



Pathology Midterm Review

wiseGEEK

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Pathology of the Testis

- ❖ The two common pathological conditions of the testis are **testicular inflammation** (Orchitis) and **testicular Tumors**.
- ❖ Orchitis, usually follows epididymitis (However, in *Syphilis* testis is affected first).

-Testicular inflammation can be due to:

1/Non-Specific (Any pathogen): usually follows UTI, the microscopic findings can be aggressive ending by fibrous scar (However, **Leydig cells are not destroyed** due to its high resistance to inflammation)

-The causative organism *vary with age*.

Children	Gram negative rods . However it's still <u>uncommon</u>
Less than 35	Chlamydia trachomatis and Neisseria
More than 35	E.coli and Pseudomonas

2/Granulomatous: Thought to be autoimmune, Patients present with unilateral large mass **mimicking tumor**.

3/Gonococcal infection: Starting from urethra then spread into the whole male genital system with abscess.

4/Tuberculosis: Begins in the epididymis, usually associated with tuberculous prostatitis and seminal vesiculitis.

- ❖ Testicular Tumors, characterized by large firm painless testicular mass. Peak incidence (20-34)

-Classified into (**Germ cell tumors**) / (**Sex cord tumors** e.g. **Leydig and Sertoli cell tumor**).

- Germ cells tumors:

-Always **malignant** and highly aggressive, can be a single type tumor (Pure) or mixed in one testis.

-Sub divided into **Seminomatous** and **Non-Seminomatous**.

-Common **risk factors** are: Cryptorchidism / Testicular dysgenesis / Genetic factors / White people.

Tumors are discussed in the table below.

Type	Subtype	Peak incidence	Markers	Important morphological features	Other important information
Seminomatous (Radiosensitive)	Seminoma	30ies	PALP OCT4 c-Kit	-No necrosis or hemorrhage. -The cells' cytoplasm contain collagen.	-It's the most common type of germ cell tumors. -Never occur in infants.
	Spermatocytic Seminoma	Over 65	-	-	-Uncommon. -Excellent prognosis. -Doesn't metastasize.
Non-Seminomatous (Chemosensitive)	Embryonal Carcinoma	20-30	Cytokeratin CD30	-Smaller in size than Seminoma. -Poorly demarcated with foci of hemorrhage and necrosis.	-Highly aggressive and metastatic. -Can be mixed with other germ cell tumors.
	Yolk sac tumor	-Commonly infants (Pure) -Rarely adults (Mixed)	AFP α 1-Antitrypsin	-Non-encapsulated and mucinous. -Schiller-Duval bodies is seen. -Hyaline pink globules.	-Also called Endodermal sinus tumor. -The most common germ cell tumor in infants.
	Choriocarcinoma	-	HCG	-A small sized lesion with prominent hemorrhage and necrosis.	-Highly aggressive tumor. -Almost always occur as mixed tumor. (However its pure type is the most aggressive Germ cell tumor)
	Teratoma	Any age	-	-Usually large 5 -10 cm. -Composed of bizarrely distributed collection of different type of cells or organ structures.	-It can be mature or immature. -It's usually a benign tumor in infancy while in post pubertal male, it's always a malignant tumor.

Pathology of Prostate

❖ There are only two common diseases affecting the prostate gland.

1/Benign prostatic hyperplasia (BPH)

- Pathogenesis: hyperplasia of glands and stromal tissue (**nodular enlargement**) resulting in obstruction of the urethra). Thought to be caused by the long-standing effect of **Androgens**.
- Gross morphology: nodular enlargement in the inner aspect of prostate (**transitional zone**).
- Microscopic findings: nodules composed of (either **fibromuscular** or **fibroepithelial**) material.
- Clinical findings are simply (Dysuria, Nocturia and increased frequency).

2/Prostatic adenocarcinoma

- Pathogenesis: **androgens** have a major role.
- Morphology: firm and gritty tumor arising from the **peripheral zone** in most cases.
- Can spread directly by local extension either through blood vessels or through lymph.
- Microscopic findings:
 - ✓ Glands are lined by a single layer of **cuboidal** or **low columnar** epithelium with large nuclei and one or more large nucleoli.
 - ✓ *The outer basal cell layer is absent. (IMPORTANT)*
 - ✓ Clinical findings that related to the urethra and bladder are usually absent (Unlike BPH) as it arises from peripheral zone which lack the closeness from the prostatic urethra.

