Paclitaxel (Taxanes)

Paclitaxel is an antimitotic chemotherapy drug that belongs to the class of agents known as taxanes. They work by stabilizing microtubules and are indicated for breast cancer, ovarian cancer, non-small cell lung cancer, and kaposi sarcoma. Side effects include mucositis, myelosuppression, peripheral neuropathy, hypersensitivity reactions, and alopecia. Premedication with diphenhydramine can reduce the risk of a hypersensitivity response.



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Mechanism of Action

Taxane
Tarzan
Pacltaxel and docetaxel are types of taxanes. Taxanes are metabolized by the liver and excreted through the biliary system.

Stabilizes Microtubules
Stabilizing-chains on Microtubule
Microtubules polymerize in metaphase (during mitosis) of the cell cycle, and then depolymerize to allow separation of sister chromatids to opposite poles in anaphase. Taxanes stabilize microtubules in the polymerized state so that anaphase cannot occur. This prevents cancer cells from replicating.

Indications

Breast Cancer
Breast Tumor-guy
Paclitaxel treats metastatic breast cancer after other treatment options have failed or relapsed after chemotherapy.

Ovarian Cancer
Ovary Tumor-guy
Paclitaxel is first-line treatment for ovarian cancer when used with cisplatin. Paclitaxel also can be used for advanced ovarian cancer.

Non-Small Cell Lung Cancer
Nun-Lung Tumors
Paclitaxel is first line treatment for patients with non-small cell lung cancer who cannot undergo surgery or radiation therapy.

Kaposi Sarcoma (HHV-8)
Cape Shark-comb
Paclitaxel is second line treatment for Kaposi sarcoma, which is a cancer of the skin & soft tissues caused by human herpesvirus 8 seen most commonly in immunocompromised patients. It presents in a linear pattern on the lower extremities, face, mouth, or genitalial. Lesions may be purple, red, or brown. AIDS-related Kaposi sarcoma usually spreads more quickly than non-AIDs related sarcoma, due to the immunosuprression condition of HIV and AIDs.

Side Effects

Mucositis
Mucous-on-fire
Patients may present with painful mouth sores. This can be alleviated by encouraging the patient to consume cool foods like popsicle or ice chips. If non-pharmacological interventions do not alleviate the pain, patients may be given topical or oral analgesics.

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Myelosuppression

Suppressed Red and White blood cells

Myelosuppresion includes neutropenia, leukopenia, anemia, and thrombocytopenia. This is a dose limiting side effect, so dosages may be increased or decreased depending on the severity of myelosuppresion.

Peripheral Neuropathy

Wavy Neuron-extremities

Sensory neuropathy is a common side effect of paclitaxel. Patients may report pain, numbness, or tingling in their hands or feet. This is a dose limiting side effect, so dosages may be increased or decreased depending on the severity of peripheral neuropathy.

Hypersensitivity

Hiker-sensitive crying

Hypersensitivity reactions like anaphylaxis may be seen in response to paclitaxel.

Alopecia

Aloe-plant on Bald-head

Alopecia (hair loss) is a common side effect of chemotherapy agents.

Considerations

Diphenhydramine (Benadryl)

Dolphin-hydra

Prior to administration, patients can be premedicated with an H1 blocker because hypersensitivity is common with any dose.

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