بسم الله الرحمن الرحيم

﴿ وَإِن تَتَوَلَّوْا يَسْتَبْدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَالَكُم ﴾

اللهم استعملنا ولا تستبدلنا

PHYSIOLOGY

MID | Lecture #

Past Papers

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Past Papers

(رَبِّ إِنِّي لِمَا أَنزَلْتَ إِلَيَّ مِنْ خَيْرٍ فَقِيرٌ)

Lecture 1
Introduction

Q1: Choose the correct statement regarding the interstitial cells of Cajal (ICCs):

A. ICCs are responsible for tonic contraction of Gl smooth muscle cells

B. ICCs are responsible for the slow action potentials (slow waves) in smooth Muscle

C. ICCs are neurons that communicate with smooth muscle cells through gap junctions

D. ICCs control ENS activity

E. None of the above

Answer: B (about (D) ICCs controled by ENS but not the opposite)

Q2: One of the followings regarding control functions of Gl is NOT TRUE:

A. Parasympathetic system generally causes increase in secretions

B. Sympathetic generally is decreasing blood flow by direct effect over vessels

C. Basic electrical rhythm (BER) is controlling phasic contraction

D. Tonic contraction is set by released neurotransmitter

E. Salivary secretion is increased by intrinsic reflexes

Answer: E

Q3: One of the followings is NOT true with regard to the ICCs:

A. Are generating action potentials

B. Are considered as pacemaker cells in the gastrointestinal tract

C. Are under the control of autonomic nervous system

D. Are connected by gap junctions

E. Are responsible for generation of basic electrical rhythm (BER) at smooth muscle cells

Answer: C

Q4: Which of the following DOES NOT affect blood flow to the GI tract:

A. CCK

B. Secretin

C. GIP

D. CCI

E. kinins

Answer: D

Q5: One of the followings regarding control systems of the gastro-intestinal functions is NOT TRUE:

A. Tonic contraction is set by released neurotransmitters.

B. Sympathetic generally is decreasing blood flow by direct effect over vessels.

C. Parasympathetic system generally causes increase in secretions.

D. Salivary secretion is increased by intrinsic reflexes.

E. Basic electrical rhythm (BER) is controlling phasic contraction

Answer: D

Q6: GI transit can decrease by:

A. muscarinic receptors activation

B. release of VIP

C. high cellulose in chyme

D. intestinal irritation

E. lactase deficiency

Answer: B

Q7: One of the following with regard to the blood flow of the gastrointestinal tract is NOT true:

A. Is controlled by enteric nervous system

B. Increase blood flow results in increased water and electrolyte secretion

C. Is increased by more release of VIP

D. Is increased by higher sympathetic tone

E. Is increased after meals

Answer: D

Lecture 2
GI Movements

Q1: About swallowing, all true EXCEPT:

A. composed of voluntary and involuntary phases

B. primary peristalsis is initiated at the pharynx

C. secondary peristalsis is initiated in the esophagus by reminiscent of food in the esophagus

D. preceded by relaxation wave to open the lower esophageal sphincter

E. closure of epiglottis is voluntary

Answer: E

Q2: One of the following with regard to esophageal movements in NOT true:

A. They are part of swallowing

B. Primary esophageal peristalses are initiated at the pharynx

C. Secondary esophageal peristalsis can be initiated in esophagus by the presence of food residues

D. Distention of lower esophagus stimulates extrinsic reflexes to induce relaxation of lower esophageal sphincter

E. They are controlled mainly by enteric nervous system

Answer: D

Q3: The remaining food particles in the esophagus initiate:

A. Primary peristalsis

B. Secondary peristalsis

C. MMC

Answer: B

Q4: Regarding gastro-esophageal motilities, one of the followings is NOT true:

A. Primary esophageal peristalses are initiated at the pharynx

B. Relaxation of lower esophageal sphincter is ensured by extrinsic reflexes

C. The patterns of primary and secondary peristaltic contractions are the same

D. More tone of pyloric sphincter is achieved when gastric peristaltic contractions are reaching pyloric region

E. At early stages of gastric movements only chyme of fluid consistency is emptied by pyloric pump activity

Answer: B

Q5: All of the following are true about deglutition EXCEPT:

A. It is initiated voluntarily

B. It involves reflex centers in the brain

C. Respiration is impeded during the esophageal phase

D. It is less effective when lying down

E. All of the above are true statements

Answer: C

Q6: With regard to haustral contractions at the colon, all the followings are true EXCEPT:

