MEDTEC SCHOOL

Course: Organ system disease 2: Kidney and Genito-urinary system

Year (1st-2nd-3rd-4th-5th-6th): __4th_____

Period (1st-2nd semester annual): ___1st semester_____

Credits: __8___

Objectives

Nephrology:
This module is designed to provide comprehensive teaching of the pathophysiology and clinical aspects of kidney diseases, electrolytes and acid-base disorders.
The most recent diagnostic and therapeutic tools in the management of patients with kidney diseases, included innovations in dialysis, will be discussed.
Students are invited to refer to the textbooks to deepen the issues covered in the lessons.

Urology:

Contents

NEPHROLOGY

Lesson 1 – Introduction to Nephrology

- Describe the physiology and the major functions of the kidneys:
  - excretion of waste products
  - control of body fluids and pressure
  - electrolyte homeostasis and acid-base balance
  - production of hormones
- Discuss glomerular filtration rate (GFR) regulation under physiological and pathological conditions (e.g. intravascular volume depletion or fluid overload)
- Discuss how GFR is measured or estimated, knowing the pros and cons of estimated GFR formulas
- Collect a detailed rload)

- Describe causes, clinical features, diagnostic approaches and principles of therapy related to calcium and phosphorus

Lesson 5 – Acid Base Disorders

- Discuss how acid-base balance is assessed in clinical practice
- Describe the causes, clinical features, diagnostic approach and principles of therapy of:
    - metabolic acidosis
    - metabolic alkalosis
    - respiratory acidosis and alkalosis
    - mixed acid-base disturbances

Lesson 6 – The Approach to Glomerular Disease Syndromes and Renal Biopsy

- Define isolated urinary abnormalities and macroscopic hematuria of glomerular origin
- Define nephrotic syndrome and recall the major primary and secondary causes
- Define nephritic syndrome and rapidly progressive renal insufficiency recall the major primary and secondary causes
- Discuss the indications for renal biopsy, the contraindications and the potential harmful consequences
- Describe the histology of the glomerulus, underlining the possible sites of damage (capillaries, endothelial epithelium, basement membrane, visceral epithelium, urinary space and mesangium)
- Discuss the main histologic patterns of glomerular diseases
- Regarding the distribution of glomerular changes, define the terms focal, diffuse, segmental and global
- Describe the definitions: tip lesion, collapsing lesion, endocapillary proliferation, mesangial hypercellularity, extracapillary proliferation and crescents

Lesson 7 – Major Primitive Glomerulonephritis

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- Describe the renal involvement in systemic vasculitides, with particular attention to the etiopathogenesis and to the natural history and prognosis of these diseases
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- Discuss the most relevant aspects in the preparation of CKD patients for renal replacement therapies
- Describe the effects of CKD on mineral metabolism, including secondary and tertiary hyperparathyroidism and renal osteodystrophy
- Discuss the major therapeutic approaches to bone disorders in CKD
- Discuss the clinical features of anemia in CKD patients
- Discuss the therapeutic approaches to anemia in CKD, including erythropoiesis-stimulating agents (ESAs)
- Discuss the pathophysiological basis of cardiovascular disease in CKD

Lesson 14 – Cystic Diseases and Other Hereditary Kidney Disorders

- Define the clinical criteria for diagnosis of autosomal dominant polycystic kidney disease (ADPKD) and describe the pathogenesis and clinical history of ADPKD, autosomal recessive polycystic disease, cystic disease of the renal medulla, and acquired cystic kidney disease
- Describe inherited disorders associated with generalized dysfunction of the proximal tubule (renal tubular acidosis [RTA] type 2 and Fanconi syndrome12 12 Tf1 0 0 1 74.664 96.62 Tm 93 841.9 re2 r

-Introduction to the ERAS concepts of fluid balance and pressure optimization, use of fluids in the perioperative period and role in preventing postoperative complications.
-Factors associated to fluid overload and fluid depletion and intraoperative policies of fluid administration.
-Goal-directed vs. liberal/restrictive pathways of fluid administration.

- Evolution of general surgery in steps (open, laparoscopic, robotic). Definition of robotics, introduction of the first robot and evolution of platforms. Describe potential advantages of robotic platforms. Potential market expansion of robotic platforms. Basic and common characteristics of

student scoring at least 60% in the written exam may, optionally, access the oral exam in order to redefine the final score for whole the module. The oral exam is a discussion of one key topic in Nephrology, Urology and General Surgery. The student will possibily also be asked to contextualize these topics in a clinical case.

Texts

- National Kidney Foundation Primer on Kidney Diseases,