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NEOPLASIA (Nomenclature)

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* Neo → New * plasia → Growth

Every new growth is not Neoplasia.

Pre-Molecular Era

→ Neoplasia is Abnormal mass of Tissue w/c :

* Grows in Excessive Manner -

* " " Uncoordinated " -

* " is Persistent (Even-if you remove the stimulus w/c stimulate it / has initiated it.)

* Autonomous (doesn't obey the laws of Growth)

Modern Era

→ " Neoplasia is a Series of Genetic Damages / Mutations in a cell / Progenies of a cell until they have a tendency to make Abnormal tissue mass w/c grows excessive, Uncoordinatedly & is Persistent ————."

* Proto Onco Genes → for Proliferation of cell. (Accelerator)

* Tumor Suppressor " → stops over proliferation (Brakes)

* DNA repair " → Repair Mutations.

* Pre-Apoptotic " → For Apoptosis of cell.

* Anti- " " → Prevent Apoptosis.

* If Proto Onco → over Expressed

* " Tumor Supp. → under "

* " Pre-Apoptotic → " "

* " Anti- " → over "



Neoplasia

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→ Neoplasia is like a dangerous Parasite → originate from body at cost of normal Body function & also is damaging the body.

Tumor

- Previously → Any swelling in the body → Tumor.
→ cardinal sign of Inflammation.
- Now → Any swelling → w/c is neoplastic in nature.

② Basic Components OF Neoplasm/Tumor

Paranchyme

- Neoplastic cells i.e. Transformed cells.
- Every tumor has Paranchyme.
- * It determines:
 - Nomenclature of Tumor.
 - Biological Behaviour of " -
ie Malignant / Benign

Stroma

- Not itself → Neoplastic
- Supportive & Reactive Component of a tumor.
- Consists of:
 - Connective Tissue.
 - Blood Vessels.
 - Reactive Inflammatory cells.
 - Determines spread of the Tumor.

- Some Tumors → very little stroma → Soft + Fleeshy.
- " " → a lot of collagen → Desmoplasia.
- " " → Too much collagen → Scirrhus.

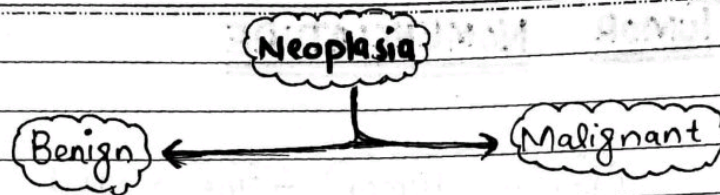
Stony
Hard

→ Breast
Tumor

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→ Those tumors whose microscopic & Macroscopic appearance suggests that they are innocent i.e.

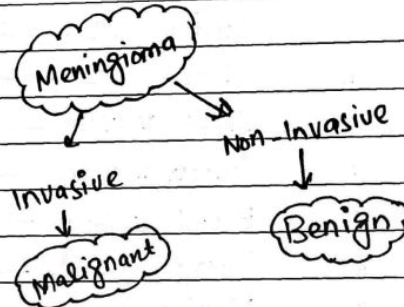
- * They are localized.
- * They are Non-Invasive.
- * They are Non-Metastatic.
- * can be removed by Surgery usually.

→ Some Benign Tumors are dangerous like :

- Ependymoma → In 3rd Ventricle.
- Meningioma
- Glioma
- Atrial Myxoma → In Lt. Atrium.
- Pheochromocytoma → ↑↑ Catecholamine
- Insulinoma → Severe Hypoglycemia.

→ These Tumors are very dangerous as they :

- ~~Not~~ Invade the Surrounding st.
- ~~Not~~ Metastasizes.
- Not localized.



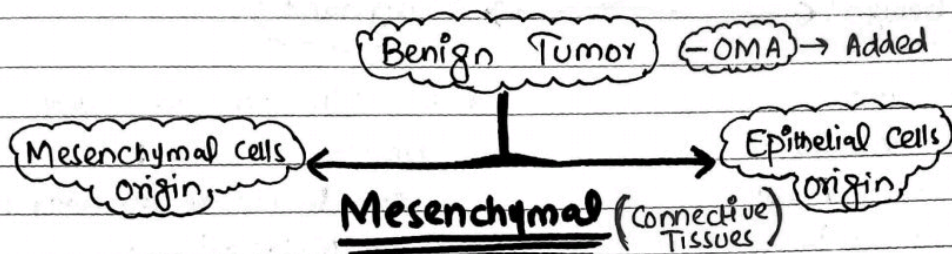
Heart Sound
↑
Tumor Plop

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Benign Tumor NOMENCLATURE



→ Usually "-oma" is added at the end.

