

Benha University.

Faculty Of Medicine.



Pathology Department ,course code (0705)

Final Exam. Third year. Paper II Date: 27/5/2013.

Important instructions For All Students :Please Read Carefully.

All Questions to be answered.

ALLOCATED TIME		(2 HOURS)	
Total allocated marks		(75 marks)	
Number of pages.		(12 pages)	
Number of questions		(7 questions) <u>Secrete No:</u>	
Question number	Mark	First signature	Second signature
1			
2			
3			
4			
5			
6			
7			
Total			
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Student name:

Student number:

Secret number

Oral Exam will be in the pathology department , on 28 may at 9.00 AM

Question 1: Define the following (One mark each)

1- Autoimmune Diseases.

Group of disorders results from breakdown of self tolerance and development of immune response against self proteins

2- Embolism.

Impaction of the embolus (insoluble solid, liquid or gaseous mass) in a blood vessel

3- Gangrene.

Massive tissue necrosis followed by putrefaction

4- Hamartoma.

Tumor-like mass formed due to developmental error and consists of irregularly arranged normal tissues of the part from which it arises

5- Gene mutation.

It is a permanent change in DNA sequence of a certain gene leading to the appearance of abnormal gene having new properties

6- Lymphoma.

Malignant tumor of lymphoid tissues

7- Hydronephrosis.

Dilatation of renal pelvis & calyces associated with progressive atrophy of renal parenchyma due to obstruction to outflow of urine

8- Endometriosis.

Characterized by endometrial glands and stroma outside the endometrium

9- Seminoma.

Malignant germ cell testicular tumor with one histologic pattern

10- Hydrocephalus.

Abnormal dilatation of ventricular system by excess cerebrospinal fluid with atrophy of the brain tissue.

Question 2: Explain the pathogenesis of: (2.5 marks each)

1- Type 4 hypersensitivity (Delayed type).

The antigen-antibody reaction is characterized by:

- 1) Occurs after 12-48 hours (delayed).
- 2) It is a reaction between the antigen and a cell-bounded antibody mainly on lymphocytes and macrophages. This is the only class of hypersensitive reactions to be triggered by antigen-specific T cells.
- 3) The reaction leads to release of excessive cytokines (lymphokines) which have the following actions:
 1. Attract leucocytes to the area of inflammation.
 2. Inhibit macrophages migration.
 3. Stimulate lymphocytes proliferation.
 4. Causes tissue necrosis

2- Acute hematogenous osteomyelitis.

Source of infection:

Abscess, Upper respiratory or Urinary tract infection



Bacteraemia

+ **Trauma** → hematoma in the metaphysis → Sharply bent metaphyseal blood vessels → slow blood flow → stasis of bacteria → Bacteria localize in the metaphysis

Bacterial toxins + ischemia (due to infl. effects) → necrosis

3- Septic shock.

The effect is dependent on the level of endotoxin, which is due to bacterial wall lipopolysaccharides (LPS), that cause profound activation of mononuclear cells and production of potent effector cytokines such as **IL-1 and TNF**.

Higher levels of LPS result in:

- *Systemic vasodilation (hypotension)
- *Diminished myocardial contractility
- *Widespread endothelial injury and activation, causing systemic leukocyte adhesion and diffuse alveolar capillary damage in the lung
- *Activation of the coagulation system, culminating in disseminated intravascular coagulation (DIC)

4- Glomerulonephritis.

1- Immunological mechanisms:

- Antibody-mediated
 - Cytotoxic antibodies, immune complex deposition (circulating or in-situ)
- Cell-mediated immune injury.
- Activation of alternative complement pathway.

2- Non-immunologic mechanisms

Question 3: a- Compare between :(4 marks):

<i>Dry Gangrene</i>	<i>Moist Gangrene</i>
1. Gradual arterial occlusion	1. Sudden arterial and venous occlusion
2. Exposed parts (limbs)	2. Internal organs (intestine)
3. Slow putrefaction	3. Rapid putrefaction
4. Tissue mummification	4. Tissue edema
5. Slow spread	5. Rapid spread
6. Marked line of demarcation	6. Poor line of demarcation
7. Self separation may occur	7. Self separation absent
8. Mild toxemia	8. Severe toxemia

Question 3: b-Compare between :(4 marks):

