

Chemotherapy of Cancer



Cancer



- Cancer is defined as life threatening disease and a major killer in mankind.
- It is a disease of cells characterized by the loss of normal cellular growth, maturation and multiplication, which disturbs the homeostasis.

Main features



- Excessive cell growth(usually in the form of tumor)
- Invasiveness
- Undifferentiated cells or tissues.
- Ability to metastasize.
- A type of hereditary disorder
- A shift of cellular metabolism

Difficulties in treatment of Cancer



- Anticancer drugs are not specific and have a lower margin of safety.
- In spite of satisfactory treatment, possibility of recurrence always remains.
- Neoplastic cells can develop resistance to drugs.

Classification of Anticancer drugs



- **Alkylating agents:**
- Nitrogen mustard
- Mechlorethamine
- Cyclophosphamide
- Uracil mustard
- Busulfan
- **Antimetabolites:**
- Methotrexate
- 6-mercaptopurine
- Fluorouracil
- **Radio-active isotopes:**
- Radio iodine
- Radio gold

- **Antibiotics:**
- Actinomycin-D
- Mitomycin-C
- Rubidomycin
- **Misc:**
- Vinca alkaloids-Vinblastin,Vincristine
- **Hormones:**
- Androgens
- Estrogens
- Progestins
- Corticosteroids



MOA



- The antimetabolite act by affecting either enzymes or substrates, which affects DNA synthesis or function.
- The alkylating type of drugs affects substrates usually the DNA macromolecule.
- The vinca alkaloids bind to microtubular proteins necessary for cell division and dissolve this protein, causing death of cell during mitosis.

Adverse Effects



- In initial phase-Nausea,vomiting
- After 10-14 days of therapy-bone marrow depression.
- GI toxicity includes bleeding ulceratin,diarrhoea etc
- Neurotoxicity
- Hepatotoxicity
- Teratogenecity and infertility
- Immunosuppression