Patients may complain of **back pain** caused by vertebral metastasis.

❖ **PSA** (Prostate Specific Antigen) is important for diagnosis followed by biopsy to confirm.

Pathology of the ovaries

- The most important medical problems in ovaries are the **neoplasms**.
- **Death** from **ovarian cancers** is more than that of cervix and uterus together.
- ❖ **Ovarian cysts**
 - ✓ Are common but they are not serious problems.
 - **Follicular cyst**: due to distension of un-ruptured Graafian follicle.
 - **Corpus luteum cyst**: results from hemorrhage into a persistent mature corpus luteum
 - **Theca lutein cyst**: associated with high levels of circulating gonadotropins
 - **Chocolate cyst**: resulting from endometriosis with hemorrhage
- ❖ **Ovarian Tumors**
 - **PRIMARY TUMORS** : many subtypes according to cell type:
 - **Surface epithelial ovarian tumors**
 - ✓ Subtypes: (serous, mucinous, Endometrioid, Clear cell tumor, Transitional (**Brenner**) cell tumor)
 - **Germ cell tumors**
 - ✓ Subtypes: (Teratoma, Dysgerminoma, Yolk sac tumor, Choriocarcinoma, embryonal carcinoma, Mixed germ cell tumors)
 - **Sex cord stromal tumors**
 - ✓ A- Always **benign**: Fibromas/ Fibrothecoma /Thecomas
 - ✓ B- with **malignant** potential: Granulose cell tumors, Sertoli-Leydig cell tumors
 - **2- SECONDARY (metastatic) TUMORS**:
 - ✓ Primaries are Gastro-intestinal tract (most common), Breast and lung.
 - ✓ One of the most classic forms of metastatic carcinoma involving the ovaries is the *Krukenberg tumor* (metastatic carcinoma composed of signet ring cells in a fibrous background)
 - ✓ The most common sites of origin is the GIT (stomach, colon and appendix).

Pathology of the uterus

- ❖ **Endometrial hyperplasia:** more glands and less stroma when compared to normal endometrial tissue.

Generally cause by **increased estrogen**, may progress to **adenocarcinoma** if it is severe especially if with Atypia.

Causes of excess estrogen: Failure of ovulation, tumors in granulosa cell, excessive ovarian function, polycystic ovarian syndrome and exogenous estrogen.

- ✓ Milder forms seen in young and more severe in **perimenopausal/postmenopausal** women.
- ✓ **Irregular bleeding** is the most common clinical presentation.

It is classified into four categories (According to gland architecture and cytology)

1-Simple (less glands) without Atypia: showing a Swiss cheese appearance, 1% progress to cancer.

2-Simple with Atypia: uncommon, 10% chance to progress into cancer.

3-Complex without Atypia: crowded gland and less stroma but with normal cells, 3% may become cancer.

4-Complex with Atypia: back to back crowded gland with less stroma and pleomorphic cells — 30% chance to become cancer.

Risk factors includes **obesity, Diabetes and Hypertension** ...etc.

- ❖ **Endometrial Adenocarcinoma:** The most common cancer in women.

-arises mainly in postmenopausal women and detected by bleeding.

-classified into tow broad categories:

1-Type I carcinomas: Also known as Endometrioid carcinoma: more common, related to high estrogen, usually preceded by hyperplasia, well differentiated with better prognosis, Mutation in **PTEN** gene better prognosis.

2-Type II carcinomas (Serous carcinoma): in old people, no association with estrogen, **P53** gene mutation, poorly differentiated with bad prognosis.

Both can invade and metastasize either to myometrium or through lymphatic.

Leiomyoma

- ✓ Benign and is very common neoplasm in women. Its location causes the problem.
- ✓ Estrogen responsive, so it increases in size during pregnancy.

Features: Multiple, may cause anemia, urinary frequency, abortion obstructed labor
(However it can be asymptomatic)

Classified according to location into [Submucosal/intramural/Subserosal](#).

- ✓ Microscopy: Bundles of smooth muscle, collagenous stroma, uniformed muscle cells.
- ❖ **Leiomyosarcoma**: Malignant — Rare — Poor prognosis.

