

ANTINEOPLASTIC CHEMOTHERAPY AGENTS OUTLINE

Classification of Antineoplastic Agents

- 1.Cytotoxic chemotherapy:** directly toxic to cells
- 2. Hormonal interventions:**anti-inflammatory effect
- 3. Anti angiogenesis agents:** inhibits development of blood vessels
- 4. Biologic response modifiers** activates the action of B and T cells
- 5. Agents used to Reduce toxicity of Antineoplastic Therapy:** stimulates neutrophil , macrophages, platelets and erythrocyte production

Cytotoxic Chemotherapy:

A. Alkylating: (Nitrogen mustard)

- Prevents cell division ; Toxic to rapidly dividing cells associated with neutropenia, thrombocytopenia, and anemia
- Used as anticancer agents;
- Varies widely in ability to induce nausea and vomiting

B. Alkylating like agents (Platinum drugs)

Chemically different; action is similar to the alkylating agents

- Forms a strong covalent bond with DNA or RNA which inhibits DNA replication resulting to cell death

C. Antimetabolites: (Purine analogs)

- Purine- necessary ingredients for cell growth,
- impostors, interfere with the normal production of DNA

Side Effects

- Myelosuppression

- Risk for infection
- Anemia
- Nausea and vomiting
- Impaired oral mucous membranes
- Alopecia
- Diarrhea /Constipation
- Pain
- Cardiotoxicity, Pulmonary toxicity, Neurotoxicities
- Hemorrhagic cystitis

Nursing Process

Assessment

- Sensitivity to antineoplastic agents, existing or recent infection, chicken pox, herpes zoster, bone marrow depression, significant drug interaction,
- General health status, CBC, Uric Acid, BUN, urinalysis for hematuria, liver function studies

Monitoring

- Myelosuppression, leukopenia, reduced urinary output
- Vital signs, swelling of feet, ulceration of mouth
- **Intervention**
- Maintain fluid intake (3L) daily before treatment and 72 hrs after treatment to ensure frequent voiding
- Administer antiemetic concurrently

- Administer Cyclophosphamide early in the day so that metabolites are excreted before bedtime
- Discontinue drugs at the first sign of hemorrhagic cystitis
- Take precaution against extravasation and IV Infiltration
- Urine may become reddish from 1-2 days after administration of Doxorubicin, but clears in 48 hrs
- Discoloration of skin and nails may occur

Education

- Avoid viral vaccines (live or killed) for 3 months to 1 year after the last chemotherapy until the patient has the ability to respond to the vaccine
- Avoid intake of alcohol and Aspirin because of the risk of GI Bleeding
- Avoid being exposed to infection
- Alopecia may occur but is reversible

Obstacles of Chemo Therapy (p 951)

1. **Drug toxicity** – most troublesome; toxic to **bone marrow** and *epithelial cells in the GIT* resulting to neutropenia after therapy, thrombocytopenia, and erythrocyte production resulting to significant risk for infection, bleeding and anemia
2. **The need to kill 100% of cancer cells** –works only during cell division; tumors with fewer dividing cells are less affected
3. **Growth fraction of tumor** – solid tumors, older and larger tumors are unresponsive to chemotherapy

4. **Absence of early detection** – If cancers are detected early, particularly when rapidly dividing and before metastasis, surgery and radiation can be effective at eliminating most or all cancer cells and chemotherapy can be used as adjuvant (add on) therapy
5. **Drug resistance and Heterogeneity of tumors** – common with repeated cycles of drug therapy because of mutations that occur in the tumor and lead to selection of chemotherapy resistant cells
6. **Host defenses and immunity** – client with immunosuppressive states (congenital immune deficiencies, HIV, client receiving organ transplant drugs, immunosuppressive therapies) have higher risk for cancers.
Immunosuppression may be associated with rapid advance of cancer and a lower response to treatment
7. **Pharmacokinetics of delivery of drug to tumor sites** – large tumors that are not well vascularized or tumors in the CNS

- **Nurse's Responsibilities (p 955)**

1. Assess the client's complete history and physical examination
2. Evaluate pre existing condition that may contraindicate the use of antineoplastic therapy (hypersensitivity, radiation therapy within the last 4 weeks, severe bone marrow depression, breastfeeding and pregnancy)
3. Obtain written consent by the client or legally authorized representative prior to administration
4. Inform client all aspects of the therapy including physical and psychological effects, adverse effects, risks and benefits

5. Review and assess laboratory data for appropriateness of prescribed therapy prior to administration
6. Preserve venous access, technical expertise of cannula placement and selection of appropriate equipment (cannula type, electronic infusion devices) to enhance therapy and prevent complications
7. Anticipate potential complication of administration and be skilled at performing immediate interventions.

Patient Education

- Discuss all aspects of drug administration before initiating chemotherapy
- Provide emotional support to a client who is receiving physically and psychologically distressing therapy
- Caution client not to take any OTC medications before checking with the Oncologist
- Educate patient on practicing the safe handling of cytotoxic drugs and body waste