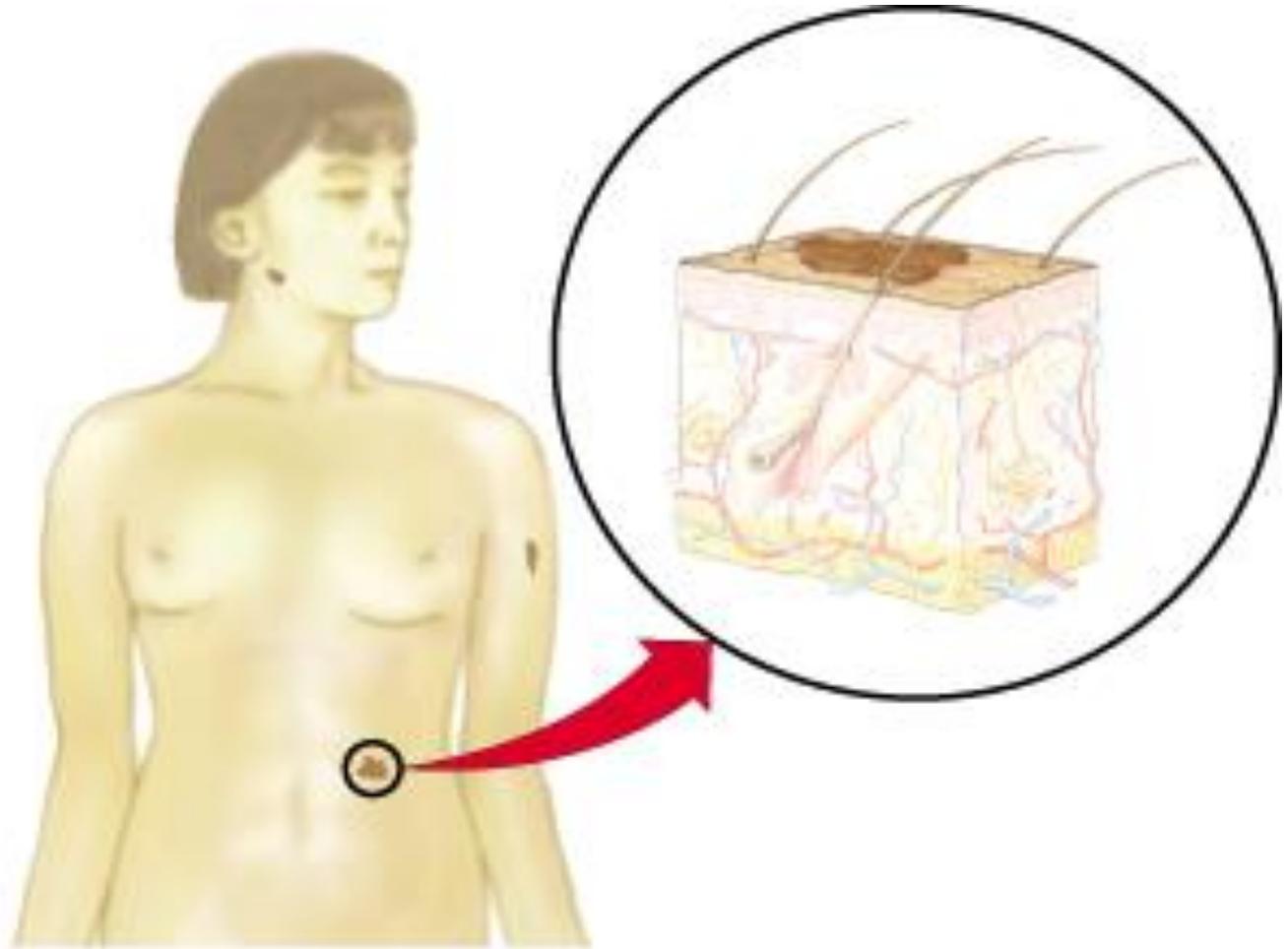


Terms in Oncology

Cancer and Its Causes



Objectives

After studying this chapter, you will be able to:

- **Name the types of cancer, discuss the major pathological conditions, and list some of the possible causes**
- **Define the combining forms used in building words that relate to oncology**
- **Identify the meaning of related abbreviations**
- **Name the laboratory tests and clinical procedures used in testing and treating cancer**

Objectives cont'd

- **Describe the pathological terms related to cancer**
- **Define surgical terms related to cancer**
- **List common pharmacological agents used in treating cancer**

Tumors: Types and Causes

Oncology is the study, diagnosis, and treatment of tumors (neoplasms).