MCQs

1-A 33 year old man have an Orchitis what is the most causative organism?

- A) Gram Negative rods.
- B) Neisseria.
- C) E.coli.
- D) Pseudomonas.

2-Which of the following tumors is radiosensitive?

- A) Choriocarcinoma
- B) Yolk sac
- C) Seminoma
- D) Embryonal carcinoma

3-A 31 year old Patient with germ cell tumor. The tumor had been removed and under the microscopy we've seen sheets of uniform cells and Cytoplasm of tumor cell has glycogen. Which of the following stains is positive for this tumor?

- A) PLAP stain.
- B) CD30 stain.
- C) Alpha-1-antitrypsin stain.
- D) HCG stain.

4-Which of the following GCT's has the worst prognosis?

- A) Pure Choriocarcinoma.
- B) Mature Teratoma.
- C) Pure Leydig cell tumor.
- D) Mixed GCTs.

5-A 2 year old child have high serum AFP and tumor in his testis. The tumor was removed which of the following will be seen in microscopy?

- A) Positive for PLAP stain.**
- B) Small sized lesions.**
- C) Cytoplasm of tumor cell has glycogen**
- D) Schiller-Duval bodies.**

6-A 27 year old man presented with a mass in his left testicle. The mass didn't respond to radiotherapy. When we removed the mass we found it poorly demarcated, Variegated with foci of necrosis and hemorrhage. Which of the following stains will be positive with this tumor?

- A) PLAP stain.**
- B) C) alpha-1-antitrypsin stain.**
- C) Cytokeratin.**
- D) HCG stain.**

7- Which of the following GCT's is malignant in in post pubertal male?

- A) Mature Teratoma.**
- B) Immature teratoma.**
- C) Both mature and immature teratoma.**
- D) Sertoli cell tumor.**

8-Which of the following markers is expected to be found in an 8 month old fetus with testicular germ cell tumor.

- A) Cytokeratin**
- B) PLAP**
- C) C-kit**
- D) Alpha-fetoprotein**

9-A 50 year old male came to the clinic complaining of fever, dysuria and testicular pain. Some investigations done to show a gonococcal UTI that spread to cause epididymitis and Orchitis. What is morphological features that is expected to be seen after this scenario?

- A) Foci of hemorrhage and necrosis.**
- B) Suppurative Orchitis and abscess.**
- C) Fibrous scarring**
- D) Enlarged testis.**

10-A yolk sac tumor is excised from a 25 years old adult, what other germ cell tumor will be most likely found along with the Yolk sac tumor?

- A) Embryonal carcinoma.**
- B) Spermatocytic carcinoma.**
- C) Teratoma.**
- D) Choriocarcinoma.**

11-A patient has a prostate adenocarcinoma. The mass was removed and under microscopy 70% of it was grade 4 and 20% was grade 3 and 10% was grade 2. Which of the following is the Gleason score of this tumor?

- A) 4.**
- B) 7.**
- C) 6.**
- D) 5.**

12-Which of the following diagnoses cannot be made based on needle biopsy?

- A) Prostatic Adenocarcinoma.**
- B) Prostatic intraepithelial neoplasia.**
- C) Benign Prostatic Hyperplasia.**
- D) None of the above.**

13-In Prostatic adenocarcinoma hematogenous extension occurs chiefly to which one of the following?

- A) Bone.**
- B) Seminal vesicles.**

- C) Brain.
- D) Obturator lymph nodes.

14-Risk factors for prostate cancer include which one of the following?

- A) Castration before age 40 years.
- B) Black race.
- C) Asian race.
- D) Young age.

15-To confirm the diagnosis of prostate adenocarcinoma we need to do which one of the following?

- A) Very high PSA.
- B) Digital rectal examination (DRE).
- C) Blood culture.
- D) A Transrectal needle biopsy.

16- Anatomically, prostate cancer usually begins at which site of the following?

- A) Centrally.
- B) Peripherally.
- C) At urethra.
- D) At sphincter.

17-Which one of these lesions is the most likely to undergo a malignant transformation?

- A) Prostatic intraepithelial neoplasia.
- B) Benign prostatic hyperplasia.
- C) Fibromuscular proliferation.
- D) Nodular scarring.

