

### Basics Components of Tumors \*

وادی بحقیقہ سے ال benign و ال Malignant نفس الی

تنبیهیم حیوی علی ال parenchymal cells (neoplastic cells)

یبحد ال biological behavior

لرینا فی عنا زجرا = non-neoplastic stroma ← supporting

parenchymal cells  
carries the blood supply (= BV) & connective tissue ← made by  
↳ [Blood vessels]

### Nomenclature of benign Tumors \*

ذالانقیح الاسم → oma ← benign بی من لایم

Cartilage → Chondroma - 2      Fibroma ← Fibrous tissue - 1

Complex ← benign epithelial T      ↳ nomenclature      \*

BT = P epithelial ← papillomas -

glands ← Adenomas -

ovary. ← Cystadenomas -

Subject

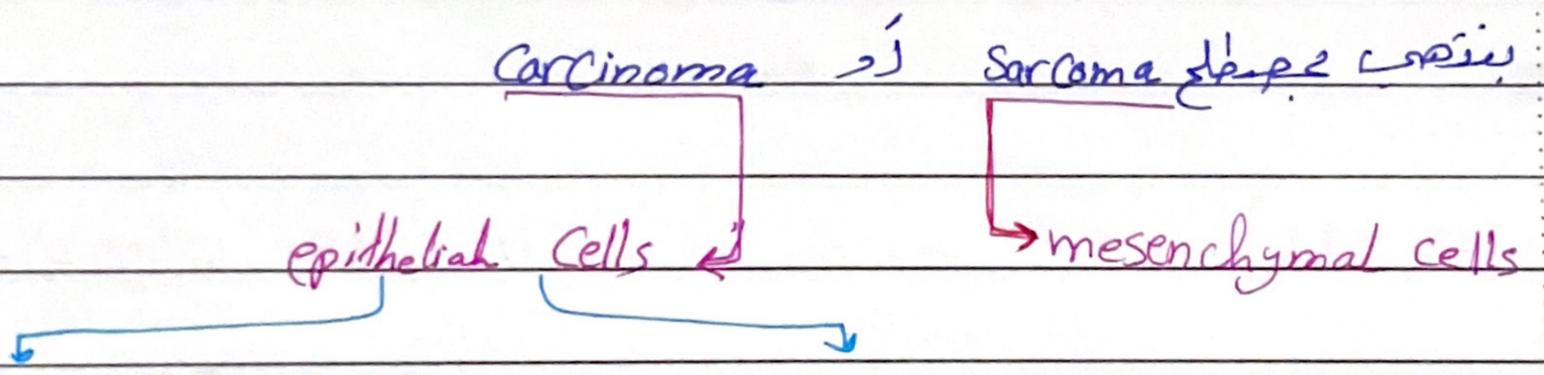
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No.

projecting mass ⇐ polyps  
انتفاخات يطلع من سطح المصمغ ⇐ mucosa

Malignant أو benign

← Malignant Tumors



Adeno Carcinoma

Squamous cell carcinomas (SCC)

- ↳ epithelial cells form
- ↳ grow in glandular patterns

↳ stratified squamous carcinoma

⇐ Mixed tumors

the stem cell may undergo divergent differentiation.

2 types of cell. cancer طالع فيه layer الى ال

pleomorphic adenoma ⇐ salivary gland ⇐ ex

Female breast ⇐ fibroadenoma

← special nomenclature \*

یعنی تیسری (oma) سے مری Malignant

یعنی اولیٰ و ثانیٰ ال Oma ← benign سے برخیز مزیم Malignant

- lymphoma -2                      seminoma -1
- mesothelioma -4                      melanoma -3

ال [table 6.1] سے الی مینوریہ وال Slides جنرل تریڈ

\* صلا ال benign وال Malignant یا بہت بیظانواعہ بہن 8-

- Differentiation & Anaplasia -1
- local invasion -2
- Metastasis -3

حشرح ال واحد لکال (=)

### ≡ Differentiation ≡ \*

المستوى يعني؟ ≡ درجة التشابه للـ Tumor cells

normal cells ≡ يعني اختلا في الخلية السرطانية عن الخلية

الطبيعية، سبب، قلنا أنه الـ benign **بها** يعني خباثتها

الكل ما الطبيعي أما الـ malignant **بها** يعني خباثتها الخلية

un-differentiated.

