. At the end of the course will be held a comprehensive exam.

Skills

An adequate preparation in General Pathology and Clinical Pathology is the indispensable prerequisite for a correct approach to basic medical knowledge that may be useful to the pharmacist in his profession, as it provides the general and fundamental aspects necessary for understanding the pathogenetic mechanisms in humans. . At the end of the course, the student will also be able to identify the most suitable laboratory tests to ascertain and monitor an organ pathology and will also be able to carry out a critical evaluation of the report.

Assessment criteria of skills

Written exam.

Behaviors

Students will learn to recognize the factors playing in human pathogenesis, both as causes of diseases and as mechanisms of progression toward further worsening or cure. Students will acquire a critical awareness in selecting laboratory tests and considering their results.

Assessment criteria of behaviors

During the final exam, the students will be asked to display their ability of understanding a clinical problem, and selecting appropriate lab tests.

Prerequisites

Adequate knowledge of fundamentals in human anatomy, histology and biochemistry is essential in order to obtain the best profit from lessons. A general basis in microbiology and virology will also be of help. For the Clinical Pathology, also needed notions of Clinical Biochemistry and Physiology, beside those of General Pathology and Pathophysiology.

Teaching methods

Delivery: face to face lessons based on slide presentations. Dias will be updated on a yearly basis and made available on the eLearning websites of individual docents.



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Syllabus

Introduction. Concepts of health and disease, etiology, pathogenesis, evolution, course, complications, outcomes. Fields of study of General Pathology.

General etiology. Genetic pathology. Pathologies originating from morphological and numerical anomalies of autosomes and heterochromosomes. Point, chromosomal, genomic mutations. Method of transmission of hereditary diseases. Concepts of molecular disease and single gene disease. Congenital errors of metabolism (genetic diseases due to enzyme defect or lysosomal diseases). Extrinsic etiology. Physical causes of disease (high and low temperatures; exciting and ionizing radiation, electromagnetic and corpuscular). Chemical causes of disease (generic and specific chemical damage; poisons; acute, chronic and cumulative toxicity). Biotransformation of xenobiotics: phases, products and enzymatic activities involved. Lethal synthesis (bioactivation). Free radicals: definition and chemical characteristics; formation of free radicals in cells; the oxygen paradox; Fenton reaction, role of Fe, Haber-Weiss reaction; mechanisms of free radical damage (initiation, propagation, arrest); la by lipid oxidation; defenses against damage from free radicals (enzymes and antioxidants).

Acute inflammation: causes; vascular manifestations; inflammatory exudate; chemotaxis and phagocytosis; chemical mediators of acute inflammation. Evolution of acute inflammation. Wound healing processes. Regeneration and repair. Chronic inflammation. Granulomas and their pathogenesis.

Cellular adaptations: hypertrophy and hyperplasia (stable, labile and perennial tissues; control of cell proliferation; growth factors; receptors and signal transduction; cell cycle control; cyclins and CDK); atrophy; metaplasia.

Accidental and programmed cell death: necrosis and apoptosis

General pathology of tumors. Normal and pathological growth. The neoplastic cell: morphological, biochemical and metabolic anomalies.

Kinetics of tumor growth. Alterations of differentiation. Pleomorphism. Anaplasia. Neoplastic progression. Macroscopic morphology and general structure of tumors. Nomenclature and histogenetic classification. Benign and malignant tumors. Tumor metastases and their ways of spreading. Epidemiology of tumors. Genetic and environmental factors. Chemical and physical carcinogens. Metabolic activation of carcinogenic substances. Two-stage carcinogenesis. Initiation and promotion. Molecular basis of neoplasia. Oncogenes: examples and activation mechanisms. The tumor suppressor genes.

Bibliography

Testi consigliati

Parola – Patologia Generale ed Elementi di Fisiopatologia – Ed. EDISES, 2020

L. Turgeon - Medicina nel laboratorio – Ed EDRA, 2020

Assessment methods

Written exam (multiple choice questions and open questions).

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