Neoplasms

- **Growths made up of cells that reproduce abnormally**
- **Tumor cells lack the mechanism to stop producing and they lack the ability to die after a certain period**
- **Apoptosis** is the death of normal cells in a normal time cycle
- **Tumors can be either benign or malignant**

Benign

- **encapsulated**
- **not life-threatening**
- **made up of differentiated cells**

Malignant

- **not capsulated**
- **categorized by the types of tissue from which they develop**
- **can be life-threatening**

Tumors: Types and Causes

Carcinoma

- Originates from **epithelial** tissue and is the most common type of cancer
- Also called **solid tumors**
- Common sites for carcinomas:
 - skin
 - stomach
 - lungs
 - mouth
 - breasts
 - uterus
 - colon
- Spread by way of the lymphatic system

Sarcoma

- Originates in **muscle** or **connective** tissue and **lymph**
- A fairly rare form of cancer
- Certain leukemias are sarcomas

Tumors: Types and Causes

Mixed-Tissue Tumor

- **Derives from tissue that is capable of separating into either epithelial or connective tissue because it is composed of several types of cells**
- **Can be *teratomas*, which are growths containing bone, muscle, skin, glandular tissue and other cells**

NOTE: A class of cancer such as leukemia arises from blood, lymph or nervous system cells

Tumors: Types and Causes

Malignant Tumors

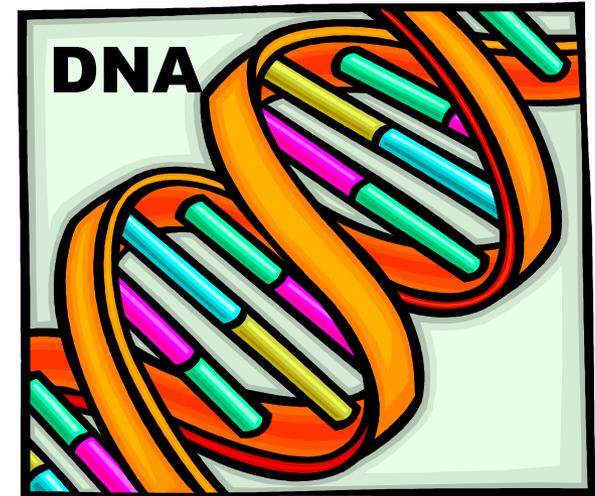
- Made up of cells that lack the normal orderly arrangement of the cells from which they arise
- Lack a defined mature cell structure referred to as **anaplasia**
- Any abnormal tissue development is known as **dysplasia**
- **Metastasis** may occur



Tumors: Types and Causes

Causes of Cancer

- Inherited defect transmitted to the child in DNA
- Exposure to carcinogens



Types of Carcinogens

- Environmental agents
- Chemicals
- Radiation
- Viruses



Other Cancer Causing Agents

- tobacco
- smoke
- asbestos
- insecticides
- certain dyes
- certain hormones

Combining Forms and Abbreviations

Combining Form

Meaning

- **blast(o)** → **immature cell**
- **carcin(o)** → **cancer**
- **muta** → **genetic change**
- **mutagen(o)** → **genetic change**
- **onc(o)** → **tumor**
- **radi(o)** → **radiation, X-rays**

Combining Forms and Abbreviations

Suffix

Meaning

- blast** **immature cell**
- oma** **tumor**
- plasia** **formation (as of cells)**
- plasm** **formation (as of cells)**
- plastic** **formative**

