Pathology review file
Reproductive block

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THE UTERINE CORPUS

Simple hyperplasia without atypia	Simple hyperplasia with atypia	Complex hyperplasia without atypia	Complex hyperplasia with atypia * Worst *
1- cystic hyperplasia 2-glands are varibly shaped and sized 3-Swiss Cheese 🧀 4-mild increase in the gland-to-stroma ratio 5-progress to cystic atrophy	1- Uncommon 2- here is cytologic atypia within the glandular epithelial cells 3- **10%** of such lesions progress to carcinoma	1- Proliferation of endometrial glands resulting in complex crowded glands 2-**papillary infoldings** and irregular shapes. 3- back-to-back with very little intervening stroma. 4- **3%** progression to carcinoma	1- Complex proliferation of endometrial glands (back-to-back irregular glands) with atypia. 2- **(Atypia ; nuclei show loss of polarity and are enlarged and rounded and may have irregular nuclear membranes)** 3-About **30%** progress to carcinoma “ need hysterectomy“

Endometrial hyperplasia

Patient with it present with “**abnormal uterine bleeding**”

Endometrial adenocarcinoma

Type I carcinomas (endometrioid carcinoma)	Type II carcinomas (papillary serous + clear cell)
1- estrogen excess 2- May follow complex atypical hyperplasia 3- **PTEN** gene mutations + **inactivation of DNA mismatch repair genes** 4- p53 mutations is seen in half of the poorly differentiated 5- 80% 6- 50-60 year 7- superficially 8- good prognosis	1- older women “ 60+” late in life 2- endometrial atrophy (small atrophic uterus). 3-**No** association with hyperestrinism or preexisting hyperplasia and No estrogen 4- 15% of cases 5- **Mutations in p53** are present in at least **90**% of serous endometrial carcinoma 6- **precursor** of serous carcinoma is ***endometrial intraepithelial carcinoma*** (its like carcinoma in situ) 7- large bulky poorly differentiated tumors 8- nvade early into the myometrium “ go very deep “ 9- Extrauterine extension is common 10- poor prognosis “ **worst** “

Clinical features: 1- obese 2- nulliparous 3- **abnormal vaginal bleeding and excessive leucorrhea** 4- postmenopausal bleeding

LEIOMYOMA (fibroid) of uterus :

1- Well circumscribed, spherical, dense and firm-to-hard masses.

2- Cut section shows whorled, tan-white cut surfaces

1- benign tumor of smooth muscle origin
2-most common neoplasm of the female genital tract
3-Estrogen stimulates their growth (in pregnancy ▲ - in menopause ▼)
4-**40%** of leiomyomas have an associated **chromosomal abnormality**
5- single or **multiple can be anywhere :**
A) Submucosal " heavy bleeding "
B) Intramural " most common "
C) Subserosal
6- can be asymptotic and symptomatic.
7- the symptoms could be :
A) **Irregular abnormal bleeding** (period heavy) and sometimes **pelvic pain**
B) **Anemia**
C) **urinary frequency** if the fibroid is compressing the urinary bladder.
D) interfere with implantation and therefore cause **infertility**.
E) pregnant women it may cause **abortion**, **obstructed labor**,
F) **post partum hemorrhage** etc.

Microscopically : there are interlacing bundles of smooth muscle cells with collagenous stroma between bundles. The individual muscle cells are uniform in size and shape. They have the characteristic oval to elongated nucleus. *Mitotic figures are scarce*

OVARIAN TUMORS

1) primary ovarian tumor

A) Surface Epithelial Ovarian Tumors

- Most primary ovarian tumors - 65 – 70 % of overall tumors - 90% of malignant ovary tumors - young 20+