- * From Adipocytes → Lipoma
 - * From Fibrocytes → Fibroma
 - * " Cartilage cells → Chondroma
 - * " Bone cells → Osteoma
 - * " Skelet. Muscle → Rhabdomyoma
 - * " Smooth Muscle → Leiomyoma → Most Common → In Uterus.
 - * " Blood vessels → Hemangioma
 - * " Lymph vessels → Lymphangioma
 - * " Meninges → Meningioma → Non-Invasive
- 20% ♀ women normally.
Fibroids

Epithelial cell origin

①. ADENOMA

→ "Benign Tumors originated from Glandular Epithelium or they may originate from Non-Glandular epithelium"

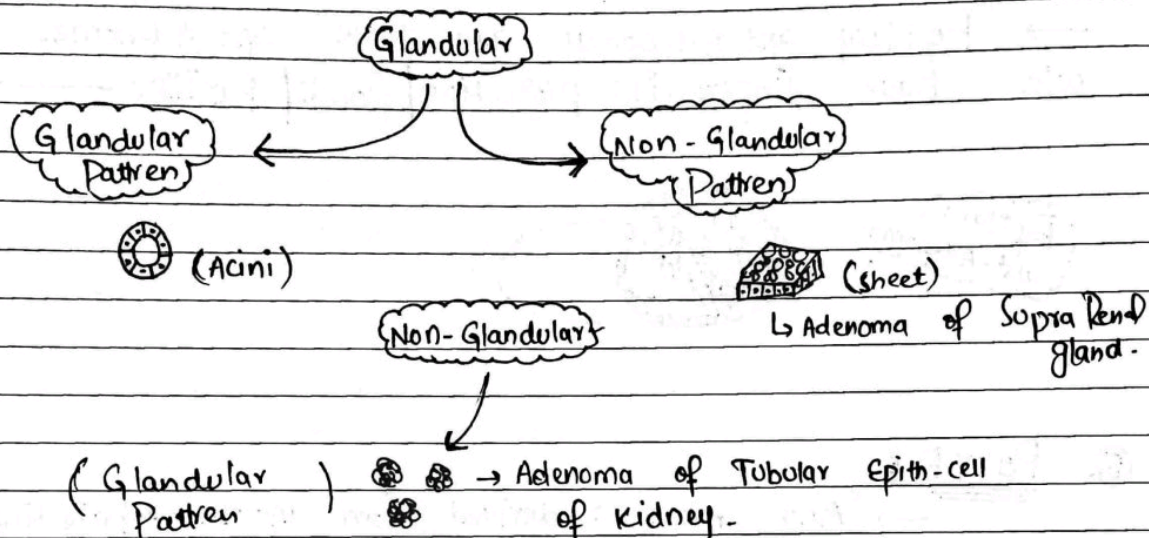
- Those Adenomas w/c are originated from Glandular Epith. may have glandular Pattern or they may have Non-Gland. Pattern.
- But Adenomas w/c are from Non-gland. epith. must have glandular Pattern.

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* Glandular Pattern → Cells → In circle → Acini



②. Papilloma : "Benign Tumors originating from Surface epithelium → growing in Fingers-Like/Papillae Like (Fronds) fashion → Macroscopically or Microscopically"



→ Classically ② Epitheliums → Stratified Squamous & Urothelium.
* Stratified → skin + Tongue + Larynx * Urothel. → Urinary Sym.

③. Cyst-Adenoma :

* Cyst → Any fluid filled cavity → lined by epithelium.

→ "Tumors → w/c have fluid filled cavities —"



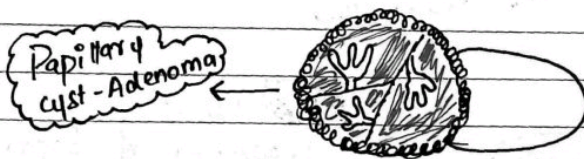
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④. Papillary Cyst-Adenoma :

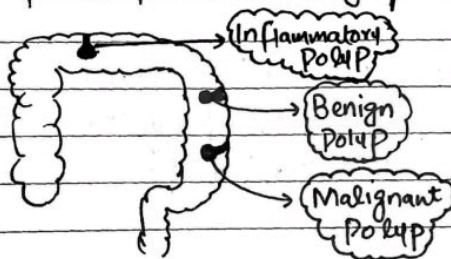
→ "Papillary cyst-Adenomas are those cyst-Adenomas w/c have fingers like projection/fronds/Papillae —."



