Physio Renal Dr. Hammam

1. In an asthmatic patient treated by B receptor agonist, potassium level was found to be 3.1 (normal 3.5-4.5). Which of the following is the mechanism by which this hypokalemia has developed?

a) Increased renal excretion of potassium
b) Increased renal secretion of potassium
c) Transcellular shift of potassium
d) Reduced gastrointestinal absorption of potassium
e) Increased gastrointestinal absorption of potassium

2. In states of fluid deprivation, countercurrent mechanism helps developing high corticopapillary osmotic gradient in order to increase water reabsorption and induce

a) an increase of plasma osmolarity
b) a decrease of urine osmolarity
c) an increase of aldosterone mediated potassium reabsorption
d) an increase of urine osmolarity
e) production of dilute urine

3. Two thirds (2/3) of total body water is confined to

a) intracellular compartment
b) Extracellular fluid compartment
c) Intravascular compartment
d) Interstitial compartment
e) Plasma

4. In a patient with elevated (above normal) serum parathyroid hormone level, elevated serum calcium level develops secondary to

a) Increased renal excretion of calcium
b) Increased osteoclast function (bone resorption)
c) Increased calcium reabsorption from the distal tubule and thick ascending loop of Henle
d) Calcitonin-mediated increase of renal calcium reabsorption
e) B&C

5. The main site of tubular magnesium reabsorption is

a) Proximal tubule
b) Glomerulus
c) Collecting ducts
d) Thick ascending loop of Henle
e) Distal tubule

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6. Regarding phosphate renal handling, all the following is true, EXCEPT

a) The main site of phosphate reabsorption in the nephron is the distal tubule
b) 15% of the filtered phosphate is excreted
c) PTH (parathyroid hormone) inhibits phosphate reabsorption
d) 85% of the filtered phosphate is reabsorbed
e) The main site of phosphate reabsorption in the nephron is proximal tubule

7. Regarding renal sodium handling, all the following is true EXCEPT

a) Distal tubule is the main site of Na reabsorption in the nephron
b) Na is reabsorbed along the entire nephron
c) Na is reabsorbed in the proximal tubule by co-transport and counter-transport mechanisms
d) Thick ascending limb of loop of Henle is sodium-permeable segment of the nephron
e) Descending limb of the loop of Henle is sodium-impermeable segment of the nephron

8. Regarding the nerve supply of the urinary bladder and urethral sphincters, which of the following is TRUE?

a) Sympathetic innervation represents the nerve of emptying
b) Parasympathetic innervation represents the nerve of filling
c) External urethral sphincter is innervated by autonomic nervous system
d) Stimulation of parasympathetic nerve supply from S2, S3&S4 induces contraction of Detrusor muscle and relaxation of internal urethral sphincter
e) Loss of function of higher inhibitory centers of micturition results in spastic neurogenic bladder

9. Regarding micturition reflex, all of the following is true EXCEPT

a) It is self-regenerative
b) It is elicited by stimulation of the stretch receptors in the urinary bladder wall
c) It is facilitated by voluntary increase in the abdominal pressure
d) Spinal centers of the reflex are L2, L3&L4
e) It can be controlled voluntarily

- Volume contraction increase aldosterone & protein
- Volume expansion decrease aldosterone & protein
- Hyper-osmotic increase ADH & Na
- Iso-osmotic no change in ADH & Na
- Hypo-osmotic decrease Na
  - Contraction no Change in ADH
  - Expansion decrease ADH

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