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MBBS

F17-011

Neoplasia ECQs

Neoplasia ECQs
→ p53, RAS, Rb genes.

a) Define Grading and Staging of tumors. (1+1)

b) Enumerate the characteristics of a malignant cell (1.5)

c) Enumerate three routes of tumor metastasis (1.5)

Q2.

a) Differentiate between benign and malignant tumors. (1.5)

b) How we can diagnose tumor? (1.5)

c) Define tumor marker. Give two examples along with tumor names. (1+1)

QNo # 1.

(a) Grading of a tumor:- It establishes the some estimate of a aggressiveness or a level of a malignancy of a tumor base on a cytologic differentiation of a tumor cells & number of a mitosis with in a tumor.

High Grade tumor

- Not well differentiated.
high mitotic rates

Low Grade tumor

Well differentiated
Low mitotic rates.

(b) Staging of a cancer:-

- Size of a primary lesions
- The spread to a regional lymph nodes.
- Presence or absence of Blood Borne metastases.

TNM system
AJCC system

(c) → (Distribution at a rapid growth rate; anaplasia)

- (Prominent Nuclei)
- (irregular Nuclear membrane)
- (Cancerous cell)
- (Non-Capsulated)
- (Common - necrosis)
- (Eosinophilic Cytoplasm)

- (c) → Seeding with in a body cavities
- Lymphatic spread
- hematogenous spread

- Distribution at a rapid growth rate, anaplasia.
- Non-Capsulated.
- Common necrosis:
- Prominent nuclei
- irregular nuclear membrane.
- Eosinophilic Cytoplasm.
- Cancerous cell.
- Seeding within a body cavities.
- Lymphatic spread
- Hematogenous spread.

P. (a) ^{malignant} Benign

(i) Well differentiated

(ii) Non invasive

metastasis absent

Slow growing
(cohesive)

Capsulated

Capsulated

Malignant

Poorly differentiated

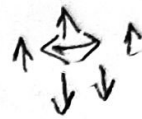
invasive

metastasis present

fast growing
(poorly cohesive)

Non-capsulated

Non-capsulated



(b) Tumor diagnosed

(i) History & Clinical examinations

(ii) Imaging → X-ray, Ultrasound, CT-Scan, MRI

(iii) Tumor marker, Lab-analysis

(iv) Cytology - Pap Smear - FNAB

(v) Biopsy, Histopathology markers

(vi) Molecular technology, Gene detection

(c) Tumor markers

Substance that are released by a tumor cells or by a body in response to a tumor cells.

→ Prostate Specific antigen (PSA) → Prostate cancer

→ Prostate acid phosphatase → Prostate cancer

→ CA-125 → Ovarian cancer

→ Human chorionic gonadotrophin → (uterine carcinoma)

→ CA-15-3 → Breast cancer

→ CA-27-29 → Breast cancer

calcitonin → ~~ovarian cancer~~
Thyroid

DATE 5/3/2019

2019

Q. A 50 year old man working in a storage for grains and nuts developed a liver mass. Abdominal CT scan shows liver mass showing hepatocellular carcinoma.

- a) Which chemical carcinogen has led to this tumor 1
- b) Names three other chemical agents causing tumors with associated cancer 1.5
- c) Describe the pathogenesis of Chemical carcinogenesis in tabulated form. 2.5

Aflatoxin B
 Asbestos → lung cancer
 Asbestos → skin cancer
 Cadmium → prostate
 Coccar

Q. 2 Write short notes on

- a) Viral Oncogenesis 2.5
- b) Grading and staging of tumours. 2.5

121 pp
 The tumor of tumor virus that induced benign or malignant cells

Q. 3 What are different hall marks of cancer, enumerate them and give description of any two in detail. 2+3.

Q. 4 Describe the mechanism of action of P53 (RAS) and Rb Gene 5

Ras → ?

Q. 5 What are different techniques used in medical practice to diagnose a case of malignancy 3

b) Enumerate four tumor markers with associated tumors

Q. 6 a) Write down differences between benign and malignant tumors 1.5.

b) What are different characteristics of tumours. 3.5

malignant cells
 benign growth, metastasis, high mitotic
 immortality

Q. 7 What are different modes of spread of tumors and describe the mechanism of spread of tumors 1.5+3.5

Seeding into Body Cavities → Lymphatic Spread → Hematogenic Spread
 Picture

Q. 8 Explain

a) Paraneoplastic syndrome with examples

b) Choristoma 0.5

c) Hamartoma 0.5

d) Difference between mixed tumour and teratoma 1

e) Four malignant tumours ending with word "oma" 1

2 → ?
 Cells more than one germ layer.

