

CANCER



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Shaping Lives...
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By

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INTRODUCTION:

Cancer is a disease characterized by the abnormal and uncontrolled growth of cells in the body. Normally, cells grow, divide, and die in an orderly manner, but cancer cells grow and divide uncontrollably, forming tumors or invading other tissues and organs. Cancer can occur in any part of the body and can spread to other parts of the body through the blood or lymphatic system.

CLASSIFICATION:

Cancer can be classified in various ways, including by the type of cell that is affected, the location of the tumor, and the stage of the disease. Here are some common ways cancer is classified:

- **By type of cell:** Cancers can be classified by the type of cell that is affected. For example, carcinoma is cancer that starts in epithelial cells, which are the cells that line the surfaces of organs and tissues. Sarcoma is cancer that starts in connective tissue, such as bone, cartilage, or muscle. Leukemia is cancer that affects blood-forming cells.
- **By location:** Cancers can also be classified based on where they occur in the body. For example, lung cancer, breast cancer, and colon cancer are named based on the part of the body where they develop.
- **By stage:** The stage of cancer refers to how advanced the disease is. Staging takes into account factors such as the size of the tumor, whether it has spread to nearby lymph nodes or other organs, and whether it has metastasized (spread) to distant parts of the body.

- **By grade:** The grade of cancer refers to how abnormal the cells look under a microscope. The grade helps determine how fast the cancer is likely to grow and how likely it is to spread.
- **By genetic markers:** Some cancers are classified based on the presence of certain genetic markers. For example, breast cancer can be classified as HER2-positive or HER2-negative, depending on whether the cancer cells have too much of a protein called HER2.
- **By treatment options:** Cancers can also be classified based on the treatments that are typically used to treat them. For example, some cancers may be treated with surgery, while others may be treated with chemotherapy or radiation therapy.

ETIOLOGY/CAUSES:

- **Genetics:** Certain gene mutations can increase a person's risk of developing cancer, including inherited mutations that are passed down from parents.
- **Lifestyle factors:** Factors such as smoking, excessive alcohol consumption, a diet high in processed or red meats, lack of physical activity, and exposure to certain chemicals and pollutants can increase the risk of developing cancer.
- **Age:** Cancer is more common in older adults, as the risk of mutations and other changes in cells increases over time.
- **Exposure to radiation:** Exposure to ionizing radiation, such as radiation therapy for other medical conditions or exposure to radiation from nuclear accidents, can increase the risk of cancer.

- **Exposure to certain viruses and infections:** Certain viruses, such as human papillomavirus (HPV) and hepatitis B and C, can increase the risk of developing certain types of cancer.
- **Hormones:** Exposure to certain hormones, such as estrogen, can increase the risk of developing some types of cancer, such as breast cancer.
- **Environmental factors:** Exposure to certain environmental toxins, such as tobacco smoke, air pollution, radiation, and chemicals, can increase the risk of developing cancer.

PATHOPHYSIOLOGY:

- **Initiation:** The first step in the development of cancer is the initiation of a genetic mutation in a normal cell. This mutation can be caused by exposure to carcinogens or spontaneous errors in DNA replication.
- **Promotion:** Once a cell has undergone a genetic mutation, it may begin to divide and grow uncontrollably. This is known as promotion, and it is influenced by various growth factors and hormones.
- **Progression:** As the abnormal cells continue to divide and grow, they can develop additional mutations that make them even more aggressive and invasive. This is known as progression, and it can lead to the formation of a tumor or the spread of cancerous cells to other parts of the body.
- **Metastasis:** The spread of cancerous cells to other parts of the body is known as metastasis. Cancer cells can travel through the blood or lymphatic system to other organs and tissues, where they can form new tumors and cause further damage.
- **Angiogenesis:** In order to sustain their growth and survival, cancer cells need a blood supply. They achieve this by secreting chemicals that promote the growth of new blood vessels, a process known as angiogenesis.

- **Immune evasion:** The immune system plays an important role in identifying and destroying abnormal cells, but cancer cells can evade the immune system by producing chemicals that suppress immune function or by changing their surface proteins to avoid detection.