Dactinomycin (Actinomycin D)

Dactinomycin, or actinomycin D, is an antitumor antibiotic used to treat childhood tumors. It is indicated for use against Wilms tumor, Ewing's sarcoma, rhabdomyosarcoma, and gestational trophoblastic malignancy. It works by intercalating DNA and halting the replication process in tumors. A common side effect of this drug is myelosuppression.



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Indications

Wilms' Tumor
Willy-Wonkey the Tumor-guy
Dactinomycin is indicated to treat Wilms' tumor, or nephroblastoma, which is a childhood tumor of the kidneys.

Rhabdomyosarcoma
Raptor-mayo-shark-comb
Dactinomycin can be used in conjunction with radiation therapy to treat rhabdomyosarcoma, a sarcoma of skeletal muscle. Rhabdomyosarcoma is more common in children and often affects very early forms of muscle cells. Common sites include the head, neck, urinary and reproductive organs, limbs, and trunk (chest and abdomen).

Ewing's Sarcoma
Earring-shark-comb
Ewing's sarcoma is a malignant bone cancer affecting teenagers and young adults. Ewing's sarcoma is treated using neoadjuvant therapy, where dactinomycin is combined with radiation therapy.

Gestational Trophoblastic Malignancy
Pregnant Trophy-blast Malignant-man
This medication can be used to treat gestational trophoblastic malignancy, such as malignant hydatidiform moles.

Mechanism

Intercalates DNA
Inner-cleats DNA
This drug works by intercalating into DNA, effectively inhibiting its transcription. It does so by binding to the DNA transcription initiation complex and prevents RNA chain elongation. Dactinomycin effectively "gets in the way," physically blocking RNA transcription.

Side Effect

Myelosuppression
Suppressed Red and White blood cells
The most common side effect of dactinomycin is myelosuppression, which leads to decreased red and white blood cell production.

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