	Carcinoma	Sarcoma
Origin	Epithelium	Mesenchyme
Incidence	Most common form	Much less common
Age of onset	Usually above 40 years	Usually below 20 years
Growth rate	Slower than sarcoma	Faster than carcinoma
Tumor margins	More infiltrative than in sarcoma	Less infiltrative and more expansile than carcinoma
Gross features		
<u>Size</u>	▪ Less bulky than sarcoma	▪ Bulky
<u>Haemorrhage and necrosis</u>	▪ <u>Usually less</u>	▪ Usually prominent
Consistency	▪ <u>Hard</u>	▪ Fleshy
Color	▪ <u>Grayish</u>	▪ Pink
Shape: - Inside solid organ - Arise from surface	▪ irregular growth. ▪ Fungating, ulcerative or infiltrative patterns.	▪ Expansile growth, with more regular outlines. ▪ Sarcomas do not arise from surface epithelia
Microscopic features		
Cellular anaplasia	Less marked than sarcoma	▪ More marked than carcinoma
Differentiation	▪ Depends on tumor cells arrangement.	▪ Depends on cell secretions (intracellular or extracellular)
Cell cohesion	▪ Variable grades of cohesion	▪ Often absent and the tumor cells occur singly
<u>Blood vessels</u>	▪ .Less and better formed than in sarcoma.	▪ <u>More</u> numerous and thin walled.
<u>Hemorrhage, necrosis and secondary changes</u>	▪ Less profound than in sarcoma.	▪ Common
Distant spread	▪ Lower than in sarcoma. ▪ Mostly, occurs early by lymphatics then later by blood	▪ Usually faster than in carcinoma. ▪ Occurs early by blood and rarely by lymphatics.

Question 4: Describe in short (3 marks each)

1- Microscopic picture of Wilm's tumor.

Gross Picture: Large rounded or lobulated well circumscribed and soft in consistency. Cut section is pale gray and shows areas of cystic changes.

Microscopic picture: the tumor consists of three components:

- (1) Cellular nests and sheets of primitive blastemal cells, round or oval with scanty cytoplasm.
- (2) Mesenchymal component of fibrous tissue, smooth muscle, striated muscle, bone and cartilage.
- (3) Epithelial component of embryonic tubules and glomeruloid structures

2- Morphology of Seminoma.

Grossly: -Well demarcated, large, soft or fleshy, homogenous, grey white or yellow. Cut section: lobulated, replacing most of testicular tissue, devoid of hemorrhage and necrosis (presence of hemorrhage indicates presence of non seminoma germ cell tumors). Confined to testis by intact tunica albuginea

Microscopic:

- Consists of lobules of seminoma cells separated by fibrous septa.
- Seminoma cells: rounded, large polyhedral cells with distinct wall, clear cytoplasm and large central hyperchromatic nucleus with prominent nucleoli.
- The stroma is infiltrated by lymphocytes.
- Large giant cells resemble syncytiotrophoblast

3- Morphology of Ewing sarcoma.

Gross: Gray firm mass in the bone marrow with areas of hemorrhage and necrosis infiltrate medullary canal, cortex and soft tissue. Lifting of the periosteum.

Microscopic:

Uniform small round cells with indefinite borders, scanty cytoplasm, and large rounded darkly stained nuclei. The cells arranged diffusely or around the blood vessel with areas of necrosis

4- Types and microscopic picture of endometrial hyperplasia.

Microscopic: proliferation of both endometrial glands and stroma

1-*Simple endometrial hyperplasia:*

Crowded glands with cystification (Swiss-cheese appearance). Epithelial lining is columnar epithelium, similar to proliferative endometrium without atypia.

2- *Complex endometrial hyperplasia:* more increased glandular stromal ratio with tufting out pouching and papillary formation. Glands are lined by more than one layers of columnar epithelium.

3- *Atypical endometrial hyperplasia:* lining epithelium shows loss of polarity, pleomorphism with mitosis with higher risk to malignant changes. Basement membranes is intact.

5- Microscopic picture of Hydatidiform mole.

1- Complete Mole

***All** or most of the villi show hydropic edematous cores with marked *diffuse* circumferential trophoblastic proliferation.

*Fetal parts are rarely seen.

*Blood vessels: absent.

*Nucleated erythrocytes: absent

*The chromosomal number is diploid

2- Partial Mole

***Some** of the villi are only edematous and trophoblastic proliferation is *focal*, unipolar and mild.

*Fetal parts are more common.

*Blood vessels: commonly present.

*Nucleated erythrocytes: sometimes

*The chromosomal number is triploid

Question 5: Enumerate: (2 marks each)

1- Non neoplastic cysts of the ovary.

- 1- Follicular
- 2- Corpus luteal, theca lutein
- 3- Polycystic ovary
- 4- Chocolate cyst

2- Four possible complications and effects of endometriosis.

- 1- Pain & hemorrhage in the affected site.
- 2- Ovarian chocolate cyst (large, blood-filled cysts).
- 3- Pelvic adhesions.
- 4- Infertility.
- 5- Hematuria (bladder affection)
- 6- Intestinal obstruction (intestinal affection)

3- Four locally malignant tumors.

- 1- Giant cell tumor
- 2- Adamantinoma
- 3- Carcinoid tumor
- 4- Astrocytoma

4- Four types of Hodgkin's lymphoma.

- 1- Lymphocyte-rich,
- 2- Nodular-sclerosis,
- 3- Mixed-cellularity, and
- 4- Lymphocyte-depleted variants

5- Four microscopic types of intraductal carcinoma breast.

