PATHOLOGY

بسم الله الرحمن الرحيم

Past Papers

- Cell Adaptations
- Reversible & irreversible cell injury

﴿ وَإِن تَتَوَلَّوْا يَسْتَبْدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَالَكُم ﴾

اللهم استعملنا ولا تستبدلنا

Collected by:

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- Hala Sweidan
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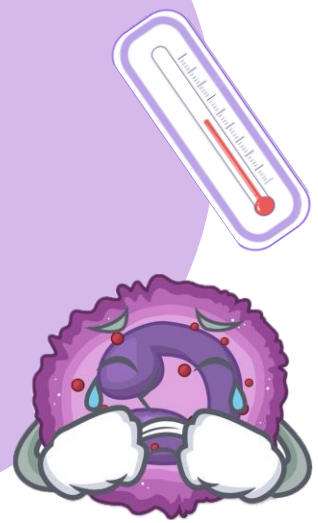

Which of the following is an irreversible Nuclear change in cell injury

A. Myelin figures
B. Cell membrane blebs
C. Mitochondrial densities
D. karyorrhexis
E. Cellular swelling

Ans :D

Which of the following patterns of necrosis can be caused by focal bacterial and fungal infections

A. Caseous necrosis
B. Liquefactive necrosis
C. Fibrinoid necrosis
D. Fat necrosis
E. Coagulative necrosis

Ans :B

Accumulation of misfolded proteins in the cytoplasm activates which of the following enzymes:

A. Caspases

B. Glutathione peroxidase

C. Telomerase

D. Superoxide dismutase

E. Bax/Bak activation

Ans :A

Which of the following enzymes reduce oxidative stress

A. Nitric oxide synthase

B. Glutathione peroxidase

C. myeloperoxidase

D. Proteases

Ans :B

Which of the following leads to an enlarged prostate:

A. Atrophy
B. Hyperplasia
C. Hypertrophy
D. Metaplasia
E. There is no correct answer

Ans :B

Which of the following is caused by GERD (Gastroesophageal reflux disease)

A. Atrophy
B. Hyperplasia
C. Hypertrophy
D. Metaplasia
E. There is no correct answer

Ans :D

Ischemia reperfusion injury is directly linked to

A. Anemia
B. Generation of ROS
C. Toxins
D. Necrosis
E. Protein misfolding

Ans :B

Which of the following is caused by vitamin A deficiency

A. Atrophy
B. Hyperplasia
C. Hypertrophy
D. Metaplasia
E. There is no correct answer

Ans :D

Which of the following patterns of tissue necrosis has granuloma formation and the tissue architecture is completely obliterated, and cellular outlines cannot be discerned

A. Coagulative necrosis
B. Caseous necrosis
C. Liquefactive necrosis
D. Fibrinoid necrosis
E. Gangrenous necrosis

Ans :B

Which of the following is an exogenous pigment:

- A. Lipofusion
- B. Melanin
- C. Hemosiderin
- D. Carbon

Ans : D

لا راحت عليك .... ولا ضاعت منك
وَفِي السَّمَاءِ رِزْقُكُمْ وَمَا تُوعَدُونَ)

In the process of necrosis, a reduction in the size of the nucleus and condensation of nuclear material is known as:

A. Karyorrhexis
B. Pyknosis
C. Cytolysis
D. Hyperplasia

Ans: B

In which particular order are morphological changes of injured tissue seen?

A. Loss of function, cell death, microscopic changes, gross changes

B. Loss of function, microscopic changes, cell death, gross changes

C. Gross changes, loss of function, cell death, microscopic changes

D. Cell death, loss of function, microscopic changes, gross changes

Ans : A

All the following are true statements regarding Hemosiderin except:

A. pigment derived from hemoglobin

B. Often seen in macrophages in bone marrow, spleen and liver

C. Results from the free radical peroxidation of membrane lipids

D. Regarded as endogenous pigment

Ans : C

Which of the following is a miss-match between a disease and the type of necrosis:

A. Myocardial Infarction --- Coagulative Necrosis

B. Brain Infarction --- Gangrenous Necrosis

C. Mycobacterial tuberculosis --- Caseous Necrosis

D. Vasculitis --- Fibrinoid Necrosis

Ans : B

Calcium deposition in damaged aortic valves can be explained as

A. Excessive calcium nutritional intake
B. Dystrophic calcification
C. Hypercalcemia
D. Apoptosis
E. Metastatic calcification