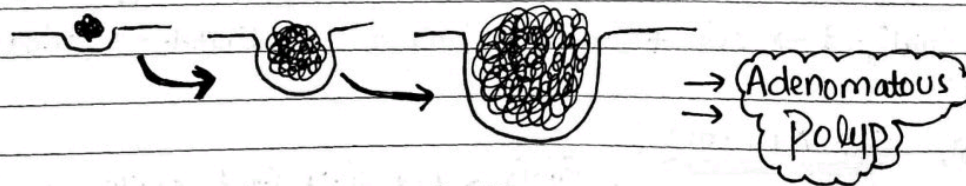
⑤. POLYP :

→ "Any mass → derived from mucosa → Projecting into the Lumen → Polyp."

→ Polyp may be benign / Malignant / Non-Neoplastic at all.



↳ Inflammatory polyp
↓
Allergic Polyps in Nose



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MEISNOMERS

→ These have -OMA at the end but they aren't Tumors.

* Hematoma

* Granuloma → collection of Immune cells around microbe.

* Choristoma → Normal cell, arranged in a normal fashion but placed in a wrong place.

e.g. * Gastric Mucosa cells in Meckel's Diverticulum.

* Pancreatic Tissue in Gastric wall.

* Hamartoma → Normal cells, At Normal place but Arranged in an abnormal Fashion.

e.g. Hamartomas in Lungs.

Choristoma:

● ⑤ girls holding Hands w/ each other → Enters → Male Toilet

Hamartoma:

● ⑤ girls in girls Toilet → But in Uneven Positions.

→ Malignant Tumors having -OMA in their ends?

* Invasive Meningioma

* Glioma

* Melanoma → Malano-Carcinoma of Skin.

* Hepatoma → Hepato-Carcinoma.

* Mesothelioma → of Pleura of Lungs.

* Lymphoma

* Seminoma → of Testis.

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MALIGNANT TUMOR NOMENCLATURE

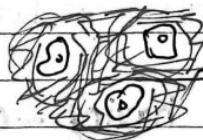
Metastasis : "When Tumor makes Secondary growths w/c are discontinuous with Primary mass physically —."

* Malignant Tumors are also called "Cancer".

* Cancer means "CRAB" → stick very tightly to structure like crab.

Epithelium : Connective Tissue in w/c cells are tightly held to each other & have well defined Basement Membrane & cells show Polarity (Apical side, Basal side, lateral side → different)
→ Have No InterCellular Matrix.

Mesenchyme : "Embryonic C-T in w/c cells → no holding →
→ Away from each other, have large InterCellular matrix
in b/w cells & cells → no Polarity."
→ Usually/Almost Mesodermal in Origin.



Matrix

(Mesenchyme)

Malignant Tumors

Mesenchymal Tumors

Epithelial Tumors

* — Sarcoma

* — Carcinoma

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MESENCHYMAL TUMORS

→ Usually have "SARCOMA" at the end.

- * From striated muscle → Rhabdomyo Sarcoma
- * From Fibrocytes → Fibro Sarcoma
- * From Adipocytes → Lipo sarcoma
- * From cartilage cells → Chondro Sarcoma
- * " Bone " → Osteo Sarcoma
- * " Blood vessel → Angio Sarcoma
- * " Lymph vessel → Lymphangio Sarcoma
- * " Mesothelium → Mesothelioma*
- * " Meninges → Invasive Meningioma*
- * " Blood Forming cells (Hematopoietic cells) → Lymphoma*
- * " " → Leukemia*
- * " Smooth Muscles → Leiomyo sarcoma

Lymphoma

Leukemia

* Solid cohesive masses.

* Didn't spill over to Blood Usually.

* Didn't diffuse

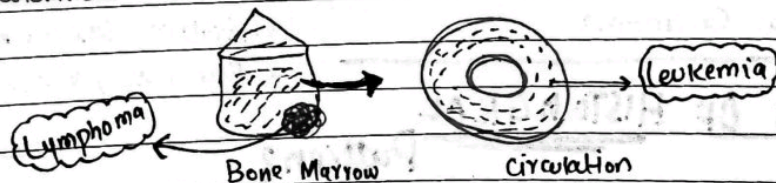
→ Like Butter → e.g:

→ Metastatizes → But Metastatic Masses → Also solid

* Diffuses to Bone Marrow.

* Spill over to Blood → Blood Count → ↑↑↑

→ Like Milk → e.g:



* Lymphoma can sometimes shifts in Leukemia & vice versa.

* Mesenchyme of Head & Neck → From Ectoderm.

