

ENDOCRINE BLOCK FIFTH WEEK

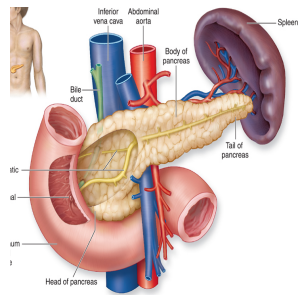


Done by: Hessa bin Jadeed, TahaniAlshaibany, ReemAlotaibi, HamadAlmohsen, Lulu Alobaid

Design& Reviewed by: khalid alosaimi

Table of Content

Anatomy	3
Histology	4
Physiology	5
Pharmacology	13
Pathology	15



Anatomy

[4] Pancrease

1-The pancreas gland extend in which plane:

- A- L1
- B- L2
- C- L12
- D- T12

Answer: A

2-Structures posterior to the head are:

- A- Bile duct and Superior mesenteric artery
- B- Bile duct and IVC
- C- Superior mesenteric artery and IVC
- D- IVC only

Answer: B

3- Superior mesenteric vessels emerge from:

- A- superior border of the neck of pancreas
- B- Inferior border of the body of pancrease
- C- Inferior border of the neck of pancreas
- D-Superior border of the body of pancreas

Answer: C

4-The ampulla of vater opens into the duodenal lumen through:

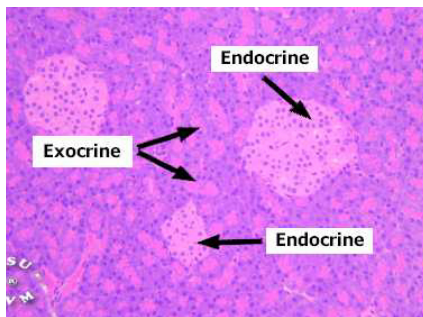
- A-Minor duodenal papilla
- B-Duct of santorini
- C-Pyloro-duodenal junction
- D-Major duodenal papilla

Answer: D

5-Efferent lymphatic vessels from the pancreas ultimately drain into:

- A- Celiac nodes
- B-Hepatic nodes
- C-Para-aortic nodes
- D-Illial nodes

Answer:A



Histology

[5] Pancrease Exocrine & Endocrine

1-Which of the following is wrong regarding the Pancreatic Acini:

- A-Centroacinar cells represent the beginning of the ducts.
- B-Surrounded by myoepithelial cells
- C-Their cells have basal nuclei

Answer: B

2-Islets of Langerhans:

- A-vascularized by fenestrated capillaries
- B-most numerous in the body of the pancreas
- C-Cells of Langerhans can be differentiated

Answer: A

3-The most numerous type of Langerhans's cells is:

- A- B-Cells
- B- A- Cells
- C- F-Cells
- D-D-Cells

Answer:A

4-Which cells of Langerhans secretes gastrin:

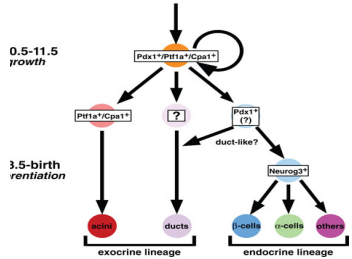
- A- PP Cells
- B- G- Cells
- C- D-Cells
- D- B-Cells

Answer: B

5-Which type of Langerhans cells increase the blood sugar level:

- A-B-Cell
- B-D-Cell
- C-A-Cell

Answer: C



Physiology

[15-16] Pancreas

1-What increases the translation of the insulin mRNA?

- A. glucose
- B. glucagon
- C. somatostatin

Ans :A

2-one of the Actions of insulin on Adipose tissue is stimulating?

- A. -hormone-sensitive lipase
- B. -glycerolphosohate synthesis
- C. -ketone uptake

Ans: B

3-all of the following are action of the insulin except?