Serous Tumors	Mucinous Tumors	ENDOMETRIOID TUMORS “ malignant + tubular gland “	TRANSITIONAL CELL/ BRENNER TUMOR “ benign “
1- **most common** 2- Age is 30-40 3-cystic filled with clear serous fluid 4- bilateral 5-Psammoma bodies 6- types **A) Benign serous tumors (serous cystadenomas) 60%** - large cystic thin walled - **unilocular** - lined by serous cells - containthin,clear yellow fluid **B) Borderline serous tumors 15%** -cystic withthin wall and smooth surface -multiple papillary excresences (grape-like clusters) **C) Malignantserous tumors (serous cystadenocarcinoma) 25%** - commonest **malignant** ovarian tumor 1/3 of ovary cancers - partly cysticand partly solid - with prominent excrescences - necrosisand hemorrhage - ascites due to abdominal metastases. - Poor prognosis	1-about 25% of all ovarian neoplasms. 2-mucin-producing cells. 3- -80% are benign-cystadenoma -10% are borderline-mucinous borderline tumor -10% malignant -mucinous adenocarcinoma 4- Bilaterality is uncommon. “ unit lateral “ 5- no symptoms so can be very large 6- **typically cystic and multilocular and filled with thick sticky, viscous mucoid fluid**	Read it just in case	

B) Sex Cord-Stromal tumors

Thecoma-Fibroma	Granulosa Cell Tumor	Sertoli – Leydig cell tumor
1- Any age 2- Unilateral 3- benign 4- can be - pure thecomas " produce estrogen " - pure fibromas " no estrogen " - fibrothecomas " estrogen " 5- Solid and vary in color from yellow to white 6- Fibromas are whiter, harder with whorled cut surface. 7- **40%** cases are associated with **ascites and hydrothorax** and this combination is called as ***Meig's Syndrome***	1- Unilateral, solid and cystic 2- Produce estrogen 3- 2 forms: A) **Adult** form is more common in postmenopausal women. B) **The juvenile** form is seen the first three decades, can present with **isosexual precocity" يبلغ بسرعه"** 4- with abnormal vaginal bleeding 5- **can be associated with endometrial hyperplasia and carcinoma (bcz of estrogen**) " نفس ما قلنا بالمحاضرة الاولى " 6- 5-25% malignant behavior	1-low malignant potential 2- All ages 3- Unilateral yellowish solid tumor. 4- **Produces androgens and present with virilization in 1/3 of cases (oligomenorrhea, amenorrhea, loss of female secondary sex characteristics with hirsutism, clitoromegaly, deepening of voice)**

C) Germ Cell Tumors

A) Teratoma " MCQ's "		
Mature cystic teratoma " benign "	**Immature teratoma**	**Monodermal teratoma IMPORTANT**
1- Is the most common ovarian germ cell tumor and the most common type of ovarian teratoma 2- benign neoplasm in reproductive years 3- composed of mature elements - ectoderm - mesoderm - endoderm 4- cystic tumor, filled with sebaceous material and **hair** and occasionally **teeth**. 5- Histology: skin, hair, sebaceous glands, and mature neural tissue predominate; cartilage, bone, respiratory and intestinal epithelium are common. 6- Complications include torsion, rupture, infection	1- malignant 2- occurs in children and young adults 3- unilateral and solid 4- contain immature or embryonal tissues especially immature **neuroepithelial cells.** 5- graded based on the amount of immature tissue	1- A teratoma composed of one tissue element 2- The most common type of monodermal teratoma is called **"struma ovarii", which is made up of mature thyroid tissue**. 3-The thyroid tissue can sometimes become malignant. 4- carcinoid tumor can arise from it

