Isoniazid (INH)

Isoniazid, or INH, is a first line medication used to treat and prevent tuberculosis. It works by disrupting DNA metabolism in tuberculosis bacilli, and also inhibits mycolic acid synthesis, which is a bacterial cell wall component. It has numerous side effects, such as nausea and vomiting, optic neuritis, hepatotoxicity, and peripheral neuropathy. Patients should have their liver enzymes monitored and should prophylactically take pyridoxine (vitamin B6) to prevent peripheral neuropathy.



PLAY PICMONIC

Mechanism

Interferes with DNA Metabolism

Breaking DNA Metal-balls

Isoniazid works to disrupt DNA metabolism in bacteria, along with harming lipid, carbohydrate and NAD metabolism. It prevents mycolic acid synthesis as well, which is a vital component of mycobacterial cell walls.

Indications

Tuberculosis (TB)

TB-TV

Isoniazid is part of the “RIPE” regimen for treating tuberculosis (rifampin, isoniazid, pyrazinamide, ethambutol). It is also given to patients who may have been exposed to tuberculosis for prophylaxis.

Side Effects

Optic Neuritis

Optics Nerve-on-fire

Another neurologic side effect of isoniazid is bilateral optic neuritis, leading to inflammation of the optic nerves. Patients can complain of vision loss, blurriness, and decreased visual acuity.

Nausea and Vomiting

Vomiting

Nausea and vomiting are common side effects of INH use, and these symptoms are more apparent when hepatotoxicity occurs.

Hepatotoxicity

Liver with Toxic-green-glow

Severe and sometimes fatal liver damage can occur from isoniazid use. The development of liver damage is related to how fast isoniazid is metabolized, known as acetylation. People who are slow-acetylators are more prone to having this hepatotoxic drug circulating, leading to damage when it isn’t cleared quickly. Alcoholics and patients with liver problems are at greatest risk.

Peripheral Neuropathy

Purple-wavy Neuron-extremities

Peripheral neuropathy and CNS effects are associated with isoniazid, as this drug causes pyridoxine (vitamin B6) depletion. Patients with concurrent disease (e.g., diabetes, uremia, HIV, malnutrition) are more prone to developing this side effect. Prophylactic vitamin B6 administration helps prevent neuropathy.

Considerations

Sign up for FREE at picmonic.com

Vitamin B6 Prophylaxis

Viking Bee (6) Sax with Purple-axes

Isoniazid leads to pyridoxine (vitamin B6) depletion, which can lead to peripheral neuropathy. Thus, patients are recommended to take prophylactic vitamin B6.

Monitor AST/ALT

Monitor with Ass-Tea and Aladdin-Tea

Due to the possibility of severe hepatic damage, patients should have their AST and ALT liver enzymes closely monitored. If these enzyme levels rise, the drug should be discontinued.

Sign up for FREE at picmonic.com