

Lecture #2
First semester

NURSING CARE OF PATIENT WITH
CANCER

:by
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DEFINITION

A disease process that begins when an abnormal cell is **transformed** by the genetic mutation of cellular DNA (**Normal cells mutate into abnormal cells**)

Group of complex diseases; affect different organs and systems.

The abnormal cells have invasive characteristics and infiltrate other tissues. This phenomenon is **metastasis**.

Cancer cells are described as **malignant**. These cells demonstrate uncontrolled growth that does not follow physiologic demand.

Incidence and Prevalence

1. Cancer accounts for about 25% of death on yearly basis.
2. Males: 3 most common types of cancer are prostate, lung and bronchial, colorectal.
3. Females: 3 most common types of cancer are breast, lung and bronchial, and colorectal.

RISK FACTORS

- Age
- Stress
- Heredity
- Gender (Females with breast cancer)
- Poverty (Stress, diet, not doing screening tests)
- Diet (Some preserved food considered genotoxic)
- Occupation (healthcare providers exposure to x-ray)
- Infection
- Tobacco, alcohol, recreational drug use.

Pathophysiology of the Malignant Process

- ❖ Normal Cell Growth includes two events
 - a. Replication of cellular DNA
 - b. Mitosis (cell division)
- ❖ Four Phases of Cell Cycle
 - a. G1: Gap 1 Phase; cell enlarges, synthesizes proteins to prepare for DNA replication
 - b. Synthesis (S) Phase: DNA replicates and chromosomes duplicate
 - c. G2: Gap 2 Phase: cell prepares for mitosis
 - d. Mitosis M Phase: mitosis occurs with 2 copies of cell (daughter cells).

Pathophysiology of the Malignant Process

- ❖ Cell cycle is under control of cyclins which control process by working with enzymes; some cyclins “brake” (stop) the cellular division.
- ❖ Forms the basis of how some chemotherapeutic agents work against cancers.
- ❖ Differentiation: normal process occurring over many cell cycles for special tasks.
- ❖ Some unproductive differentiations occur (seen on biopsy reports).
 1. Hyperplasia: increase in number or density of normal cells.
 2. Metaplasia: change of cell type.

NEOPLASM

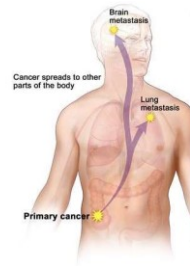
- A neoplasm is a mass of new tissue that grows independently of its surrounding structures and has no physiological purpose.
- They are classified as **benign** or **malignant** on the basis of their potential to damage the body and on their growth characteristics.

TUMOR INVASION AND METASTASIS

- **Invasion:** the ability of cancer cells to invade adjunct tissues
 1. The pressure of growing tumor can cause atrophy and necrosis to adjunct tissues.
 2. Many cancer cells release enzymes that lyse cell membranes of normal tissues.
 3. Cancer cells are easily separate from neoplasm and moves into surrounding tissues.
 4. Motile cells are attracted by chemical signals produced by activity within normal cells

TUMOR INVASION AND METASTASIS

- **Metastasis:** travelling of malignant cells from the primary tumor to invade other tissues and organs of the body and form a secondary tumor.



CANCER IDENTIFICATION

1. Classification: Naming of the tumor
 - Incorporates the Latin stem identifying the tissue from which the tumor arises

| Tissue origin | Name | Example |
|-------------------|-----------|---|
| Epithelial tissue | Carcinoma | Adenocarcinoma: a glandular malignancy arising from epithelial tissue |
| Supportive tissue | Sarcoma | Fibrosarcoma: a cancer of fibrous connective tissue |
| Germ tissue | Seminoma | |

- Hematopoietic malignancies are usually named by the type of immature blood cell that predominates.
 - Ex. Myelocytic leukemia: immature form of the granulocyte is predominant.
- Other names incorporate of discoverer. (Hodgkin's disease)

CANCER IDENTIFICATION

2. Grading: describing tumor aggressiveness
 - Evaluates the amount of differentiation of the cell and estimates the rate of growth based on mitotic rate
 - The most differentiated is the least malignant (grade 1)
 - The least differentiated is the most aggressively malignant (grade 4)

CANCER IDENTIFICATION

3. Staging: spread within or beyond the tissue of origin
 - Is used to classify solid tumors and refers to the **relative size of tumor** and **extent of the disease**.
 - TNM staging classification system
 - T (tumor): relative tumor size, depth of invasion, and surface spread
 - N (nodes): presence and extent of lymph node involvement
 - M (metastasis): presence or absence of distant metastasis

DIAGNOSIS

1. Diagnostic tests:
 - X-ray, CT, ultrasonography, and MRI to locate abnormal tissues or tumor.
 - Microscopic histologic and cytologic examination to know the type of cell and its structural differences from the parent tissue.
 - Lymph nodes biopsy to determine whether metastasis has begun.
 - Blood tests to check the tumor markers (Antigens, hormones, proteins, or enzymes)
 - Nuclear imaging
 - Direct visualization (i.e. endoscopy, cystoscopy)

TREATMENT

- The goals of treatment are aimed to cure, control, or palliation of symptoms.
- Treatment can be through:
 1. Surgery
 2. Chemotherapy
 3. Radiation therapy
 4. Bone marrow and stem cell transplants

TREATMENT- SURGERY

1. Prophylactic surgery:
 - Aims to remove tissue or organs that are likely to develop cancer
 - Ex. Mastectomy can be done for a woman with a strong history of breast cancer, abnormal findings of mammography.
2. Diagnostic surgery:
 - Aims to ensure histologic diagnosis and staging of cancer.
 - Ex. Biopsy, endoscopy, laparoscopy, and open surgical exploration.

