



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Pathology

2627-4-H4102D029-H4102D109M

Aims

Knowledge and understanding

At the end of the course, students will have acquired knowledge and understanding of the main etiological, pathogenetic, and physiopathological mechanisms underlying renal and endocrine diseases. Students will understand the pathological basis of glomerular, tubular, interstitial, and vascular kidney disorders, as well as the mechanisms leading to acute and chronic kidney damage. They will also acquire knowledge of the main pathological processes affecting endocrine organs, including hyperplastic, inflammatory, autoimmune, metabolic, genetic, and neoplastic diseases of the thyroid, parathyroid, adrenal glands.

Applying knowledge and understanding

At the end of the course, students will be able to recognize the principal causes and pathogenetic mechanisms of renal and endocrine diseases and to correlate them with the corresponding morphological, functional, laboratory, and clinical manifestations. Students will be able to apply basic pathological concepts to the interpretation of common renal syndromes, endocrine dysfunctions, and neoplastic diseases, with particular attention to clinicopathological correlations relevant to medical practice.

Making judgements

Through the description and discussion of frequent and clinically relevant pathological conditions, students will be able to integrate knowledge of etiology, pathogenesis, morphology, and organ dysfunction in order to critically evaluate the impact of renal and endocrine diseases on clinical presentation, disease progression, prognosis, and diagnostic reasoning.

Communication skills

At the end of the course, students will have acquired the ability to describe and discuss the topics covered using clear language, appropriate medical and pathological terminology, and scientific rigor. They will be able to communicate the essential pathological features of renal and endocrine diseases and their clinical relevance in an accurate and structured manner.

Contents

The course will cover the essential aspects of renal and endocrine pathology, with particular attention to mechanisms of disease, macroscopic and microscopic morphology, and clinicopathological correlations.

Main topics include:

- General mechanisms of renal injury.
- Glomerular diseases.
- Tubulointerstitial diseases.
- Vascular diseases of the kidney.
- Acute kidney injury and chronic kidney disease.
- Pathology of the thyroid gland.
- Pathology of the parathyroid glands.
- Pathology of the adrenal glands.
- Multiple endocrine neoplasia syndromes.

Detailed program

Renal Pathology

1. Introduction to renal pathology

- Functional anatomy of the kidney.
- Main compartments involved in renal disease: glomeruli, tubules, interstitium, and vessels.
- Mechanisms of renal injury.
- Clinical syndromes of renal disease: nephritic syndrome, nephrotic syndrome, acute kidney injury, chronic kidney disease, asymptomatic urinary abnormalities.

2. Glomerular diseases

- Pathogenetic mechanisms of glomerular injury.
- Immune-mediated glomerular diseases.
- Nephritic syndrome.
- Nephrotic syndrome.
- Minimal change disease.
- Focal segmental glomerulosclerosis.
- Membranous nephropathy.
- IgA nephropathy.
- Post-infectious glomerulonephritis.
- Rapidly progressive glomerulonephritis.
- Membranoproliferative patterns of injury.
- Diabetic nephropathy.
- Lupus nephritis.
- Amyloidosis and renal involvement.

3. Tubular and interstitial diseases

- Acute tubular injury.

Acute and chronic interstitial nephritis.
Drug-induced and immune-mediated tubulointerstitial nephritis.
Pyelonephritis.

4. Vascular diseases of the kidney

Benign and malignant nephrosclerosis.
Renal artery stenosis.
Thrombotic microangiopathy.
Vasculitis involving the kidney.
Renal infarction.

5. Acute and chronic kidney disease

Morphological patterns of acute kidney injury.
Pathological progression to chronic kidney disease.
End-stage kidney disease: macroscopic and microscopic features.

Endocrine Pathology

1. General aspects of endocrine pathology

Hyperfunction and hypofunction of endocrine glands.
Mechanisms of endocrine disease: autoimmune, inflammatory, hyperplastic, neoplastic, genetic, and iatrogenic causes.
Principles of endocrine tumor pathology.

2. Thyroid gland

Congenital and developmental abnormalities.
Goiter: diffuse and multinodular.
Hyperthyroidism and hypothyroidism.
Graves disease.
Hashimoto thyroiditis.
Subacute and other forms of thyroiditis.
Thyroid nodules.
Follicular-patterned lesions.
Papillary thyroid carcinoma.
Follicular thyroid carcinoma.
Medullary thyroid carcinoma.
Poorly differentiated and anaplastic thyroid carcinoma.
Main diagnostic and prognostic pathological features.

3. Parathyroid glands

Primary, secondary, and tertiary hyperparathyroidism.
Parathyroid hyperplasia.
Parathyroid adenoma.
Parathyroid carcinoma.
Bone and systemic effects of parathyroid disease.

4. Adrenal glands

Adrenocortical hyperplasia.
Adrenal cortical adenoma.

Adrenocortical carcinoma.
Cushing syndrome.
Primary hyperaldosteronism.
Adrenogenital syndromes.
Adrenal insufficiency.
Pheochromocytoma and paraganglioma.
Incidental adrenal lesions

Prerequisites

Prerequisites

Students are expected to have basic knowledge of:

General pathology.
Cell injury, inflammation, repair, and neoplasia.
Normal anatomy and histology of the kidney and endocrine organs.
Basic physiology of renal function and endocrine regulation.
Basic principles of immunology and molecular biology.

Teaching form

Lectures and exercises

Textbook and teaching resource

Recommended textbook:

Robbins & Cotran Pathologic Basis of Disease, latest available edition, Elsevier.

Additional teaching resources:

Lecture slides provided by the teacher.
Selected histological images and clinicopathological examples.
Updated international classifications and guidelines when relevant.
Supplementary material provided during the course.

Semester

Second semester

Assessment method

Quiz and Oral Test

Office hours

by appointment

Sustainable Development Goals

GENDER EQUALITY