مثلا كما ذكرنا [well-differentiated] يعني خباثتها الـ normal cells  
Carcinoma

بس الاننا 2: يزيد يعني الـ secretion لهاي الخلايا بتزيد

the endocrine glands => produces hormones characteristic of their origin =>

- 1- squamous cell carcinoma => produces Keratin
- 2- hepatocellular carcinoma => bile

benign  $\Leftarrow$  BT  
 Malignant  $\Leftarrow$  MT

$\Leftarrow$  rate of growth  $\Leftarrow$   $\text{معدل النمو}$  \*

grow slowly  $\Leftarrow$  Most BT -

grow rapidly  $\Leftarrow$  MT -

$\Leftarrow$  expectations  $\Leftarrow$   $\text{التوقعات}$  \*

\*  $\text{لا يمكن توقعه}$   $\Leftarrow$   $\text{أنه لن يتوسع}$   $\Leftarrow$  Cancer  $\text{من فجأة}$

Most cancers progressively enlarge over time, some slowly, others rapidly

$\rightarrow$  but the idea that they occur suddenly is not true.

$\Leftarrow$  local invasion  $\Leftarrow$   $\text{الاختلاف التام}$

infiltration  $\Leftarrow$  localized origin  $\Leftarrow$  BT

invasion  $\Leftarrow$   $\text{معدية}$   $\Leftarrow$  Metastasis  $\Leftarrow$   $\text{معدية}$

invasion, infiltration  $\Leftarrow$   $\text{معدية}$   $\Leftarrow$  Encapsulation  $\Leftarrow$  MT  
 Metastasis  $\Leftarrow$   $\text{معدية}$

Metastasis ← بالانتقال إلى أماكن أخرى \*

development of secondary implants discontiguous with ← means

The primary tumor

← Cancers have different abilities to metastasize \*

\* At one extreme ⇒ basal cell carcinoma of the skin

↓  
most primary tumors of CNS

↓  
rarely metastasize ← نادر

→ osteogenic sarcomas ⇒ metastasized to the lungs

← كلما كان أكبر

the more anaplastic & the larger the primary T, the more \* it's to metastasize.

← Metastatic T disseminate by one of these pathways -

ovary, stomach, colon into peritoneal cavity. ← seeding within body cavities (1)

favoured by ← hematogenous spread ← blood (2)

sarcomas but carcinomas use it as well

more typical ← lymphatic spread ← lymphatic circulation (3)

of carcinomas

\* ال Cancer ال أسباب و مخاطر من شرط باكتيات ←

1- cigarette smoking is associated with lung cancer. ← ي

2- dietary fat & fiber content may be important in the causation of →  
Colonic cancer.

\* slide 30 ← أسباب Cancer ال male ال female

← Geographic & Environmental Factors \*

- واحد عم يعرف بشكل قسري لا sunlight ← سرطان الجلد

- حسب الينا خطه بعني في مناطق نسبة ال Cancer تختلف

حسب القوة ال Factors فيها.

Environmental carcinogens ⇒ sunlight, cigarette smoking & chronic alcohol consumption

Cervical cancer is linked to age, sexual intercourse & the number of sex partners [ pointing to a role of  
[ Oncogenic virus, HPV ]

\* بالسنه لا age ←

- the frequency of cancer ↑ increase with age.

- Most cancer Mortality occurs between ⇒ 55-75 y.

