March 2020 Class Clinical Medicine

Anatomy Assignment and Short Notes

Urinary System

1. Draw and clearly label the anterior view of the organs of urinary system.
2. Draw and clearly label.
    a. The external and internal gross anatomical features/structurers of the kidneys.
3. Draw and Trace the path of blood flow through the kidneys.
4. Draw and Describe the structure of renal corpuscles and renal tubules
5. Draw and label the structure of nephron and associated blood vessels.
6. Outline clearly the Blood supply of the kidneys.
7. Describe the Relation of a nephron's structure to its three basic functions:
    a. Glomerular filtration,
    b. Tubular reabsorption,
    c. Tubular secretion.
8. Draw and label a female.
    a. Ureters,
    b. Urinary bladder,
    c. Urethra.
9. Draw and label a male.
    a. Ureters,
    b. Urinary bladder,
    c. Urethra.

Short Notes

1. The organs of the urinary system are the kidneys, ureters, urinary bladder, and urethra.
2. After the kidneys filter blood and return most water and many solutes to the bloodstream, the remaining water and solutes constitute urine
3. The kidneys are retroperitoneal organs attached to the posterior abdominal wall.
4. Three layers of tissue surround the kidneys: renal capsule, adipose capsule, and renal fascia.

5. Internally, the kidneys consist of a renal cortex, a renal medulla, renal pyramids, renal papillae, renal columns, major and minor calyces, and a renal pelvis.
6. Blood flows into the kidney through the renal artery and successively into segmental, interlobar, arcuate, and interlobular arteries; afferent arterioles; glomerular capillaries; efferent arterioles; peritubular capillaries and vasa recta; and interlobular, arcuate, and interlobar veins before flowing out of the kidney through the renal vein.
7. Vasomotor nerves from the sympathetic division of the autonomic nervous system supply kidney blood vessels; they help regulate the flow of blood through the kidney.
8. The nephron is the functional unit of the kidneys. A nephron consists of a renal corpuscle (glomerulus and glomerular or Bowman's capsule) and a renal tubule.
9. A renal tubule consists of a proximal convoluted tubule, a loop of Henle, and a distal convoluted tubule, which drains into a collecting duct (shared by several nephrons). The loop of Henle consists of a descending limb and an ascending limb.
10. A cortical nephron has a short loop that dips only into the superficial region of the renal medulla; a juxtamedullary nephron has a long loop of Henle that stretches through the renal medulla almost to the renal papilla.
11. The wall of the entire glomerular capsule, renal tubule, and ducts consists of a single layer of epithelial cells. The epithelium has distinctive histological features in different parts of the tubule.
12. The juxtaglomerular apparatus (JGA) consists of the juxtaglomerular cells of an afferent arteriole and the macula densa of the final portion of the ascending limb of the loop of Henle.