Ans : B

Which of the following is an example of compensatory hyperplasia

A. Weight-lifters skeletal muscle

B. Liver after partial Hepatectomy

C. Postmenopausal uterus

D. Bronchial mucosa of a smoker

Ans : B

Dystrophic calcification can be seen in all the following except:

A. Calcifications seen in kidney, cardiac muscle and soft tissue

B. Tuberculosis caseous necrosis

C. Calcification in advanced atherosclerosis

D. Carcinoma of the breast

Ans : A

In intracellular accumulations, one of the following is an example of accumulation due to inherited enzyme deficiency

A. Anthracosis

B. Steatosis

C. Lysosomal storage diseases

D. Alpha 1 antitrypsin deficiency

E. Silicosis

Ans : C

intrinsic pathway of apoptosis is initiated by all the following except:

A. Loss of survival signal

B. DNA damage

C. Protein misfolding

D. Type 1TNF receptor

Ans: D

Russell bodies are seen in

A. Lymphocytes
B. Neutrophils
C. Macrophages
D. Plasma cell

Ans: D

Which of the following types of necrosis is grossly opaque and chalky white

A. Coagulation necrosis
B. Liquefaction necrosis
C. Caseous necrosis
D. Fat necrosis
E. Gangrenous necrosis

Ans: D

The statement that's wrong about Metaplasia :

A. Metaplasia involves the transformation of stem cells into completely different types of cells without any differentiation

B. Metaplasia is the process where cells lose their specialized functions entirely, leading to a non-functional state

C. Metaplasia is an irreversible process that cannot revert back to the original cell type once it has occurred.

D. Already differentiated cells . (It’s reprogramming of stem cells)

Ans: D

Pathological adaptive mechanism that affects the prostate :

A. Hyperplasia
B. Atrophy
C. Metaplasia
D. Hypertrophy

Ans:A
Benign prostatic hyperplasia

A patient with myocardial infraction & uncontrolled hypertension was found to have atrial enlargement the type of the adaptive mechanism that occurred is:

A. Hyperplasia
B. Atrophy
C. Metaplasia
D. Hypertrophy

Ans:D

Coagulative necrosis is caused by:

A. Sudden ischemia
B. Viral infection
C. Chronic inflammation
D. Bacterial toxins

Ans: A

واعلم أنك في ميدان سباق، والأوقات تنتهب، ولا تخلد إلى كسل، **فما فات**
ن فات إلا بالكسل، ولا نال من نال إلا بالجد والعزم، وإن الهمّة لتغلي في
القلوب غليان ما في القدور

One of the followings is a REVERSIBLE change caused by a deficiency in the Na+/k+ pump :

A. Myelin figures
B. ER dilation
C. Mitochondrial changes
D. Cellular swelling
E. All answers are correct

Ans: D

Which of the following is correct about karyorrhexis :

A. Fragmentation
B. Shrinkage
C. Increased basophilia
D. Basophilia fades

Ans: A

A patient with cerebral infraction, was found to have:

A. Liquefactive necrosis
B. Gangrenous necrosis
C. Caseous necrosis
D. Fat necrosis

Ans:A

A patient with acute pancreatitis, was found to have:

A. Liquefactive necrosis
B. Gangrenous necrosis
C. Caseous necrosis
D. Fat necrosis

Ans: D

Which of the following is NOT seen in hypoxia :

A. Glycolysis increases
B. Na enters the cells and causes swelling
C. Lactic acid builds up
D. The cell pH increases

Ans:D

Lipid peroxidation of cellular and organelle membranes in the process of cell injury is mediated by :

A. Membrane pump failure
B. Low PH
C. Direct acting toxins
D. ATP depletion
E. Reactive oxygen species

Ans:E

Restoration of blood flow following myocardial infarction may impose more tissue injury sometimes, the main mechanism directly responsible for this paradoxical effect is?