- A. -stimulating cell growth
- B. -inhibitinggluconogenesis
- C. -stimulationketogenesis

Ans: C

4-which one of the following inhibit glucagon secretion?

- A. -somatostatin
- B. -sympathatic stimulation
- C. -increase serum amino acid

Ans: A

[9] DKA

Q1) Which one of the following represent the triad of diabetic ketoacidosis?

- A. hyperglycemia, Low anion gap metabolic acidosis, and ketonemia
- B. hyperglycemia, high anion gap metabolic acidosis, and ketoneuria
- C. hyperglycemia, ketonemia and high anion gap metabolic acidosis.
- D. hyperglycemia, ketoneuria and low anion gap metabolic acidosis.

Ans: C

Q2) The first synthesized keton body is:

- A. β -Hydroxybutyrate
- B. acetoacetate
- C. acetone

Ans :B

3) The rate limiting enzyme in ketolysis is:

- A. pyruvate carboxylase
- B. HMG CoA synthase
- C. Thiophorase
- D. Dehydrogenase

Ans: C

4) Which one of the following substances causes the fruity odor on the breath:

- A. β -Hydroxybutyrate
- B. acetoacetate
- C. acetone

Ans: C

5) Which one of the following is not right according to hyperosmolar hyperglycaemic state:

- A. occurs in elderly patients with T2DM
- B. Little or no accumulation of ketone bodies
- C. Neurological abnormalities
- D. Not very high glucose level

Ans: C

In Hyperosmolar hyperglycaemic state the glucose level is very high !while in diabetic ketoacidosis is not very high.

6) Which one of the following is the last to be secreted to correct hypoglycemia:

- A. Epinephrine
- B. Cortisol
- C. Growth hormone
- D. glucagon

Ans: B

1st Epinephrine & glucagon

2nd Growth hormone

3rd Cortisol

Glucose homeostasis

Q1) The metabolic source of glucose occur by ?

- A. glycogenolysis
- B. -gluconeogenesis
- C. -fructose

Ans: b

Q2) All body tissues use dietary glucose for energy in which phase ?

- A. phase I
- B. -phase II
- C. -phase III
- D. -phase V

Ans : a

Q3) Gluconeogenesis is inhibited in which phase ?

- A. -phase I
- B. -phase II
- C. -phase III
- D. -phase V

Ans : a

Q4) maintain blood glucose level in phase II occur by :

- A. glycogenolysis
- B. -gluconeogenesis
- C. -dietary CHOs

Ans :a,b

Q5) Brain uses both glucose and KB for energy but glucose more in which phase ?

- A. -phase I
- B. -phase II
- C. -phase III
- D. -phase IV

Ans:d

Q6) All body tissues mainly use FA and KB oxidation for energy production in which phase ?

- A. -phase I
- B. -phase II
- C. -phase III
- D. -phase V

Ans:d

Q7) Which one of these hormones affects glucose homeostasis indirectly ?

- A. Glucagon
- B. Somatostatin
- C. Cortisol
- D. Growth hormone

Ans:a

Q8) Glucose uptake by liver cells is:

- A. Energy-consuming
- B. A saturable process
- C. Insulin-dependent
- D. Insulin-independent

Ans:d

Q9)The conversion of alanine to glucose is termed:

- A. Glycolysis
- B. Oxidative decarboxylation
- C. Specific dynamic action
- D. Gluconeogenesis

Ans: d

Q10)Which of following sources is used in phase III of glucose homeostasis:

- A. Glycogenolysis
- B. Fatty acid oxidation
- C. Gluconeogenesis
- D. Diet

Ans:c

Which of the following is an action of insulin:

- A. Simulate ketogenesis
- B. inhibit glucose up take in muscle
- C. stimulateglycogenolysis
- D. Lipogenesis

Ans:d

Regarding the action of glucagon:

- A. It stimulates glycogenolysis
- B. It stimulates glycolysis
- C. It inhibits glycogenolysis
- D. It stimulates insulin activity

Ans:a

Metabolic changes in diabetes

Regarding diabetic retinopathy, which is incorrect:

- A. Higher risk in type 1
- B. Microvascualr disease contributes to the progression of diabetic retinopathy
- C. Never happens in type 2
- D. Common complication

Ans:c

Which one of the following cut-off points of Hemoglobin A1C is used to diagnose diabetes?