- 1- Comedo pattern
- 2- Solid pattern
- 3- Cribriform pattern
- 4- Papillary pattern

Question 6: 12 marks:

Case : I: An 8-year-old boy presents with high fever, and sore throat. He received a course of antibiotics for 10 days. His physician told him that he is now completely cured. Twenty days later, the patient returns to his physician complaining from painless dark smoky urine. Urine analysis reveals both Red blood cells and WBC > 100 /HPF, some cellular casts and mild proteinuria.

a- What is the most probable diagnosis of this case? (2 marks)

- **Acute poststreptococcal glomerulonephritis**

b- Enumerate 3 immunologic mechanisms of your diagnosis. (2 marks)

- **Antibody-mediated**

- **Cell-mediated immune injury.**

- **Activation of alternative complement pathway.**

1- **Case:2:** A 55-years old female comes to physician complaining of vaginal spotting after a long period of progressive offensive vaginal discharge and back pain. She had gone through menopause since 3 years and smoked one pack of cigarettes a day for the last 20 years. On physical examination there is Rt. Leg swelling. Colposcopic examination shows a 4 cm fungating mass arising from cervix.

a- What is the most probable diagnosis? (2 marks)

Cancer cervix

b- Mention risk factors of this condition. (2 marks)

1-Early age at first intercourse.

2-Multiple sexual partners.

3-Multiparous females.

4-Presence of cancer-related HPV.

5-Certain HLA and viral subtypes.

6-Exposure to oral contraception

7-Chlamydia.

Case 3: A 30-year-old female gave a full term baby after a prolonged obstructed labor. Forty minutes after, she experienced difficulty in breathing, chest pain, and headache. She also experienced severe vaginal bleeding as well as bleeding from her nose and mouth. She was diagnosed as disseminated intravascular coagulation.

- What is the most likely cause of this condition? (2 marks).

a- Amniotic fluid embolism.

b- Severe sepsis.

c- Extensive tissue injury.

d- Neurogenic shock.

2- **Case 4:** A 24 years old female complained of lower abdominal fullness and heaviness. By clinical examination a large Left pelvic swelling was detected. Radiological examination reveals a rounded ovarian cystic swelling with a radio opaque shadow looks-like a tooth.

Fine needle aspiration cytology smears reveals benign looking squamous epithelial cells.

- What is the most probable diagnosis? (2 marks)

Dermoid cyst

Question 7: (one mark each):

A- Choose the most appropriate answer:

- 1- **The neoplastic element in giant cell tumor is:** **c**
 - a- Giant cells.
 - b- Osteoblasts
 - c- Stromal cells
 - d- All of the above

- 2- **Phyllodes tumors:** **b**
 - a- Occur in a younger age group than fibroadenomas.
 - b- Is mostly benign tumor with high rate of recurrence.
 - c- Are distinguished from fibroadenomas by a less cellular stroma.
 - d- Metastasize predominantly by the lymphatic route.

- 3- **Which of the following is incorrect regarding cervical carcinoma:** **a**
 - a- Is usually an adenocarcinoma.
 - b- Is associated with infection by some types of human papillomavirus.
 - c- May cause death due to uraemia.
 - d- May arise from areas of cervical intraepithelial neoplasia.

- 4- **Burkitt Lymphoma is characterized by following EXCEPT:** **d**
 - a- Related to EBV
 - b- High mitosis
 - c- Produce extranodal tumors
 - d- Express CD3.

- 5- **Prostatic carcinoma:** **c**
 - a- Is usually a squamous cell carcinoma.
 - b- Usually produces osteolytic bony metastases.
 - c- Secretes acid phosphatase enzyme.
 - d- None of the above

- 6- **Autoimmune disease is characterized by:** **a**
 - a- Immune reaction against self-antigen.
 - b- Exacerbation of tolerance.

- c- Suppression of autoreactive lymphocytes.
 - d- Selective deletion of immature B lymphocytes.
- 7- In case of moist gangrene, all the followings are correct except: b**
- a- Rapid putrefaction.
 - b- Prominent line of demarcation.
 - c- Sever toxemia.
 - d- May occur in a limb of diabetic patient.
- 8- In minimal change disease of the glomeruli: b**
- a. The incidence is greatest between the ages of 20 and 40 years.
 - b. Fusion of the foot processes of the podocytes is seen on electron microscope.
 - c. Light microscopy shows crescent formation in glomeruli.
 - d. Glomeruli show diffuse thickening of basement membrane.
- 9- Carcinoma in situ is: b**
- a- A locally malignant tumor.
 - b- Intraepithelial neoplasia without invasion of basement membrane.
 - c- Tumor of erratic behavior.
 - d- None of the above.
- 10- Teratoma may be: d**
- a- Benign tumor.
 - b- Malignant tumor.
 - c- Monodermal.
 - d- All of the above.

Best wishes