ليه سبب الأصابة بمرض الخبايا بتقل مع العمر ، ولأنه مع العمر تيزيد

accumulation لا mutation

1- Accumulation of somatic mutations

سبب الخبايا ←

2- Decline in immune competence that accompanies aging.

\* الوراثة ← hereditary

- Autosomal dominant ⇒ mutation in cancer suppressor genes ⇒ (RB, p53, BRCA1 & 2)

- Autosomal recessive ⇒ inherited defects in DNA repair.

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\* اسباب اخرى لا Cancer =>

1- Etiology of Cancer / Carcinogenic Agents =>

- Chemical Carcinogens - 2
- Radiation Carcinogen - 1

2- viral & Microbial oncogenesis => [ مهم جدا حسب حكي و الدكتور ]

\* oncogenic viruses =>

(I) RNA Oncogenic viruses =>

- فاي اول لابنة معنا حقة

- human T Cell leukemia virus type 1 (HTLV-1)

تلكا

↳ T-Cell leukemia / lymphoma

حفظها

(II) - DNA oncogenic viruses =>

[ بر ضوء 6.3 table => مهم ]

- human papillomavirus => (HPV) => cervical cancer =>

[ طلائع فيل كرم لاييم ]  
[ وقتل اعنه السبحاد ]

- Epstein Barr virus (EBV) => Burkitt lymphoma

لـ اثنى ها اثنى

↳ hodgkins lymphoma

ما تكونوا يشيو - 6 -

[ جاد بوا اشوف ] لـ بر ضوء حكي اعنه انه

لـ بصيرة - 7 -

- hepatitis B virus HBV => hepatocellular carcinoma (HCV an RNA virus causes

\* Bacterial infection =>

HCC too)

H. pylori infection => gastric adeno carcinoma

لـ فاي بقى

الذئبة بال no

هو قوية كانت و اجواء

ارحولها اذا فايين

# ← How do Tumors Develop\*

genes lb mutation يسبب cancer lb في نفسه

DNA repair genes lb, Apoptosis lb, growth lb

⇐ 4 classes (التي هي)

- 1- Growth-promoting proto-oncogene.
- 2- Growth-inhibiting tumor suppressor genes
- 3- Apoptosis-regulation genes
- 4- DNA repair genes

⇐ proto-oncogenes lb \*

← oncogenes lb قبل ما يحدث الموت

normal cellular genes whose products promote cell proliferation ⇐

oncogenes lb بعد ما حدث الموت

\*protein products of oncogenes:

- 1- growth factors
- 2- growth factor receptors
- 3- signal transducing proteins
- 4- Nuclear transcription proteins
- 5- cyclins & cyclin-dependent kinases (CDKs)

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المراقب المركزي للضغط في الخلية ← p53 \*  
← [17] مرجع

the central monitor of stress in the cell \*

can be activated by → anoxia \*  
↳ DNA damage  
↳ by phosphorylation  
↳ inappropriate on cogene signaling

controls the expression genes -1 ← activated -1 \*  
↳ involves

- ↳ cell cycle arrest
- ↳ DNA repair
- ↳ cellular senescence
- ↳ apoptosis

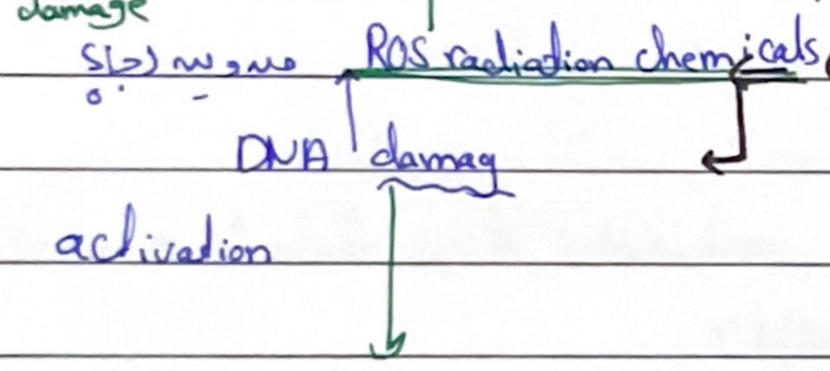
70% ← human tumors \*  
↳ have a homozygous loss p53

