

COURSE OF MEDICINE AND SURGERY
Student Handbook a.y. 2014-2015

LABORATORY MEDICINE

III Year	Scientific Field	DISCIPLINE	TUTOR
Laboratory Medicine	BIO/12	<i>Clinical Biochemistry and Molecular Biology</i>	Fabrizio Barbetti
	BIO/12	<i>Clinical Biochemistry and Molecular Biology</i>	Andrea Urbani
	MED/05	<i>Clinical Pathology</i>	Gaspere Adorno
ECM 10 Coordinator Gaspere Adorno	MED/07	<i>Microbiology and Clinical Microbiology</i>	Cartesio Favalli
	VET/06	<i>Parasitology</i>	David Di Cave

PROGRAM

Clinical Biochemistry and Molecular Biology:

These are the chapters

- 1: David Cameron: Biochemical Investigations and Quality Control
- 2: Tim James: Automation
- 3: Edmund Lamb: Kidney Disease
- 5: Tim James & Walter Reid: Fluid and Electrolyte Disorders
- 6: David Tierney: Acid-Base Disorders
- 7: Paul Collinson & Amy Lloyd: Clinical Enzymology and Biomarkers
- 8: Roy Sherwood: Liver Function Tests
- 9: Mike France: Abnormalities of Lipid Metabolism
- 12: Garry McDowell: Thyroid Disease
- 13: Allen Yates and Ian Laing: Diabetes Mellitus and Hypoglycaemia
- 17: Gordon Brydon: Gastrointestinal Disorders and Malabsorption
- 18: Gerald Maguire: Specific Protein Markers
- 19: Joanne Adaway and Gilbert Wieringa: Cancer Biochemistry and Tumour Markers
- 20: Mary Anne Preece: Inherited Metabolic Disorders and Newborn Screening
- 21: Robin Whelpton, Nigel Brown and Robert Flanagan: Therapeutic Drug Monitoring

And these are the topics on which we focus on in our lectures: 1) Pre-analytical variables 2) Laboratory automation 3) Analytical errors in Laboratory medicine 4) Post-analytical errors 5) ROC curve, biomarkers specificity and sensitivity 6) Immunoassay, RIA, EMIT, ELISA 7) Thermodynamic and kinetic features of immunoassays 8) Immunoassay application in oncology 9) Etiological classification of diabetes, monogenic forms of diabetes. Tests to monitor long term renal diabetic complications. Tests to assess chronic glycemic control. 10) Hypoglycemia in the newborn, monogenic forms of hyperinsulinism and hypoglycemia. 11) Diagnosis of diabetes in pregnancy. Current criteria and new proposal from expert panel. 12) Thyroid function tests. Neonatal screening of congenital hypothyroidism 13) Diagnosis of osteoporosis. Markers of bone resorption and bone formation for monitoring of therapy.

Clinical Pathology:

INTRODUCTION : immunological reactions; antigens and antibodies; the complement in immunohemolytic reactions.

ERYTHROCYTE BLOOD GROUP : genetical and immunological approach; biochemical approach.

ABO BLOOD GROUP : ABH and LEWIS antigens biochemical genetics; blood group glycoproteins; erythrocytes ABH glycolipids; erythrocytes Lewis glycolipids.

ABO BLOOD GROUP : ABO phenotypes; molecular biology of ABO blood groups; ABO antibodies; the Hh system.

LEWIS SYSTEM

I AND i ANTIGENS

THE P SYSTEM

KELL AND DUFFY SYSTEM

OTHER BLOOD GROUP SYSTEM

LEUKOCYTE AND PLATELET SYSTEM : HLA leukoplatelet groups; leukoplatelet non-HLA antigens; antileukocyte antibodies; antiplatelet antibodies.

THE HLA SYSTEM : MHC genetics; type I and II MHC genes and molecules; MHC polymorphism; MHC and immunological response; MHC and diseases susceptibility.

IMMUNOLOGICAL REACTIONS TO RED BLOOD CELLS, GRANULOCYTE AND PLATELETS TRANSFUSION.

HEMOLYTIC DISEASE OF THE NEWBORN : diagnosis and therapy

ANEMIAS : diagnosis and therapy

AUTOIMMUNE HEMOLITIC ANEMIA: diagnosis and therapy

THALASSEMIA: diagnosis and therapy

MHC AND ORGAN TRANSPLANTATION: genetics of histocompatibility; cellular typing; immunological aspects of organ rejection; transplantation antigens.

GVHD : diagnosis and therapy

TRANSFUSIONAL THERAPY: blood components, therapeutic indications, risks and complications.

HAEMAPHERESIS : principles and indications

Clinical Microbiology:

Objective: Knowledge of appropriate microbiological tests for the diagnosis of infectious diseases, choice of correct specimen, collection and transport to the laboratory, time required to achieve results. Interpretation in relation to the specimen and the patient.

General principles and Specimen Quality

The aims of the Clinical Microbiology Laboratory

Specimen Collection

Transport of Specimen

Specimen processing

Diagnosis of Infection and Assessment of Host Defense Mechanisms

Non-cultural Techniques for the Laboratory

Culture of Microorganisms

Identification of Microorganisms Grown in Culture

Antibody Detection Methods for the Diagnosis of Infection

Assessment of Host Defense Systems

Protocols for Specimen Processing

Diagnosis of Infections by body system

Upper Respiratory Tract Infections

Infections of the Eye

Lower Respiratory Tract Infections

Urinary Tract Infections

Infections of the Skin, Muscle, Joint, Bone and Hemopoietic System

Sepsis

Sexually Transmitted Diseases

Infections Occurring in Pregnancy

Congenital Infections

Infections occurring Around the Time of Birth

Gastrointestinal Tract Infections

Infections in Pregnancy

Duration of Infection Origin

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Pyrexia of Unknown Origin

Hospital-acquired Infections
Central Nervous System Infections
Worldwide Virus Infections

Parasitology:

Systematics and zoological nomenclature. Biological associations. Life cycles. Parasitic specificity. Host-parasites relationships. Pathogenic parasites. Human parasitic infections. Protozoans. Cestodes and Trematodes. Nematodes. Arthropods as vectors.

Textbooks

Clinical Biochemistry, Nasser Ahmed Ed., Oxford Univ Press plus details given in our lectures.

Medical Microbiology, Mims, Playfair, Roitt, Wakelin, Williams. Mosby Ed.
Medical Microbiology, Sherris, The McGraw Hill Companies, Inc.

EXAM METHOD

Written and Oral examinations.

EXAM COMMISSION

Gaspere Adorno (President)		
Fabrizio Barbetti		
Andrea Urbani		
Cartesio Favalli		
David Di Cave		

Tutor



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