A) Have propulsive effect over cecal content

B) Are phasic contractions

C) Are similar with segmentation contractions in the small intestine

D) Are present all the day

E)Initiated by activation of gastrocolic reflexes

Answer: E

Q7: Wrong about mass contractions:

A)Causes feces to be forced to move into the rectum

B) facilitated by gastrocolic and duodenocolic reflexes

C) Present all the day

D) Mucosal irritation causes it to increase

E) begin at transverse colon

Answer: C

Q8: One of the following is true with regard to defecation reflexes in normal adult:

A) voluntary control is ensured by relaxation of external anal sphincter

B) appears as series of voluntary reflexes after the distention of rectum

C)generate motor activities which are present all the day over the colon

D) the intrinsic component of the reflex is provided by sympathetic neurons

E) As a result of increased activity of intrinsic reflex, defecation will follow without the voluntary stage of defecation

Answer: A

Q9: With regard to mass contractions at the colon, all the followings are true EXCEPT:

A. Are mainly controlled by released gastro-intestinal hormones

B. Have propulsive effect over the content of the colon

C. Are similar with peristaltic contractions in the small intestine

D. Can induce activation of defecation reflexes

E. Are initiated by gastro-colic reflexes

Answer: A

Q10: *All the followings with regard to defecation reflexes are true EXCEPT*:

A. Appears as involuntary intrinsic reflexes by the distension of the colon

B. They have parasympathetic component that fortifies the contractions of the rectal smooth muscle

C. As a result of increased activity of defecation reflexes, in normal adults defecation is finally can take place as a voluntary act

D. Relaxation of the external anal sphincter is ensured by the activity of cranial parasympathetic fibers

E. The intrinsic component of the reflex is provided by enteric nervous system

Answer: D

Q11: Tracing a food bolus along the GI tract, choose the correct chronological order of motility patterns that this bolus will go through:

1. Receptive Relaxation

2. Segmentation Contractions

3. Primary Peristaltic Wave

4. Pyloric Pump

A. 1,3,4,2

B. 1 , 3 , 2 ,4

C. 3 , 1 , 4 ,2

D. 3, 2 , 1 , 4

E. 2 , 3 , 1 , 4

Answer: C

Q12: True about defecation :

A)parasympathetic to muscle of anus

B) Intrinsic reflexes caused by parasympathetic innervation

C) Intrinsic reflexes are strong enough to cause defecation

D) Voluntary act while defecation causes internal sphincter to relax

E) Closure in glottis uses decreasing in abdominal pressure

Answer: A

*Q13:*One of the following concerning gastric motility is true:

A)After food ingestion, tonic contraction of gastric muscle is decreased

B) Is regulated by hormone only

C)Increases by activation of entero-gastric reflex

D) Increases by inhibition of parasympathetic control

E) Increases by more release of CCK (cholecystokinin)

Answer: A

Q14: All the following may describe the contractions that appear along the small intestine EXCEPT:

A. Increased velocity of chyme propulsion may lead to an increased intestinal absorption

B. Tonic contractions are set by release of neurotransmitters

C. Contractions are controlled by the activity of autonomic nervous system as well as by hormones secreted along the gastrointestinal tract

D. Both segmentation and peristaltic contractions propel chyme in anal-ward direction

E. The rhythm of segmentation contractions is set by the basic electrical rhythm of that segment

Answer: A

*Q15:*Contractions along the intestine can be described by all EXCEPT：

A. tonic contractions are set by the activity of interstitial cells of Cajal

B. the rhythm of segmentation contraction is set by basic electrical rhythm at that segment

C. segmentation and peristaltic contractions propel chime in analward direction

D. coordinated movements during peristaltic reflex need intact neural activities of myenteric plexus

E. increased velocity of chyme propulsion decreasing absorption of fluids

Answer: A

Lectures 3-5
GIT secretions

Q1: Compared to the BASAL RATE of salivary secretion, by parasympathetic stimulation all the followings are increased in the final saliva EXCEPT:

A) Amount of saliva

B) pH of saliva

C) K+ concentration

D) Na+ concentration

E) Cl- concentration

Answer: C

Q2: One of the following about salivary secretion is true:

A) At low rate of secretion, the final (secondary) saliva has a higher Na^+ concentration than the primary saliva

B) Decreases during cephalic phase

C) The pH is lower at high rate of secretion than at low rate

D) Regulated by hormones secreted along the gastrointestinal tract

E) During high rate of secretion, HCO_3^- content is higher than at low rate

Answer:E

Q3: Blood Flow to Gl glands could be affected by all EXCEPT:

A)autonomic nervous system

B) submucosal plexus

C) hormones secreted along GIT

D) secretory glands stimulation

E) Interstitial cells of Cajal

Answer: E

Q4: True about salivary gland secretion:

A) during the low rate of secretion the final (secondary) saliva has lower K+ concentration than primary saliva

B) at high rate of secretion, it contains lower CL- concentration than primary saliva

C) decreases by unconditioned reflexes

D) regulated by hormones secreted along the GIT

E) condition reflexes are stimulating sympathetic control

Answer: B

Primary saliva is isotonic, like plasma.