Slide 45

### Erosion of Apoptosis ← حشره حسب شرح الدكتور

بعض المواد تحتوي على الجينات التي تسبب الإصابة تؤدي إلى

Reason تؤدي إلى حدوث الـ Cancer



PG3 response → Mutation of PG3 ⇒ overexpression of

MDM2

PG3 damage يجعل نسبة عالية منه

activation do other proteins

BAX/BAK

BCL-2

BCL-XL

MCL-1

ارتفاعهم يجعل Inhibition

Mitochondria

يطلق تسمى مواد وتخرج

Cytochrome c. APAF-1

inhibitor of apoptosis

Inhibition by IAP

Caspase 9

Caspase 3

Apoptosis

BCL-2

BCL-XL

MCL-1

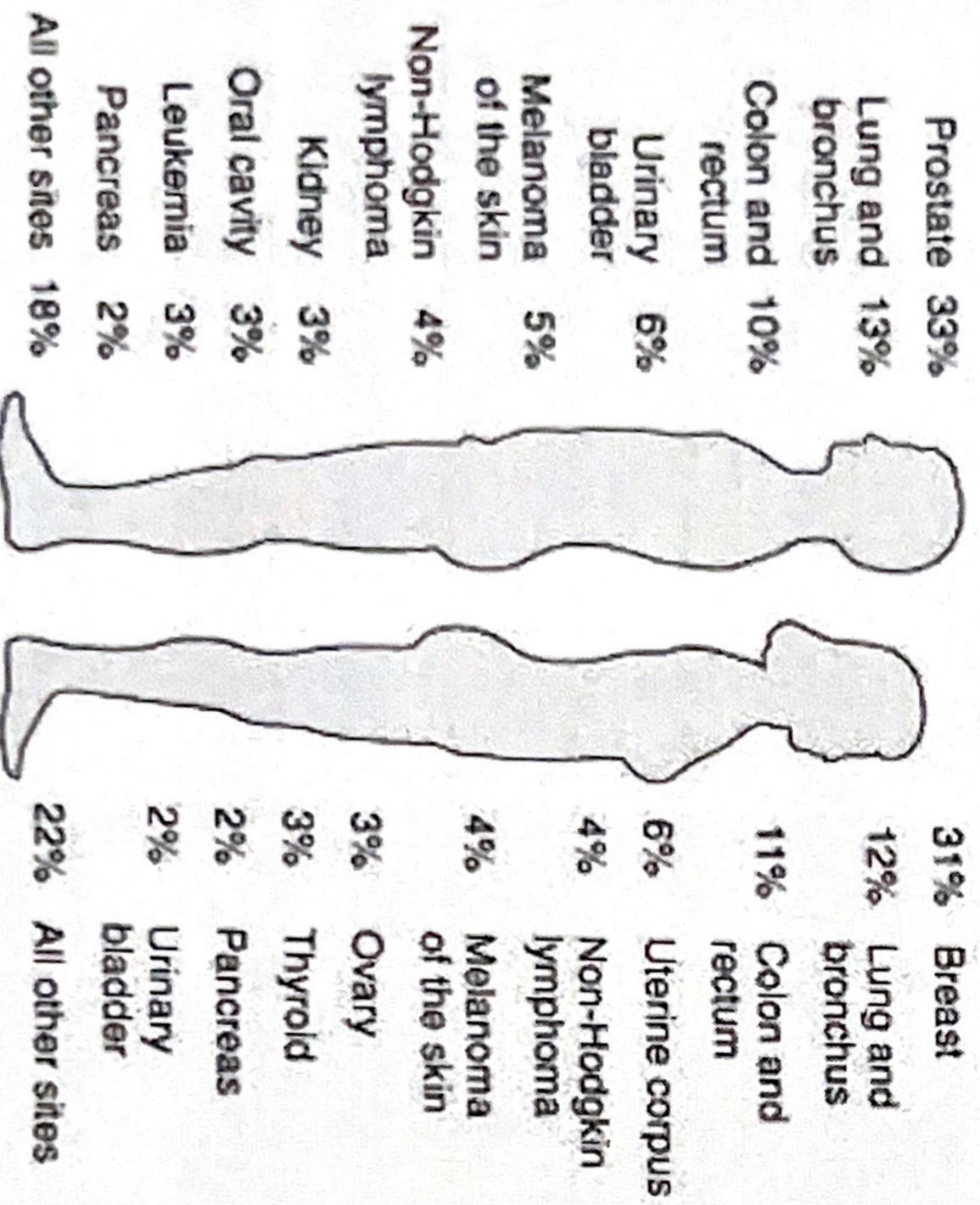
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Table 6.1 Nomenclature of Tumors