A. Accumulation of misfolded proteins
B. Decreased ATP production
C. Hypoxia
D. Increased reactive oxygen species formation
E. Decreased PH

Ans:D

One of the following does not cleave free radicals :

A. Myeloperoxidase
B. Catalase
C. Superoxide dismutase
D. Glutathione peroxidase
E. Vitamin A,E

Ans:A

Which of the following gets affected by low blood perfusion with least damage:

A. Cerebral cortex
B. Cerebral spin
C. Skeletal muscle
D. Cardiac muscle
E. Myocardium

Ans:C

Pathological apoptosis can be caused by one of the following:

A. Viral infection

B. Self reacting lymphocytes

C. End of function

D. During embryogenesis

Ans:A

Which of the following molecules is anti-apoptotic:

A. Bax

B. P53

C. BCl-2

D. Bak

E. CytC

Ans:C

The enzyme that is directly responsible for the apoptosis process:

A. Myeloperoxidase

B. Capases

C. Cyt C

D. Catalase

Ans:B

من "والصبر"من أجل اللّـه، "الترك"نتعلم فيها "تقوى"فيإنها رحلة نتعلم فيها معنى السعي، ومعاني !من أجل اللّـه "والتعب"أجل اللّـه، التسليم اليقين.

The presence of the russell bodies in the plasma cells is due to:

A. Protein deposition
B. Glycogen deposition
C. Cholesterol deposition
D. None of the above

Ans:A

Brown atrophy is a term that refers to the deposition of which of the following substances:

A. Melanin pigment
B. Bilirubin pigment
C. Hemosiderin pigment
D. Lipofuscin pigment
E. Glycogen pigment

Ans:D

During lung surgery, it was noted that there is black densities on the surface of the lymph nodes, this is called :

A. Dystrophic calcification

B. Metastatic calcification

C. Bruise

D. Anthracosis

Ans:D

A patient has hit his arm with a table, after 3 days a yellowish-Brown Color appeared on his skin, this is due the deposition of:

A. Melanin

B. Hemosiderin

C. Carbon

D. Calcium

Ans:B

The adaption of regular exercise on skeletal muscle:

A. Hypertrophy
B. Atrophy
C. Dystrophy
D. Fibrosis

Ans: A

All of the following cause atrophy except:

A. Disease
B. Ageing
C. Hypertension
D. Malnutrition

Ans: C

Helps in stimulation of ubiquitin-proteasome system:

A. Atrophy
B. Hypertrophy
C. Necrosis
D. Metaplasia

Ans: A

The most common cause of cell injury:

A. Hypoxia
B. Hyperglycemia
C. Autoimmune reactions
D. Chemical exposure

Ans: A

قَالَ الله تَعَالَى: وَلْتَكُنْ مِنْكُمْ أُمَّةٌ يَدْعُونَ إِلَى الْخَيْرِ وَيَأْمُرُونَ بِالْمَعْرُوفِ وَيَنْهَوْنَ عَنِ الْمُنْكَرِ وَأُولَئِكَ هُمُ الْمُفْلِحُونَ

Barrett esophagus (The change in esophageal mucosa from squamous to columnar epithelium in patient with chronic reflux) is an example of:

A. Metaplasia
B. Dysplasia
C. Adenocarcinoma
D. Hyperplasia

Ans: A

In Gastroesophageal reflux disease patients, the type of the adaptive mechanism that occurred is:

A. Hyperplasia
B. Atrophy
C. Metaplasia
D. Hypertrophy

Ans:C

Extrinsic apoptosis happens when:

A. Lymphocytes show self-reactivity
B. Defective DNA
C. Misfolded proteins
D. UV damage

Ans:A

Which of the following is caused during lactation:

A. Atrophy
B. Hyperplasia
C. Hypertrophy
D. Metaplasia
E. There’s no correct answer

Ans:B

Cause of brown bruises:

A. Lipofuscin
B. Hemosiderin

Ans:B

Which one is true about necrosis:

A. Almost always pathological
B. A form of programmed cell death
C. Typically involves cell shrinkage
D. Requires energy (ATP) for the process

Ans:A

Lung biopsy showed caseous necrosis with calcification, what caused calcium to deposit?

A. Hypercalcemia
B. High intake of Ca
C. Metastatic calcification
D. Apoptosis
E. Dystrophic calcification

Ans:E

What is the main reason of cellular swelling during injury?