TREATMENT- SURGERY

3. Treatment surgery:
 - Aims to remove the entire tumor and involved surrounding tissue and lymph nodes as much as possible and feasible.
4. Palliative surgery:
 - If the tumor is in a nonresectable location or deeply invasive with metastasis.
 - Aims to allow the involved organs to function as long as possible, to relieve pain and provide comfort, or to bypass an obstruction.

TREATMENT- CHEMOTHERAPY

- Chemotherapy: the use of cytotoxic medications to cure some cancers, decrease tumor size, or to prevent or treat suspected metastasis.
- It works by:
 - Disrupting the cell cycle in various phases by interrupting cell metabolism and replication.
 - Interfering with the ability of the malignant cell to synthesize vital enzymes and chemicals.

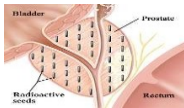


TREATMENT- CHEMOTHERAPY

- The cell-kill hypothesis:
 - The chemotherapy kills fixed percentage of cells and leaves some behind.
 - The patient will receive several doses till the remains cells become small enough that body's immune system can finish the job.

TREATMENT- RADIATION THERAPY

- Delivering ionized radiations of gamma and x-rays in one of two ways:
 - Teletherapy: external radiation
 - Brachytherapy: internal radiation
 - Placing the radioactive material directly into or adjunct to the tumor
 - High dose to the tumor and lower dose to tissues

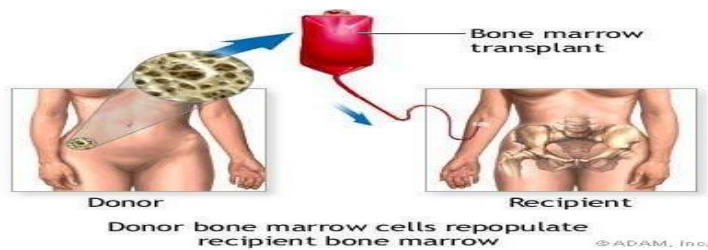


TREATMENT- RADIATION THERAPY

- Radiation kills cells by causing lethal injury to DNA, especially cells in fast growth.
- The goal of the radiation therapy is to achieve maximum tumor control with a minimum of damage to normal tissue.

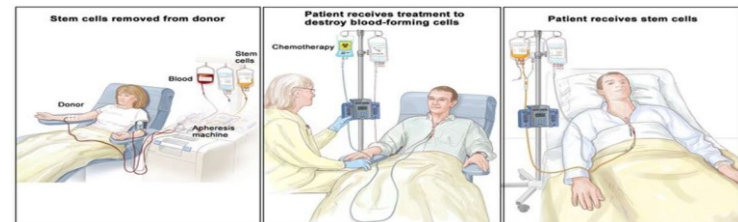
TREATMENT- BONE MARROW AND PERIPHERAL BLOOD STEM CELL TRANSPLANTATIONS

- BMT is an accepted treatment to stimulate a nonfunctioning marrow or to replace marrow.



TREATMENT- BONE MARROW AND PERIPHERAL BLOOD STEM CELL TRANSPLANTATIONS

- PBSCT is the process of removing circulation stem cells from the peripheral blood through apheresis and returning these cells to the patient after dose-intensive chemotherapy.



NURSING CARE

Nursing diagnosis and interventions

- Anxiety
 - Carefully assess the client's level of anxiety
 - Establish a therapeutic relationship
 - Encourage the client to express his feelings
- Disturbed body image
 - Provide supportive environment
 - Teach strategies for minimizing physical changes, such as providing skin care during radiation therapy
 - Encourage wearing colorful head cover

NURSING CARE

- Anticipatory grieving
 - Use therapeutic communication skills
 - Answer questions about illness
- Risk of infection
 - Monitor vital signs
 - Monitor WBCs
 - Protect skin and mucus membrane from injuries
 - Encourage high protein diet
- Imbalanced nutrition: less than body requirement
 - Assess current eating pattern
 - Teach the principles of maintaining good nutrition

NURSING CARE

- Impaired tissue integrity
 - Carefully assess and evaluate the type of tissue impairment present. Identify possible sources such as chemotherapy.
 - Observe for systemic signs of infection
 - Monitor for the dry mouth and lubricate it with moisturizing agent

- Acute pain
 - Use relaxation techniques
 - Administer medications as prescribed