EPITHELIAL MALIGNANCIES

- Usually have "CARCINOMA" at the end.
- ~~#~~ Some epith. → derived from Ectoderm, Some → Endo- & Some → from Mesoderm → So Epithel. Malignancies can be of Ectodermal, Mesodermal or Endoderm. Origin.

Ectodermis

- Cutaneous Squamous Cell Carcinoma
 - Basal Cell Carcinoma
 - Malignant Melanoma* → Neural Crest cell derivatives.
- ↓ ↓ ↓
 Cancer of Melanocytes

MESODERMAL

- Renal cell Carcinoma.

Epithel. of Renal Tubules }
is derived from Mesoderm }

ENDODERM

- GIT - Adeno-Carcinomas.
- Cholo-Rectal Carcinoma

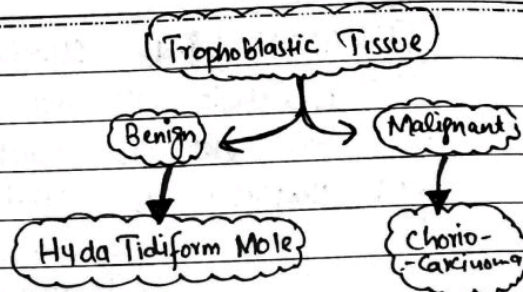
Endoderm $\rightarrow$ lining of GIT & most of the Respiratory System etc.
 $\rightarrow$ Pancreas, liver etc

On the Basis OF HISTOLOGICAL Pattern:

- * Squamous cell Carcinoma.
- * Adeno Carcinoma → Glandular
- * Papillary Carcinoma → Fronds
- * Undifferentiated Carcinoma → cells → undifferentiated.

Some other Carcinomas :

- * Broncho-Carcinoma → Lungs
- * Chorio-Carcinoma → Placenta
- * Seminoma* → Testis
- Hepatocellular Carcinoma

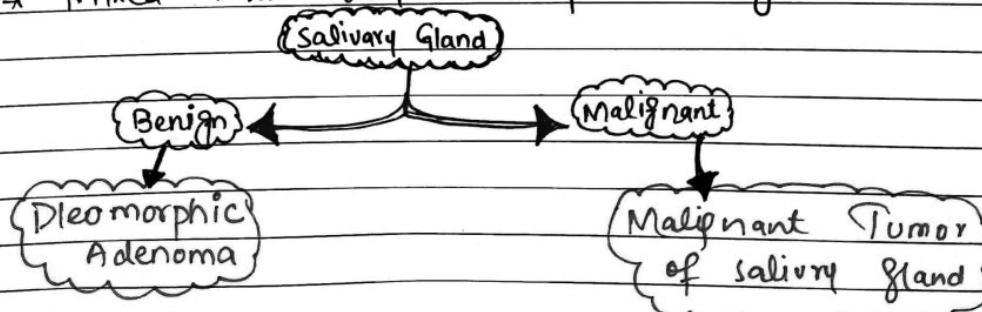


- All the Benign & Malignant Neoplasias → Usually are derived from one germ layer & all the Neoplastic cells are usually closely Resembling to each others.

MIXED TUMORS

- " Tumors → Derived from one germ layer → then undergo Neoplastic Transformation (Divergent Differentiation) →
- so tumor contains different populations of cells → But all the cells types are derivative of one germ layer →
- Such Tumors ——— !
- e.g. → Tumors of Salivary Gland.

- x Mixed Tumor may be benign or Malignant.

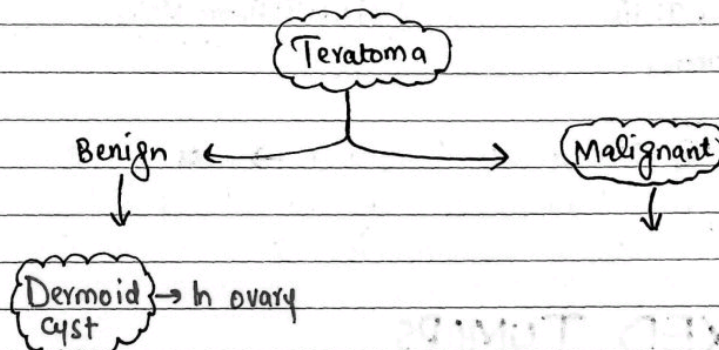


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TERATOMA → Special Type of Mixed Tumor in w/c
Neoplastic cells are derived from (2) or All (3)
Germ ~~cell~~ cells layers.
e.g: Neoplasia of Toti-potent cell.



- | | |
|---------------------------|-----------------------------|
| * Differentiated Teratoma | * Undifferentiated Teratoma |
| * Cystic " | * Solid " |
| * Mature " | * Immature " |