Secondary saliva at rest: very hypotonic — much lower Na^+/Cl^- and higher K^+/HCO_3^- than plasma.

Secondary saliva at high flow: less hypotonic — Na^+/Cl^- closer to plasma, K^+ lower than at rest.

Further explanation in the next slide

Question 4 further elucidation

The net result of these transport processes is that *under resting conditions,* the concentrations of sodium and chloride ions in the saliva are only about 15 mEq/L each, about one seventh to one tenth their concentrations in plasma. Conversely, the concentration of potassium ions is about 30 mEq/L, seven times as great as in plasma, and the concentration of bicarbonate ions is 50 to 70 mEq/L, about two to three times that of plasma.

During maximal salivation, the salivary ionic concentrations change considerably because the rate of formation of primary secretion by the acini can increase as much as 20-fold. This acinar secretion then flows through the ducts so rapidly that the ductal reconditioning of the secretion is considerably reduced. Therefore, when copious quantities of saliva are being secreted, the sodium chloride concentration is about one half or two thirds that of plasma, and the potassium concentration rises to only four times that of plasma.

Q5: One of the following is NOT a function of saliva:

A) Keeping the mouth clean

B) Facilitated the absorption of carbohydrates by oral mucosa

C) Helps in stimulation of taste buds

D) Has protective action

E) Due to its much content, it facilitates the slippage of food bolus along the esophagus

Answer:B

Q6: Gastric HCL secretion can be decreased by stimulation of:

A) S cells (somatostatin releasing cells)

B) H2 receptors

C) Enterochromaffin like cells

D)Vagus nerve

E)G cells

Answer:A

Q7: Loss of G cells Decreases acid secretion mainly by which of the following mechanisms:

A)Increased acetylcholine release

B)Reduced parietal cell inhibition

C) Decreased gastrin secretion

D) Decreased Secretin Release

E)Parasympathetic stimulation

Answer:C

Q8: The effects of cholecystokinin on gallbladder smooth muscle, sphincter of Oddi, and exocrine pancreas, respectively, are:

A) Relaxtion , contraction, stimulation of secretion from duct cells

B) Contraction, contraction, stimulation of secretion from acinar cells

C) Contraction, contraction, stimulation of secretion from duct cells

D) Contraction, relaxation, stimulation of secretion from acinar cells

Answer: D

Q9: One of the followings with regard to gastric secretions is NOT true:

A) Proton pump inhibitors are reducing HCl secretions

B) Enterochromaffin like cells are releasing intrinsic factor

C) Pepsinogen is released by chief cells

D) Is stimulated by vagus nerve

E) Increased activity of enteric neurons that release GRP results in activation of hormonal control

Answer:B

Q10: Which of the following would completely eliminate the cephalic phase of gastric secretion:

A) Histamine H2 blockers

B) CCK-B receptor blockers

C) Vagotomy (i.e. cutting the vagus nerve or branches of it)

D) Sympathectomy (i.e. cutting sympathetic nerves)

E) Atropine

Answer: C

Q11: All of the following stimulate HCl secretion EXCEPT:

A) Gastrin

B) Histamine

C) Parasympathetic Stimulation

D) Somatostatin

Answer:D
Somatostatin acts on receptors of parietal cells to decrease cAMP

Q12: true about pancreatic secretion:

A) secretion is inhibited by pancreatic poly peptide

B) pancreatic amylase is secreted from pancreas as inactive form

C) optimal activity of pancreatic enzymes is at low PH

D) enterokinase is important for activation of amylase

E) at low rate of secretion concentration of CL-is lower than at high rate of secretion

Answer: A

Q13: One of the following is TRUE with regard to pancreatic proteolytic enzymes:

A) Have optimal activity at high pH

B) Are secreted as active enzymes from the pancreas

C) All of them act as endopeptidases

D) Are activating brush border enzymes

E) Are responsible for final digestion of proteins to amino acids

Answer: A

E is wrong because Intracellular peptidases are responsible for final digestion of proteins

Q14: Secretion of pancreatic enzymes by:

A) Duct cells

B) Endocrine portion of the pancreas

C) Acinar cells

D) Zymogen granules

E) duodenal mucosa

Answer: C

Q15: Pancreatic proteolytics enzymes, which is true:

A)Secreted from acinar cells

B) Play a role in glucose homeostasis

C) More than one of the above

Answer: A

Q16: One of the following is TRUE regarding pancreatic proteolytic enzymes:

A) Have optimal activity at low pH

B) Are activating brush border enzymes

C) All of them act as endopeptidases

D) Are responsible for final digestion of proteins

E) Are secreted as inactive enzymes from the pancreas

Answer: E

Q17: Regarding gastric secretion which one of the followings is NOT true:

A) Somatostatin inhibits release of HCl

B) Oxyntic cells are secreting intrinsic factor

C) Gastrin increases HCl secretion via CCK-B receptors

D) H2 blockers can reduce HCl secretion

E) Paracrine control is achieved by the release of cholecystokinin (CCK)

Answer: E (HISTAMINE & SOMATOSTATIN, WORK IN PARACRINE PATTERN)

Q18: Which of the followings is NOT true with regard to proteolytic enzymes:

A) Intracellular peptidases are responsible for final digestion of proteins

B) Chymotrypsin is activated in duodenum by phosphorylation with enterokinase

C) Aminopeptidase is a brush border enzyme

D) Pepsin is endopeptidase

E)Pancreatic proteolytic enzymes are having optimal activity at alkaline pH

Answer: B

Q19: Which of the followings is describing the secretion of the colon:

A) Is mainly serous secretion

B) Is mainly mucus secretion

C) Is controlled by interstitial cells of Cajal

D) Is controlled by CCK

E)Is increased by sympathetic stimulation

Answer: B

Q20: Wrong about CCK (cholecystokinin):

A) Causes contraction of the gallbladder

B) Causes relaxation of Oddi sphincter

C) Activates pancreatic duct cells

D) Stimulates enzyme secretion from the pancreas

E) Its release is stimulated by high fat content in meal

Answer: C (CCK works on acinar cells)

Q21: One of the following regarding cholecystokinin is NOT True:

A) Causes contraction of the gallbladder

B) Reduces the muscle tone of Oddi sphincter

C) Activates parasympathetic control of the pancreas

D) Stimulates pancreatic duct cells

E) Its release is stimulated by high fat content in meal

Answer:D

Q22: Regarding bile secretion, one of the following is NOT true:

A) Bilirubin content is important for the formation of micelles

B) Is stored in the gallbladder between meals

C) Its secretion is well correlated with the fat content in meal

D) Water and electrolyte content is stimulated by secretin

E) Is increased by parasympathetic stimulation

Answer: A

Q23: One of the following concerning pancreatic secretion is True:

A) Cl- concentration is lower at low rate of secretion

B) HCO3- secretion is increased by parasympathetic stimulation

C) Enzymatic secretion is stimulated by secretin

D) Is controlled mainly by enteric nervous system

E) Is increased by release of pancreatic polypeptide

Answer: B

Q24: Regarding bile secretion which one of the followings is NOT true:

A)Is stored in the gall bladder between meals

B) Its secretion is well correlated with the fat content in meal

C)The main hormone involved in controlling secretion is cholecystokinin

D) Enterohepatic circulation is ensuring recycling of bile salts

E) Same concentration of constituents is found in bile released from gallbladder and liver

Answer: E

Q25: Regarding pancreatic secretions, one of the followings is NOT true:

A) It contains enzymes for digestion of disaccharides

B) Enzyme secretion is under the control of cholecystokinin (CCK)

C) HCO_3 content in pancreatic juice is increased upon vagal stimulation

D) Secretin hormone can increase secretory activity of duct cells

E) All pancreatic proteolytic enzymes are released from the pancreas as inactive enzymes

Answer: A

Q26: All of the following increase pancreatic secretion EXCEPT:

A) Cholecystokinin

B) Secretin

C) Acetylcholine

D) Vasodilation of pancreatic blood vessels

E) Pancreatic polypeptide

Answer: E

For any feedback, scan the code or click on it.

Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1	26	E	A
V1 → V2			

Additional Resources:

رسالة من الفريق العلمي:

Reference Used:

1. Guyton and Hall, Unit XII, Chapter 65, Page 820

عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللهُ عَنْهُ أَنَّ رَسُولَ اللهِ صَلَّى اللهُ عَلَيْهِ وَسَلَّمَ قَالَ: «لَيْسَ الشَّدِيدُ بِالصُّرَعَةِ؛ إِنَّمَا الشَّدِيدُ الَّذِي يَمْلِكُ نَفْسَهُ عِنْدَ الْغَضَبِ»