Combining Forms and Abbreviations

Abbreviation

Meaning

ALL	acute lymphocytic leukemia
AML	acute myelogenous leukemia
bx	biopsy
CA	carcinoma
CEA	carcinogenic embryonic antigen
chemo	chemotherapy
CLL	chronic lymphocytic leukemia

Combining Forms and Abbreviations

Abbreviation

Meaning

CML → **chronic myelogenous leukemia**

DES → **diethylstilbestrol**

DNA → **deoxyribonucleic acid**

DRE → **digital rectal exam**

ER → **estrogen repair**

METS → **metastases**

NHL → **non-Hodgkin's lymphoma**

Combining Forms and Abbreviations

Abbreviation

Meaning

PSA → **prostate-specific antigen**

rad → **radiation absorbed dose**

RNA → **ribonucleic acid**

RT → **radiation therapy**

TNM → **tumor, nodes, metastasis**

Tx → **treatment**

XRT → **x-ray or radiation therapy**

Diagnostic, Procedural, and Laboratory Terms

Routine Medical Examination

- **Pap smear**

- test for cervical and uterine cancer

- **Breast exam**

- palpate for lumps in the breast

- **Digital rectal exam**

- screening for prostate cancer

- **Testicular exam**

- palpate for tumors in testes



Diagnostic, Procedural, and Laboratory Terms

Blood Tests

- **Carcinoembryonic antigens (CEA)**

- detects gastrointestinal tumors

- **Prostate-specific antigen (PSA)**

- detects prostate cancer

- **Alphafetoprotein test (AFP)**

- detects liver or testicular cancer

- **Human chorionic gonadotropin (HCG)**

- present with testicular cancer

- **Cancer antigen 125 (CA-125)**

- protein produced by ovarian cancer cells



Diagnostic, Procedural, and Laboratory Terms

Categorizing Tumors

Tumors are categorized by:

- **grade** (the maturity of the tumor)
- **stage** (the degree the tumor has spread)
- **appearance** (using a microscope and by visual observations)

Diagnostic, Procedural, and Laboratory Terms

Microscopic Examination

Determines if a tumor is:

- **alveolar**

- forming small sacs shaped like alveoli

- **anaplastic**

- reverting to a more immature form

- **carcinoma in situ**

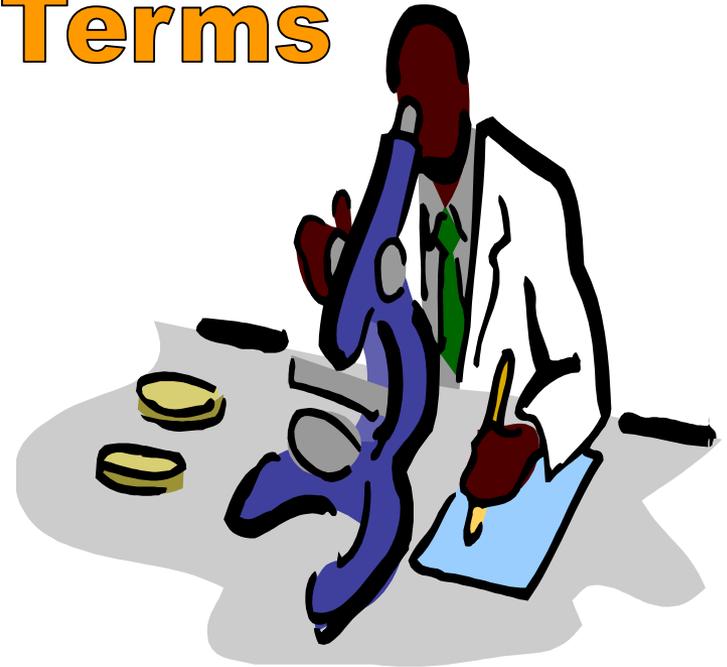
- contained at a site without spreading

- **dysplastic**

- abnormal in cell appearance

- **diffuse**

- spreading evenly



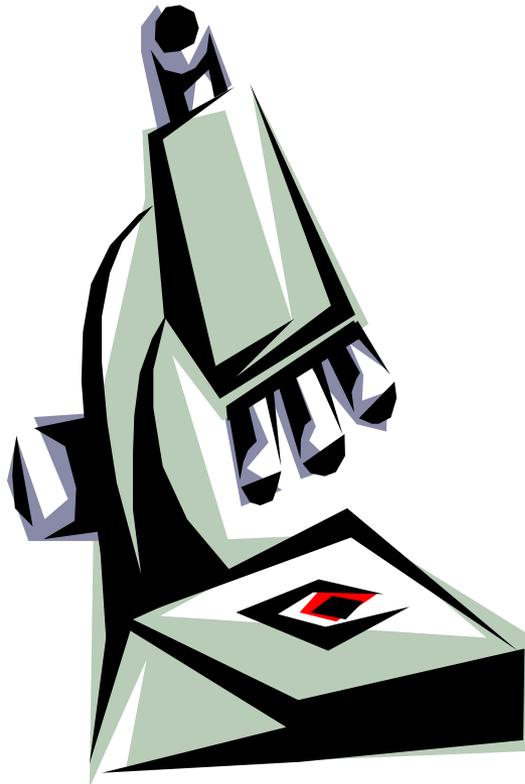
Diagnostic, Procedural, and Laboratory Terms

Microscopic Examination (cont'd)

- **epidermoid**
 - resembling epithelial cells

- **follicular**
 - containing glandlike sacs

- **hyperchromatic**
 - intensely colored



- **hyperplastic**
 - excessive development of cells

- **pleomorphic**
 - having many types of cells

- **undifferentiated**
 - lacking a defined cell structure

Diagnostic, Procedural, and Laboratory Terms

Visual Examination

- **cystic**

- filled with fluid

- **necrotic**

- containing dead tissue

- **fungating**

- projecting in a mushroom-like pattern

- **polypoid**

- containing polyps

- **medullary**

- large and fleshy

- **verrucous**

- having wart-like, irregular growths

Diagnostic, Procedural, and Laboratory Terms

Once a tumor is confirmed as malignant, doctor and patient discuss and agree on a course of treatment (**protocol**).

Radiation Therapy

- radiation rays damage the DNA of tumor cells
- surrounding normal cells usually suffer damage during treatments with radiation

Side Effects

• hair loss

• skin damage

• nausea

Pathological Terms

Type of Cancer

Where Cancer Starts

adenocarcinoma	→	gland
astrocytoma	→	neuroglia
basal cell carcinoma	→	skin
Burkitt's lymphoma	→	lymph
carcinoma	→	epithelial tissue
carcinoma in situ	→	encapsulated tumor
chondrosarcoma	→	cartilage
Ewing's sarcoma	→	connective tissue

Pathological Terms

Type of Cancer

Where Cancer Starts

fibrosarcoma ————— **connective tissue**

glioblastoma ————— **neurological tissue**

Hodgkin's disease ————— **lymph system**

hypernephroma ————— **kidneys**

Kaposi's sarcoma ————— **skin and organs of AIDS patients**

leiomyosarcoma ————— **smooth muscle**

leukemia ————— **stem cells**

leukoplakia ————— **tongue or cheeks**

Pathological Terms

Type of Cancer

Where Cancer Starts

liposarcoma ————— **fat**

lymphoma ————— **lymph system**

medulloblastoma ————— **brain**

melanoma ————— **skin**

multiple myeloma ————— **bone marrow and bone**

nephrosarcoma ————— **kidney**

Pathological Terms

Type of Cancer

Where Cancer Starts

neuroblastoma → **adrenal glands**

**non-Hopkin's
lymphoma** → **lymph tissue**

osteosarcoma → **bone**

retinoblastoma → **retina**

rhabdomyosarcoma → **striated muscle**

sarcoma → **connective tissue**

Surgical Terms

Incisional biopsy

- Removal of part of a tumor for examination

Excisional biopsy

- Removal of the tumor and surrounding tissue



Surgical Procedures

Resectioning

- Removal of the tumor and a large amount of the surrounding tissue

Exenteration

- Removal of an organ, tumor, and surrounding tissue

Surgical Terms

Other Surgical Procedures

- **Cryosurgery**
 - destruction by freezing
- **Electrocauterization**
 - destruction by burning
- **Fulguration**
 - destruction by high-frequency current