- A. Less than 6.5 %
- B. More than 6.5 %
- C. More than 5.6 %
- D. Less than 5.6 %

Ans: b

Chronic hyperglycemia will lead to non-enzymatic combination between excess glucose and amino acids in proteins which is known as:

- A. Polyol pathway
- B. ROS
- C. Advanced Glycosylation End Products
- D. None of the above

Ans:c

Microvascular complication seen in DM, may result from cross linkage between:

- A. AGEs and Amyloid
- B. Cytokines and IL-1
- C. AGEs and Interferon Alfa
- D. AGEs and Collagen

Ans:d

Sorbitol accumulation in retina, nerves, and kidney is responsible for the diabetic complication, because these tissues do not have the following enzyme:

- A. Sorbitol hydroxylase
- B. Aldose Reductase
- C. Sorbitol dehydrogenase
- D. D-Glucokinase

Ans:c

Hb A1C It is used to estimate glycemic control in the last

- 1-2 month
- 2-3 month
- 3-4 month
- 4-5 month

Ans: a

Metabolic effect of insulin deficiency on lipid metabolism ?

- ↑ Lipolysis
- ↑ Fatty acid oxidation
- ↑ Production of Ketone bodies
- All

Ans : d

Increase Intracellular sorbitol in the cell will cause

- decrease cell osmolality
- cell shrinking
- cell swelling

The earliest clinical finding of diabetic nephropathy is

- microalbuminuria
- proteinuria
- decrease glomerular filtration rate

Ans: a

Diabetic ketoacidosis

Which one of the following is the rate limiting enzyme of ketogenesis?

- A. Thiollase
- B. HMG CoA synthase
- C. HMG CoA lyase
- D. 3-hydroxybutyrate dehydrogenase

Ans:b

The Ketone Bodies produced by

- A. liver

- B. kidney
- C. pancreas
- D. spleen

Ans : a

The first KB to be synthesized is

- A. Acetoacetate
- B. Acetone
- C. β -Hydroxybutyrate

Ans : a

Ketone Bodies Utilization does not occur in the liver because ?

- A.lacksThiophorase
- B.lacksThiolase
- C. Lacks 3-hydroxybutyrate dehydrogenase
- D. HMG CoA LyaseLacks Acetyl CoA

Ans: a

Which one of the following is the first response to hypoglycemia?

- A. Insulin production decreases
- B. Epinephrine and Glucagon production increases
- C. Growth hormone production increases
- D. Cortisol production increases

Ans:a



Pharmacology

[6] Use of insulin in diabetes

Q1: to control postprandial hyperglycemia we use:

- A: regular insulin I.V.
- B: Insulin lispro I.V.
- C: insulin aspart S.C.

Ans: C

Q2: which of the following can be mixed with aspart:

- A: Isophane
- B: regular insulin
- C: Insulin detemir

Ans: A :Isophane NPH

Q3: a patient came to the ER with high blood sugar, which of the following can't be used?

- A: Insulin glulisine
- B: Humulin R
- C: insulin glargine

The answer is: c

Q4: which of the following carry fewer risks to develop nocturnal hypoglycemia:

- A: short acting insulin
- B: intermediate-acting insulins
- C: long acting insulin s

Ans: C

Q5: Which one of the following has a peakless profile?