A. Defective membrane ATP-dependent Na pumps
B. Increased protein synthesis
C. Excessive energy production
D. Activation of apoptosis pathways

Ans:A

Acetaminophen is toxic because:

A. Directly damages the cell membrane
B. Causes an immediate immune response
C. It's converted into active metabolites
D. Inhibits protein synthesis in liver cells

Ans:C

What is the main mechanism of reperfusion injury?

A. Increased ROS formation

B. Decreased blood flow to tissues

C. Reduced mitochondrial activity

D. Enhanced ATP production during reperfusion

Ans:A

{ وَإِنْ تَصْبِرُوا وَتَتَّقُوا لا يَضُرُّكُمْ كَيْدُهُمْ شَيْئًا إِنَّ اللَّهَ بِمَا يَعْمَلُونَ مُحِيطٌ }

اللهم استر عوراتهم و امن روعاتهم

Which of the following is NOT seen in hypoxia:

A. Glycolysis increases ·

B. Na enters the cells and cause swelling ·

C. Lactic acid builds up ·

D. The cell pH increases ·

E. Proteins denature

Ans:D

Coagulative necrosis is characterized by which of the following:

A. Central caseation
B. Preserved tissue architecture initially ·
C. Caused by bacterial infections ·
D. Cheesy like material ·
E. Liquified Center

Ans:B

The hallmark of CCL4 toxicity in the liver is

A. Caseous necrosis
B. Protein accumulation
C. Influx of inflammatory cells
D. Fatty change
E. Endoplasmic reticulum stress

Ans:D

Exposure to a high dose of radiation injury with resultant DNA damage is associated with which of the following cellular responses:

A. Bcl2 activation
B. Cytochrome c inhibition
C. Caspase inhibition
D. BH3 sensor inhibition
E. Bax/Bak activation

Ans:E

Elimination of self-reactive lymphocytes by apoptosis is mediated by which of the following molecules:

A. Bax/Bak ·

B. Fas-Fas ligand ·

C. BH3 ·

D. Bel2 ·

E. P53 ·

Ans:B

"لا إله إلا الله وحده، أعز جنده، ونصر عبده، وغلب الأحزاب وحده، فلا شيء بعده"

ONE of the following changes is associated with cellular hypertrophy:

A. Protein degradation
B. Increased protein synthesis
C. Autophagy
D. Decreased protein synthesis
E. Decreased function

Ans:B

One of the followings is a REVERSIBLE change in cell injury:

A. Myelin figures ·
B. ER dilation ·
C. Mitochondrial changes ·
D. Cellular swelling ·
E. All answer are correct

Ans:E

The changes in the epithelial lining of the lower esophagus in patients with reflux esophagitis, from squamous epithelium to glandular epithelium are termed

- A. Hypertrophy
- B. Metaplasia
- C. Hyperplasia
- D. Dysplasia
- E. Atrophy

Ans:B

Which of the following is a typical example of adaptive physiological atrophy:

A. Uterine smooth muscle changes in pregnancy ·
B. Skeletal muscle changes in athletes ·
C. Endometrial changes after menopause ·
D. Breast lobules changes during lactation ·
E. Left ventricular changes in hypertension

Ans:C

One of the following can cause pathologic apoptosis:

A. Turnover of gut epithelium
B. Embryogenesis
C. Elimination of self-reactive lymphocytes
D. Involution of endometrium after menopause
E. Viral infections

Ans:E

Restoration of blood flow following myocardial infarction may impose more tissue injury sometimes, the main mechanism directly responsible for this paradoxical effect is?

A. Accumulation of misfolded proteins
B. Decreased ATP production
C. Hypoxia
D. Increased reactive oxygen species formation
E. Decreased PH

Ans:D

Which one of the following could be considered as the “Hallmark of reversible injuries”?

A. Loss of DNA and chromatin structural integrity
B. Cellular enzyme leakage
C. Cellular swelling
D. Pyknosis
E. None of the above

Ans:C

In a pregnant woman her uterus can get bigger while the embryo is growing because the cells there undergo:

A. Hypertrophy
B. Atrophy
C. Metaplasia
D. Hyperplasia
E. A and D

Ans:E

Brain ischemia is characterized by

- A. Coagulative necrosis
- B. Caseous necrosis
- C. Liquefactive necrosis
- D. Fibroid necrosis
- E. Fat necrosis

Ans:C

Which of the following is an example of physiologic hypertrophy:

A. Compensation after the removal of part of the liver

B. Cardiac enlargement in aortic valve disease

C. The change of columnar epithelium in cigarette smokers

D. Myometruim during pregnancy

Ans:D

The breast during lactation undergoes

- A. Hyperplasia
- B. Atrophy
- C. Hypertrophy
- D. Metaplasia

Ans:A

Which of the following molecules is anti-apoptotic

- A. Bax
- B. P53
- C. BCl-2
- D. Bak
- E. CytC

Ans:C

"اللهم منزل الكتاب، سريع الحساب، اهزم الأحزاب، اللهم اهزمهم وزلزلهم"

Which of the following is typical for apoptosis:

- A. Disrupted plasma membrane
- B. Absence of inflammation
- C. Pyknosis and karyorrhexis
- D. Leakage of cell components
- E. Uncontrolled

Ans:B

Caseous necrosis is most likely found in:

A. Peritoneal cavity
B. Tuberculosis
C. Myocardial infarction
D. Pancreatic tissue
E. Hepatic tissue

Ans:B

Which of the following is a direct result of ROS damage:

- A. Failure of ATP synthesis
- B. Lactic acidosis
- C. Detachment of ribosomes from ER
- D. Lipid peroxidation
- E. Repairfusion

Ans:D

Which of the following pigments is found in sites of bruises

- A. Carbon
- B. Lipofuscin
- C. Hemosiderin
- D. Melanin
- E. None of the above

Ans:C

Which of the following conditions is most likely to be found in alcoholic patients

- A. Lipofuscin accumulation
- B. Cholesterol esters accumulation
- C. steatosis
- D. Dystrophic calcification
- E. Glycogen Accumulation

Ans:C

After sun exposure, a fair skinned patient noted a brownish discoloration over the skin of her face and dorsum of hands. Which of the following substances most likely accumulated at these sites?

A. Melanin pigment

B. Hemosiderin pigment

C. Lipofuscin pigment

D. Bilirubin pigment

E. Glycogen pigment

Ans:A

“Brown atrophy” is a term that refers to the deposition of which of the following substances:

- A. Melanin pigment
- B. Bilirubin pigment
- C. Hemosiderin pigment
- D. Lipofuscin pigment
- E. Glycogen pigment

Ans:D

Myeloperoxidase enzyme in macrophages catalyzes the conversion of:

- A. H2O2 to hypochlorite
- B. Oxygen to superoxide
- C. H2O2 to water
- D. H2O2 to hydroxyl group
- E. Superoxide to H2O2

Ans:A

Which of these are irreversible?

A. Karyorrhexis

B. Cellular swelling

C. Fatty change

D. Plasma membrane blebbing

Ans:A

What is the main cause of liver steatosis?

A. Alcoholism

B. Increased bile production

C. Excessive protein intake

D. Overactive immune response

Ans:A

Which of the following is caused by enlarged prostate:

A. Atropy

B. Hyperplasia

C. Hypertrophy

D. Metaplasia

E. There is no correct answer

Ans: B

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			
V1 → V2			

Additional Resources:

Reference Used:
(numbered in order as cited in the text)

1. First reference
2. Second reference
3. …

Extra References for the Reader to Use:

1. Video
2. Webpage
3. …

رسالة من الفريق العلمي:

اللهم اقسم لنا من خشيتك ما يحول بيننا وبين معاصيك ومن طاعتك ما تبلغنا به جنتك ومن اليقين ما تهون به علينا مصيبات الدنيا ومتعنا بأسماعنا وأبصارنا وقوتنا ما أحييتنا واجعله الوارث منا واجعل ثأرنا على من ظلمنا وانصرنا على من عادانا ولا تجعل مصيبتنا في ديننا ولا تجعل الدنيا أكبر همنا ولا مبلغ علمنا ولا تسلط علينا من لا يرحمنا

"اللهم اكسر بنا شوكتهم ، اللهم نكّس بنا رايتهم ، اللهم أذّل بنا قادتهم ، اللهم حطّم بنا هيبتهم ، اللهم أزل بنا دولتهم ، اللهم أنفذ بنا قدرك فيهم ، بالزوال والتدمير والتتبير يا رب العالمين وحقق آمال شعبنا بالعودة و التحرير "
- رحم الله القائد و أموات المسلمين وتقبلهم من الشهداء