18-A 56 years old teacher came to the primary clinic saying: I usually feel fullness in the bladder although I used to urinate many times .The doctor arranged some investigations including urinalysis and microscopy .The results didn't show RBCs or any infectious agents. What is the most likely the diagnosis?

- A) Bladder carcinoma.
- B) Prostatic adenocarcinoma.
- C) Seminoma.
- D) Benign prostatic hyperplasia.

19- Based on the question above, when needle biopsy was taken, what is the most likely histopathological features could be observed?

- A) Absence of basal cell layer.
- B) Proliferation of lymphoblastic cells.
- C) Nodular fibroepithelial proliferation.

20- What is the most common clinical feature that Prostatic adenocarcinoma patients present with?

- A) Dysuria.
- B) Retropubic pain.
- C) Back pain.
- D) Nocturia.

21- A 26-year-old woman experiences a sudden onset of left-sided lower abdominal Pain with radiation to the back, pelvis, and Thigh. Following a negative test for pregnancy, abdominal radiography shows an Enlarged left ovary. Ovariectomy is performed and showed a cyst filled with sebaceous material and hair. The tumor most likely is?

- A) Granulosa cell tumor.
- B) Brenner tumor.
- C) Serous cystadenoma.
- D) Dermoid cyst.

22- A 22 year old female, married for two years, presented in the ward with 32 weeks amenorrhea and right infra-umbilical abdominal swelling without any history of prior medical checkup. There was no history of any menstrual irregularity or any contraceptive intake in the patient before the pregnancy. Also, there was no history of any bowel changes, weight loss or family history of any gynecological malignancy. Local examination showed ascites and a right abdominal mass, the immunohistochemistry was interpreted as PLAP positive, AFP negative, c-Kit positive, the tumor is most likely?

- A) Dysgerminoma.
- B) Endodermal sinus tumor.
- C) Teratoma.
- D) Choriocarcinoma.

23- A 19-year-old nulliparous woman came to the clinic with complaints of progressive oligomenorrhea of 2 years. She had been amenorrheic for the past 7 months. She had also noticed a

change in her voice for 1 year and excessive hair growth on her face, chest, and limbs for the last 2 months. In addition, she complained of vague abdominal discomfort. She was married for the last 4 months and denied any history of anorexia, weight loss, increased libido, or breast recession. Her medical and family history was unremarkable, the tumor is most likely?

- A) Sertoli-Leydig Cell Tumor.
- B) Granulosa cell tumors.
- C) Fibrothecoma.
- D) Struma ovarii.

24-An 18 years female presented with abdominal distension and mild constipation of one month duration. She had lost 10% of body weight in one month. Menstrual history of the patient was normal with menarche at 13 years. General physical and systemic examination were normal. Local examination of abdomen and pelvis revealed a hard mass of 20x18 cm in midline, arising from pelvis. Ascites was present. The cytology of the ascites was negative for malignancy. The tumor is most likely?

- A) Fibrothecoma.
- B) Sertoli – Leydig cell tumor.
- C) Endodermal sinus tumor.
- D) Embryonal carcinoma.

25-A 34 female presented to the emergency department complaining of severe acute left lumbar abdominal pain, radiological examination revealed a small ovarian mass arising at the left side. Ovariectomy was performed showing a non-neoplastic blood containing cyst with adjacent endometriosis. What is the most expected type of the cyst?

- A) Follicular cyst.
- B) Theca lutein cyst.
- C) Chocolate cyst.
- D) Corpus luteum cyst.

26-Which one of the following cysts occur as a result of endometriosis?

- A) Follicular cysts
- B) Corpus luteum cysts
- C) Chocolate cysts
- D) Theca lutein cysts

27-A 35-year old female presented to the OB&GYN clinic with abdominal distention and pelvic discomfort. She complained of polyuria and she has lost 12 kg over the past 6 weeks. She has 2 children. Physical examinations of vagina and uterus were normal. Shifting dullness is observed when abdominal percussion was done.

A serum sample was obtained and reveals high levels of CA125.

The resident ordered a CT-scan for her abdomen and pelvis.

There was a pelvic mass that was suspected to be an ovarian tumor.

A biopsy was taken and the mass was partly cystic and partly solid with prominent excrescences and areas of necrosis and hemorrhage.

What is the most-likely diagnosis?