Regular insulin

Aspart

glargine

Isophane

Ans: C

[7] Management of DKA

Q1: What type of insulin thereby is used to treat diabetic ketoacidosis:

A: fast acting insulin

B: short acting insulin

C: Intermediate acting insulin

Ans: B

Q2: Routes of administrations of exogenous insulin in diabetic ketoacidosis is:

A: Insulin syringes

b: Portable pin injector.

c: Insulin pump

Ans: C

Q3: Why do we use insulin to treat diabetic ketoacidosis?

A: to restore blood volume and renal perfusion

B: to stop lipolysis and promote degradation of ketone bodies

C: to correct the serum potassium concentration

Ans: B



Q4: bicarbonate therapy should be used Only if the arterial pH

<..... after of hydration:

A: 7.5 - 1 hour

B: 7 - 2 hours

C: 7 - 1 hour

Ans: C

**Q5: sodium bicarbonate should be administered in every
.....until the pH is at least**

A: 1 hour - 7.5

B: 2 hours - 7

C: 1 hour - 7

Ans: B

**Q6: a comatose patient brought to the ER, his blood sugar is
lower than 70 mg/100cc. We should give him:**

A: 30g oral tablets, juice or honey.

B: glucagon (1 mg I.V.)

C: 20-50 ml of 50% glucose solution I.V. infusion

Ans: C



Pathology



Lecture [4-5] T1&2DM,

A 14-year-old boy presents for a presummer camp physical examination. Routine urinalysis discloses 3+ glucosuria. He admits to thirst and frequent urination, accompanied by a 4-kg (9-lb) weight loss over the past few months. His parents note that he had a flu-like illness 5 months ago. His blood glucose is 220 mg/dL. Which of the following best explains the pathogenesis of hyperglycemia in this patient?

- (A) Excess dietary glucose
- (B) Increased peripheral insulin uptake
- (C) Irregular insulin secretion
- (D) Islet cell destruction
- (E) Peripheral insulin resistance

The answer is D: Islet cell destruction.

Type 1 diabetes mellitus (T1DM). The clinical onset of T1DM often coincides with another acute illness, such as a febrile viral or bacterial infection. The most characteristic early lesion in the pancreas is a lymphocytic infiltrate in the islets (insulinitis), sometimes accompanied by a few macrophages and neutrophils. As the disease becomes chronic, b-cells of the islets are progressively depleted. Choice E (peripheral insulin resistance) represents diabetes type 2. The other choices do not lead to hyperglycemia in normal persons.

Diagnosis: Diabetes mellitus, type 1

A 10-year-old boy with a recent onset of diabetes mellitus dies following an automobile accident. Histologic examination of the child's pancreas at autopsy is shown in the image. Injury to pancreatic islet cells in this patient was most likely mediated by which of the following mechanisms of disease?

- (A) Antibody-mediated islet cell destruction
- (B) Cell-mediated immunity
- (C) Direct viral cytopathic effects
- (D) Hypovolemic shock
- (E) Phagocytosis by activated macrophages



The answer is B: Cell-mediated immunity.

Cell-mediated immune mechanisms are fundamental to the pathogenesis of type 1 diabetes mellitus (T1DM), and cytotoxic T lymphocytes sensitized to b-cells in T1DM persist indefinitely. Circulating antibodies (choice A) against components of the b-

cells of the islets, including insulin itself, are identified in most newly diagnosed patients with diabetes. However, these antibodies are regarded as a response to b-cell injury, rather than the initial cause of b-cell depletion. Evidence for viral causes of diabetes mellitus type 1 (choice C) remains controversial.

Diagnosis: Diabetes mellitus, type 1

A 55-year-old obese woman (body mass index = 33 kg/m²) complains of declining visual acuity. Funduscopic examination shows peripheral retinal microaneurysms. Urinalysis reveals 3+ proteinuria and 3+ glucosuria. Serum albumin is 3 g/dL, and serum cholesterol is 350 mg/dL. These clinicopathologic findings are best explained by which of the following mechanisms of disease?