Tissue of Origin	Benign	Malignant
<b>One Parenchymal Cell Type</b>		
<b>Connective tissue and derivatives</b>	Fibroma Lipoma Chondroma Osteoma	Fibrosarcoma Liposarcoma Chondrosarcoma Osteogenic sarcoma
<b>Endothellum and related cell types</b>	Hemangioma	Angiosarcoma
<b>Blood vessels</b>	Lymphangioma	Lymphangiosarcoma
<b>Mesothellium</b>	Meningioma	Mesothelioma Invasive meningioma
<b>Brain coverings</b>		
<b>Blood cells and related cell types</b>		Leukemias Lymphomas
<b>Hematopoietic cells</b>		
<b>Lymphoid tissue</b>		
<b>Muscle</b>	Leiomyoma	Leiomyosarcoma
<b>Smooth</b>	Rhabdomyoma	Rhabdomyosarcoma
<b>Striated</b>		
<b>Skin</b>	Squamous cell papilloma	Squamous cell or epidermoid carcinoma
<b>Stratified squamous</b>		
<b>Basal cells of skin or adnexa</b>	Nevus	Basal cell carcinoma Malignant melanoma
<b>Tumors of melanocytes</b>	Adenoma Papilloma Cystadenoma	Adenocarcinoma Papillary carcinomas Cystadenocarcinoma
<b>Epithelial lining of glands or ducts</b>	Bronchial adenoma Renal tubular adenoma	Bronchogenic carcinoma Renal cell carcinoma
<b>Lung</b>	Liver cell adenoma	Hepatocellular carcinoma
<b>Kidney</b>	Urothelial papilloma	Urothelial carcinoma
<b>Liver</b>	Hydatidiform mole	Choriocarcinoma
<b>Bladder</b>		Seminoma Embryonal carcinoma
<b>Placenta</b>		
<b>Testicle</b>		
<b>More Than One Neoplastic Cell Type—Mixed Tumors, Usually Derived From One Germ Cell Layer</b>		
<b>Salivary glands</b>	Pleomorphic adenoma (mixed tumor of salivary gland)	Malignant mixed tumor of salivary gland Wilms tumor
<b>Renal anlage</b>		
<b>More Than One Neoplastic Cell Type Derived From More Than One Germ Cell Layer—Teratogenous</b>		
<b>Todipotential cells in gonads or in embryonic rests</b>	Mature teratoma, dermoid cyst	Immature teratoma, teratocarcinoma

# Cancer Incidence

A. 2006 ESTIMATED CANCER INCIDENCE BY SITE AND SEX\*



\* Excluding basal and squamous cell skin cancers and carcinoma in situ (except urinary bladder)

B. 2006 ESTIMATED CANCER DEATHS BY SITE AND SEX