Other Germ Cell Tumors:			
DYSGERMINOMA Imp	**ENDODERMAL SINUS TUMOR *Yolk sac tumor imp***	**EMBRYONAL CARCINOMA**	**CHORIOCARCINOMA**
1- Uncommon 2-age 10-30 3- Unilateral and solid mass 4- Microscopically look exactly like its counterpart in **testis (Seminoma) and brain (germinoma)** 4- Malignant 5- **PLAP positive** 6- Highly sensitive to radiation therapy	1- Under 30 years of age 2- can be pure or a component of a mixed germ cell tumor 3- **radioresistant but responds well to chemotherapy** 4- ***elevated serum alpha-fetoprotein and alpha-1-antitrypsin.*** 5- **Schiller-Duval bodies** **6- Positive for immunostain for alpha-fetoprotein**	1- Rare, aggressive, highly malignant, **radioresistant** but responds to chemotherapy. 2- in combination with other GCTs (mixed GCT) 3- 2nd and 3rd decade (children and young adults) 4- Unilateral, solid, **hemorrhagic** and **necrotic** 5- **CD 30 immunostain positive.**	1- Rare, aggressive, highly malignant, metastasizes widely through the bloodstream to the lungs, liver, bone etc 2- Radioresistant AND chemoresistant 3- Similar to that seen in testis, usually occurs in combination with other GCTs (mixed GCT) 4- unilateral, solid, hemorrhagic tumor, composed of malignant cytotrophoblast and syncytiotrophoblast 5- **HCG immunostain positive**

2) Metastatic carcinoma in ovary

- 5% of ovarian tumors
- Older ages, mostly **Bilateral** and sometimes very large
- from **Gastro-intestinal tract** (most common), Breast and lung.
- **Krukenberg tumor**. This tumor is a metastatic carcinoma composed of signet ring cells in a fibrousbackground. The most common sites of origin is the GIT (stomach, colon and appendix).

TESTICULAR TUMORS

1- Germ cell tumors

Seminomatous germ cell tumors "Radiotherapy " prognosis excellent "	
Seminoma 📌📌 important	**Spermatocytic seminoma**
1- most common type of testicular tumor and GCT by 50 % 2- **never** occur in infants 👶 " 2 year " 3- 30 years 4- like DYSGERMINOMA in ovary 5- Classic seminoma is **highly sensitive to radiation therapy**, and the overall -year survival is 90 to 95%. 6- Bulky masses , very large,Homogenous ,gray-white, lobulated cut surface No necrosis or hemorrhage 7- **Microscopically**: - sheets of uniform cells divided into lobules by delicate fibrous septa containing lymphocytes. -Cells are **large** and **round** with **large nucleus** and **prominent nucleoli** -Cytoplasm of tumor cell has **glycogen** -Positive for ***PLAP***, **OCT4 stain and c-kit (CD117)**.	Uncommon: 1-2 % of testicular GCTs - Over age 65 - Slow growing tumor, does not metastasize - Prognosis is excellent

Non-Seminomatous germ cell tumors (NSGCT) “Chemotherapy “ + aggressive			
Embryonal Carcinoma	**ENDODERMAL SINUS TUMOR** ***Yolk sac tumor imp***	**Choriocarcinoma**	**Teratoma**
1-20 to 30 year age group 2- More aggressive 3-**metastasizes early** via both lymphatic and hematogenous routes. 4-**Not radiosensitive**, they a chemosensitive 5-Grossly: smaller than seminoma, poorly demarcated 6- foci of necrosis and hemorrhage 7- **Tumor cells are positive for cytokeratin (CK) and CD30 stain**	- pure in children - **Mixed in adult “ with Embryonal type “** - ***Most common in infant and children up to 3 year*** 👶🏼👶🏼👶🏼 - Good prognosis - **serum alpha fetoprotein (AFP)**. - Grossly: Non encapsulated, homogenous, yellow white, mucinous - • Tumor shows structure resembling endodermal sinuses called as **Schiller-Duval bodies** are characteristic. - • Hyaline–pink globules - • Tumor cell are ***positive for alphafetoprotein and alpha-1-antitrypsin stain***. -	1- Highly malignant 2- High HCG. (human chorionic gonadotropin) 3- Prominent hemorrhage and necrosis 4- small lesion 5- made up of cyto-trophoblastic and syncytio-troblastic cells 6- ***Tumor cells positive for human chorionic gonadotropin (HCG) stain*** - ***always mixed with other GCT*** - ***If pure it will have poor 💩 prognosis***	1- any age 2- in children pure 👶🏼 develop it secondary to yolk sac 3-in adult mixed 4- large 5- heterogeneous “hair , teeth , different types of cells “ - mature and Immature 6**- in infants and children** **Mature teratoma = benign** **Immature = malignant** **But !!!** **In pot pubertal male all teratomas are malignant and can metastasize**