- (A) Anti-insulin antibodies
- (B) Increased peripheral insulin uptake
- (C) Irregular insulin secretion
- (D) Peripheral insulin resistance
- (E) Secretion of insulin-like proteins

The answer is D: Peripheral insulin resistance.

Type 2 diabetes mellitus results from a complex interplay between underlying resistance to the action of insulin in its metabolic target tissues (liver, skeletal muscle, and adipose tissue) and a reduction in glucose-stimulated insulin secretion, which fails to compensate for the increased demand for insulin. In obese persons, the release of inhibitory mediators from adipose tissue interferes with intracellular signaling by insulin. Hyperinsulinemia secondary to insulin resistance also downregulates the number of insulin receptors on the plasma membrane. The other choices have not been related to the pathogenesis of type 2 diabetes.

Diagnosis: Diabetes mellitus, type 2

A 60-year-old man with diabetes mellitus complains of deep burning pain and sensitivity to touch over his hands and fingers. Nerve conduction studies show slow transmission of impulses and diminished muscle stretch reflexes in the ankles and knees. Sensations to vibrations and light touch are also markedly diminished. The development of polyneuropathy in this patient correlates best with which of the following conditions?

- (A) Anti-insulin antibody titer
- (B) Hyperglycemia
- (C) Insulin deficiency



(D) Intermittent hypoglycemia

(E) Ketoacidosis

The answer is B: Hyperglycemia.

The severity and chronicity of hyperglycemia in both T1DM and T2DM are the major pathogenetic factors leading to the microvascular complications of diabetes, including retinopathy, nephropathy, and neuropathy.

Thus, control of blood glucose remains the major means by which the development of microvascular diabetic complications can be minimized. Glucose binds nonenzymatically by attaching to a variety of proteins. This process, termed glycosylation, occurs roughly in proportion to the severity of hyperglycemia. Unfortunately, trials in which blood glucose levels were carefully controlled did not necessarily prevent all complications of diabetes.

Diagnosis: Diabetic neuropathy

A 56-year-old man with a 14-year history of diabetes mellitus presents with poor vision, peripheral vascular disease, and mild proteinuria. Which of the following is the best monitor of the control of blood sugar levels in this patient?

(A) Glycosylated hemoglobin

(B) Islet cell autoantibody

(C) Serum myoinositol

(D) Serum sorbitol

(E) Serum triglycerides

The answer is A: Glycosylated hemoglobin.

A specific fraction of glycosylated hemoglobin in circulating red blood cells (hemoglobin A1c) is measured routinely to monitor the overall degree of hyperglycemia that occurred during the preceding 6 to 8 weeks. Nonenzymatic glycosylation of hemoglobin is irreversible, and the level of hemoglobin A1c, therefore, serves as a marker for glycemic control. None of the other choices are quantitative measures of glucose levels.

Diagnosis: Diabetes mellitus

A 32-year-old woman with diabetes mellitus delivers a child after 38 weeks of gestation. Which of the following is the most likely abnormality that might be encountered in this child at birth?

(A) Cataracts

(B) Hyperbilirubinemia

(C) Hypoglycemia

(D) Low birth weight

(E) Mental retardation

The answer is C: Hypoglycemia.

Tight glucose control in the diabetic mother is necessary to prevent overstimulation of the fetal pancreas during gestation. Fetuses exposed to hyperglycemia in utero may develop hyperplasia of the pancreatic β -cells, which may secrete insulin autonomously and cause hypoglycemia at birth and in the early neonatal period. Infants of diabetic mothers show a 5% to 10% incidence of major development



abnormalities. **Increased birth weight** is commonly encountered in offspring of diabetic mothers (see choice D). The incidence of mental retardation (choice E) is not specifically increased.

Diagnosis: Gestational diabetes

If you have any questions you want to add, please send it to

Revisiontest432@gmail.com

Good luck

Team Leaders :

Khalid Al-Osaimi & Lulu Al-Obaid