Q. 9 → How diagnose tumor?

Benign & malignant tumour difference

Explain one examples each - benign

tumor neureles nerves

Q. 10 → mixed types of a cells more than one types of a cells.

neureles nerves
 neureles nerves
 neureles nerves

oncogenes

- RNA oncogenic virus
- DNA oncogenic virus

Transforming DNA. virus
from unable to



clonal expansion, growth
deregulation, angiogenesis
metastatic \Downarrow subclone.

adhesion \Downarrow to the endothel.
invasion of the Basement
membrane.

\Downarrow
< Passage through a extracellular
fluid \Downarrow

intravasation.

\Downarrow
intracellular with host
lymphoid cells.

\Downarrow
Tumor cell embolus.

\Downarrow
adhesion to the
invasion of a
Basement membrane

\Downarrow
Extravasation.

\Downarrow
Metastatic deposit.

\Downarrow
Angiogenesis

\Downarrow
Growth \rightarrow

- Evading the growth suppressor
- Enabling the replicative immortality.
- Tumor promoting inflammation.
- genomic instability
- inducing angiogenesis.
- resisting cell death.

~~Alms~~



Department of Pathology
Azra Naheed Medical College
MBBS 3rd Year

Time Allowed: 60 min

Total Marks: 30

Name: _____
Roll No: _____
Date: _____

Q 1: Give gross and microscopic differences of benign and malignant tumours (2.5)

a) What are the characteristics of a malignant cell? (2.5)

Q 2: A 50 years old female presented with ovarian mass; what possible ways a tumour can adopt for its spread. 1.5

*cancerous cell
common necrosis
Eosinophilic cytoplasm,
Prominent nuclei.*

B) Give Diagrammatic representation of spread of tumours 3.5

irregular nuclear membrane

Q-3 Q. A 50 year old man working in a factory developed mesothelioma along with lung carcinoma

a) Which chemical carcinogen has led to this tumor 1

Asbestos

b) Names four other chemical agents causing tumors with associated cancer 2

c) What is difference between direct acting and indirect acting chemical carcinogens, Give the role of initiators and promoters. 2

Q. 4 A 40 year old female has foul smelling vaginal discharge for 2 weeks. She is a commercial sex worker in past. On physical examination there is 3-cm mass in cervix showing features of well differentiated squamous cell carcinoma

a) How do you grade and stage a tumor 2.5

b) What are different grading and staging systems 2.5

Q. 5 What are different types of genes involved in tumor formation,

A) classify them and give 1 example for each. 3.5

*well diff →
→ CDKN1A.
→ Puma.
→ Rb genes:
→ TP53 genes.*

① Teratoma. ② Hamartoma. ③ Choristoma ④ Mixed tumor
⑤ Pleomorphism

5

Date Neoplasia (Study)

Q.No # 2:- (2019 - 2020)

Write short notes on "viral oncogenesis"

(a) (iii) Grading of a tumor :-

(i) Viral oncogenesis :-

(a) RNA - oncogenic virus

(b) DNA - oncogenic virus.

• RNA oncogenic virus contains a transform a viral oncogenes e.g src, abl or myb.

This is acute transforming virus.

Slow transforming virus do not contains a v- onc. but proviral DNA is inserted near a protooncogenes.

