Busulfan

Busulfan is an alkylating anticancer agent used to treat CML and as a conditioning agent prior to bone marrow transplantation. As an alkylating agent, it works to cross-link DNA. Side effects of busulfan use include myelosuppression, pulmonary fibrosis, and hyperpigmentation.



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Indications

CML
CaMeL
Busulfan is used to treat CML (chronic myelogenous leukemia) and because of its low cost. The gold standard of treatment for CML, now, is imatinib.

Bone Marrow Ablation
Bone Arrow Baster
This drug is used to ablate a patient's bone marrow and is indicated as a conditioning agent prior to bone marrow transplantation, especially in patients with CML.

Mechanism

Cross-Links DNA
Linked DNA
Busulfan is an alkylating agent that forms DNA-DNA intrastrand crosslinks. This process prevents DNA replication, as these crosslinks cannot be repaired by cellular machinery, causing the cancer cell to undergo apoptosis.

Side Effects

Myelosuppression
Suppressed Red and White-blood-cells
This drug leads to severe myelosuppression, hence its use as an ablation agent.

Pulmonary Fibrosis
Fiber-ball hitting Lungs
The most notable toxicity of this medication is interstitial pulmonary fibrosis, leading to the term "Busulfan lung."

Hyperpigmentation
Hiker-pig with Hyperpigmentation
Patients can develop skin hyperpigmentation with the use of Busulfan. The presentation of this skin manifestation mimics Addison's disease, affecting the joints and skin creases as bronzing.

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