The common combinations/mixtures are:

• Teratoma + embryonal carcinoma **CD30** +/- yolk sac tumor **AFP**

• Seminoma **PALP** + embyronal carcinoma **CD30**

2) SEX CORD STROMAL TUMORS. “ benign “

- Leydig cell tumor
- Sertoli cell tumor

Prostate Pathology

1- BENIGN PROSTATIC HYPERPLASIA

1- benign nodular hyperplasia

2- Extremely common lesion in men over age 50

-About 20% men have BPH by age 40

-About 70% men have BPH by age 60

- About 90% men have BPH by age 80.

3-Hyperplasia of glands and stroma

4- Once the nodules become large they compress the prostatic urethra

5- not premalignant

6-essential cause of BPH is unknown

7-pathogenesis is related to the action of **androgens**.

8 - **Dihydrotestesterone (DHT**) is the ultimate mediator fo prostatic growth. It increases the proliferation of stroma cells and inhibits epithelial cell death. Therefore DHT is implicated in the pathogenesis of both benign prostatic hyperplasia (BPH) and prostate cancer.

9-Drugs that act as inhibitors of 5-alpha reductase, therefore have an important role in the prevention and treatment of BPH and prostate cancer.

10-Prepubertal castration prevents BPH

Grossly:

- The prostate weighs between 60 and 100 grams
- hallmark of BPH is nodularity due to **glandular** and **fibro-muscular proliferation**
- begins in the inner aspect of the prostate gland, the **transition zone**
- **Microscopically:**
- the main feature of BPH is **nodularity**

The nodules can be:

-purely stromal nodules composed mainly of fibromuscular element

Or

fibroepithelial with both glandular and fibromuscular

Clinical features;

-Increased urinary frequency

- Nocturia

-Difficulty in starting and stopping the stream of urine

- Dysuria

- Some patients present with acute urinary retention.

2- PROSTATIC ADENOCARCINOMA

1-common form of cancer in men over age 50

2-**Androgen** are believed to play a major role in the pathogenesis

3-70% arises in the **peripheral zone** in the posterior part of the gland

4-firm and gritty and is palpable on rectal exam

5-Spread by direct local invasion and through blood stream and lymphatics

6-Local extension most commonly involves the periprostatic tissue, seminal vesicles and the base of the urinary bladder (leading to ureteral obstruction)

7- **microscopy**;

- well-defined gland patterns.
- The malignant glands are **lined by a single layer of cuboidal or low columnar epithelium with large nuclei and one or more large nucleoli.**
- Nuclear pleomorphism is ***not*** marked.
- The ***outer basal cell layer typical of benign glands is absent " myoepithelial cells disappear "***
- **Commonly there is perineural invasion.**
- Metastases first spread via lymphatics: initially to the ***obturator nodes*** and eventually to the ***para-aortic*** nodes
- **Hematogenous extension** occurs chiefly to the **bones**. The bony metastasis are typically **osteoblastic** ."patient presents in your clinic with **back pain** so you've to do CT scan you will find lesion their origin in " prostatic cancer "
- In grading use Gleason system and in staging use TNM system

- **CLINICAL FEATURES :**
- Microscopic (or very small size) cancers are asymptomatic and are discovered incidentally
- Most arise in the **peripheral zone**, away from urethra and therefore the **urinary symptoms occur late.**
- Occasionally patients present with **back pain caused by vertebral metastases**
- Careful digital rectal examination may detect some early cancers.
- **PSA (Prostate Specific Antigen**) levels are important in the diagnosis and management of prostate cancer. However, a minority of prostate cancers may have low PSA " sensitive but not specific can occur in BPH"
- **A transrectal needle biopsy is required to confirm the diagnosis " MCQ's "**
- ***It's precursor;*** *PROSTATIC INTRAEPITHELIAL NEOPLASM .*