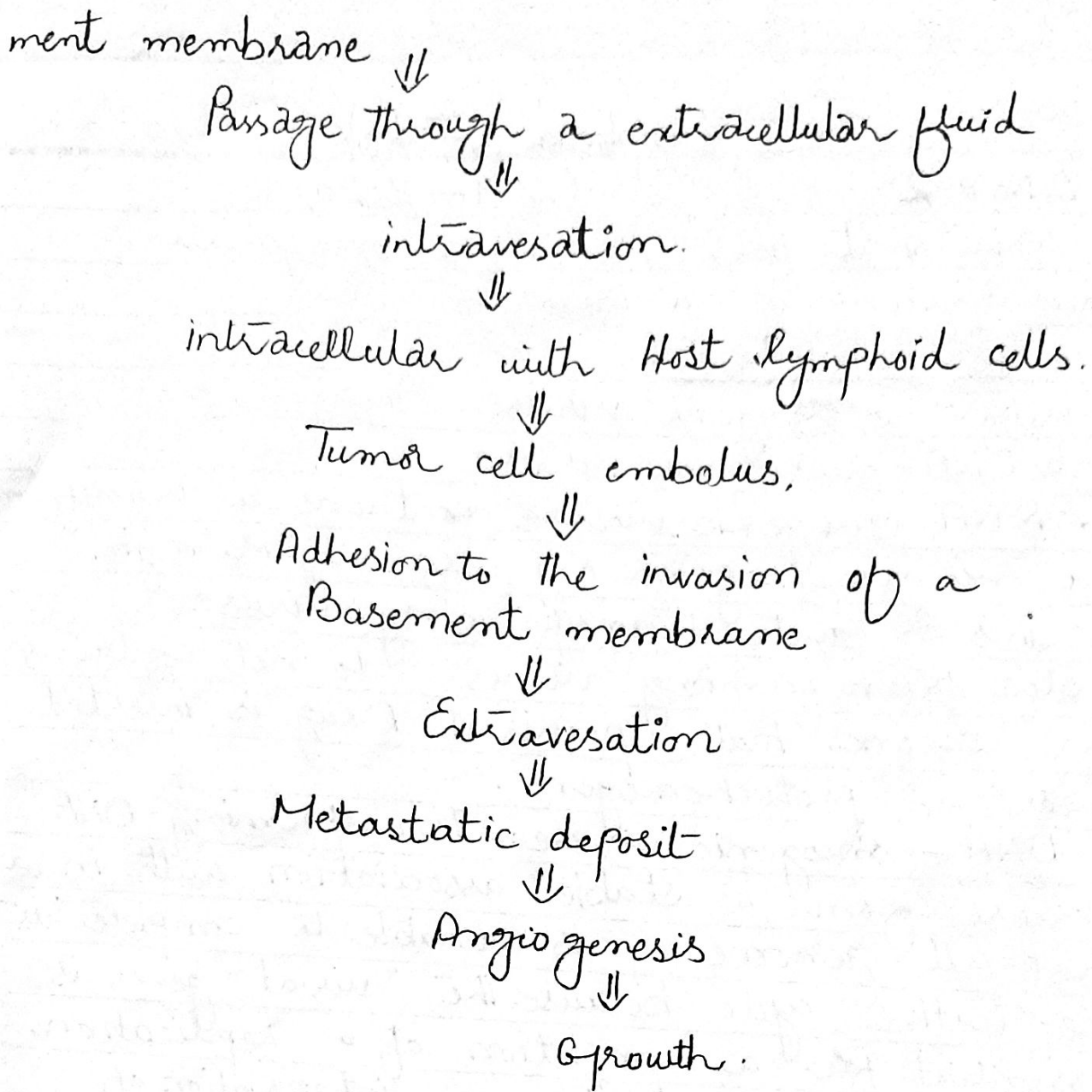
DNA - oncogenic virus :- Transforming DNA virus from a stable association with in a host cell genome & is unable to complete its replicative cycle because the "viral genes is essential for a completion of a replication are interrupted during a integration of viral DNA.

(b) - Describe the mechanisms of a spread of tumor :-

Clonal expansion, Growth, diversification,
Angiogenesis
⇓

Metastatic Subclone
⇓

Adhesion to the invasion of a base



*:- Fibroadenoma

→ Benign tumor of a fibroblast.

Hamartoma:- Disorganized form of a tissue whose cell types are indigenous to the site of a lesion.

Choriostoma:-

Ectopic focus of a normal tissue.

Date _____

Name the benign & tumor of malignant origin.

A: Connective tissue	Benign	Malignant
Bone	Osteoma	Osteosarcoma
Cartilage	Chondroma	Chondrosarcoma
Fibroblast	Fibroma	Fibrosarcoma.
B:- Hematopoietic		
Myeloid.		Myelogenous leukemia.
Lymphocytic.		Lymphocytic leukemia
. Muscles		
Smooth muscles	Leiomyoma	Leiomyosarcoma.
Skeletal muscles	Rhabdomyoma	Rhabdomyosarcoma
. Vascular		
Compare	Hemangioma	Angiosarcoma.

Anaplasia	Dysplasia	Carcinoma in situ
Lack of a differentiation of a tumor.	A-typical proliferation of a cells characterized by a nuclear enlargement & failure of	full thickness ^{Dysplasi} Extending from a basement membrane to the surface of a

Desmoplasia:- a proliferation which falls a short of a malignancy. The changes that occur in the stroma as a tumor invades of a is called desmoplasia.

Desmoplasia refers to the stroma composed of a connective tissues & Blood vessels that surround the infiltrating tumor.

Compare Epithelial lining.

* <u>Epithelial</u>	Benign	Malignant
→ <u>Stratified Squamous.</u>	Squamous cells Papilloma.	Squamous cells Carcinoma.
→ Basel cells of skin		Basel cell Carcinoma.
→ Epithelial lining from glands or ducts	Adenoma	Adenocarcinoma.
→ Hepatocytes	Hepatocellular adenoma Papilloma.	Hepatocellular carcinoma TCC
Transitional		
Renal cell	Renal cells adenoma.	Renal cell <u>Carcinoma.</u>
Melanocytes	Nevus.	<u>Melanoma</u>