- A) Serous cystadenomas.**
- B) Transitional tumor.**
- C) Borderline serous tumor.**
- D) Serous Cystadenocarcinoma.**

28-Which one of the following statements is NOT true regarding ovarian tumors?

- A) Majority of them are discovered at advanced stages.
- B) Most of them are derived from ovarian cysts.
- C) They are curable.
- D) Fifth leading cause of cancer death in women.

29-Which one of the following is NOT a component of the triad of Meigs' syndrome?

- A) Ascites.
- B) Skin rashes.
- C) Fibrothecoma.
- D) Hydrothorax.

30-A post-menopausal women was diagnosed with granulosa-cell tumor after she presented to the ER with vaginal bleeding.

High levels of which one of the following is expected to be seen in such a patient?

- A) Androgens
- B) Progesterone
- C) Estrogen
- D) DHE

A 50-year-old woman presents with a recent history of vaginal spotting. She gave the history that her last normal menstrual period occurred about 2 years ago. She has had two children. She denies tobacco or illicit drug use; drinks 8 oz wine per night. Menarche occurred at age 10. Her mother and maternal grandmother died in their 40's of colon cancer; a maternal aunt had endometrial cancer. She denies any other pertinent history. On physical exam her BP is 140/80; her Body Mass Index (BMI) is 35. The non-gynecologic Physical examination is otherwise normal

31-What is the most likely diagnosis?

- A) Endometrial cancer.
- B) Leiomyoma.
- C) Ovarian tumor.
- D) Leiomyosarcoma.

32-Which is LEAST likely differential diagnosis of her complaint?

- A) Cervical cancer.

- B) Endometrial cancer.
- C) Endometrial hyperplasia.
- D) Ovarian cancer.

33-Which of the following is not a risk factor of endometrial carcinoma?

- A) Obesity.
- B) Multiparity.
- C) Diabetes mellitus.
- D) Chronic unopposed estrogen use.

34-Endometrial hyperplasia is associated with increased level of which one these hormones?

- A) Progesterone.
- B) Estrogen.
- C) Androgen.
- D) None of Above.

35-The most likely endometrial hyperplasia that may become Cancer?

- A) Simple hyperplasia without Atypia.
- B) Simple hyperplasia with Atypia.
- C) Complex hyperplasia without Atypia.
- D) Complex hyperplasia with Atypia.

36-Which one of these endometrial cancers is poorly differentiated and is highly aggressive?

- A) Type II endometrial adenocarcinomas
- B) Leiomyoma
- C) Endometrioid carcinoma
- D) Leiomyosarcoma

37-Mutations in PTEN gene and P53 gene associated with which one of these respectively?

- A) Type I Endometrioid carcinoma and Type II serous carcinoma.
- B) Type II serous carcinoma and Leiomyoma.
- C) Leiomyoma and Type I Endometrioid carcinoma.
- D) Type II serous carcinoma and Type I Endometrioid carcinoma.

38-Which one of these statements is wrong?

- A) Leiomyoma is a benign tumor of smooth muscle origin.**
- B) Leiomyoma is mostly of single lesion.**
- C) Leiomyoma can arise in more than one location.**
- D) Leiomyosarcoma has poor prognosis.**

39-One of these lesions characterized by Swiss cheese appearance under microscopic sample?

- A) Leiomyoma.**
- B) Leiomyosarcoma.**
- C) Simple endometrial hyperplasia with Atypia.**
- D) Simple endometrial hyperplasia without Atypia.**

40-A very old lady visited the GYN clinic because of recurrent vaginal bleeding and continuous abdominal discomfort. On the Ultrasound the pelvis was containing a mass seems to be arising from the endometrium. Hormonal assay also was done to measure the levels of estrogen which was normal.

A biopsy was performed to show very poorly differentiated endometrial cells.

What is the most likely diagnosis?

- A) Simple endometrial hyperplasia.**
- B) Leiomyoma.**
- C) Leiomyosarcoma.**
- D) Serous endometrial adenocarcinoma.**

<i>Question</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
<i>Answer</i>	B	C	A	A	D	C	C	D	B	A	B	C	A	B	D	B	A	D	C	C	D	A	A	A	C
<i>Question</i>	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40										
<i>Answer</i>	C	D	B	B	C	A	D	B	B	D	A	A	B	D	D										

Thank You