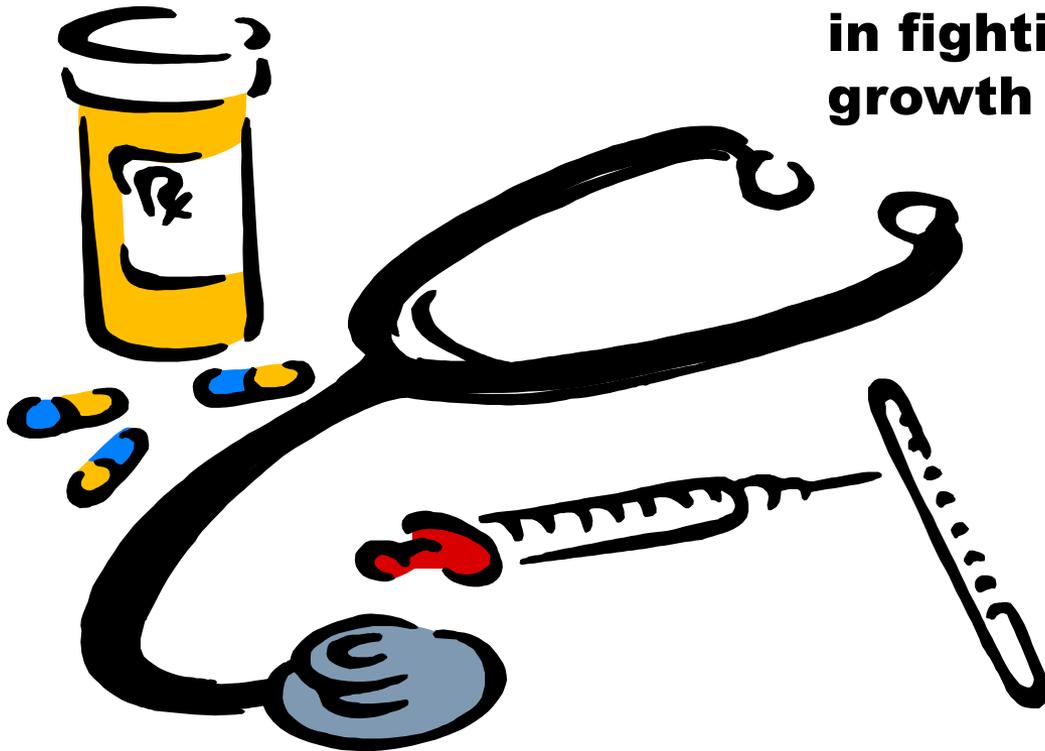
Pharmacological Terms

Chemotherapy

- Use of drugs to treat cancer

Biological Therapy

- Use of agents that enhance the body's own immune response in fighting tumor growth



Apply Your Knowledge

Harry has just returned from his follow-up appointment with his physician. He has been informed by his physician that the tumor is harmless. Which of the following terms would best describe this tumor?

A. benign

B. sarcoma

C. malignant

Answer: A. benign

Apply Your Knowledge

Dr. Jennings, the oncologist, informs his patient that tumor metastasis has occurred. You realize this means:

- A. The tumor has stopped growing in size.**
- B. The tumor has spread.**
- C. The tumor has disappeared.**

Answer: B. The tumor has spread.

Apply Your Knowledge

John has a strong family history of testicular cancer. Which of the following blood tests might his oncologist order to test for testicular cancer?

A. PSA and CA-125

B. AFP and HCG

C. PSA and AFP

Answer: B. AFP and HCG