Ethacrynic Acid

Ethacrynic acid is a phenoxyacetic acid derivative and is not a sulfonamide. This drug is a loop diuretic, and works to decrease blood volume, treating hypertension and edema. As a loop diuretic, ethacrynic acid inhibits the Na-K-2Cl cotransporter in the thick ascending loop of Henle. Side effects related to this medication include hypokalemia, ototoxicity and gout. Large doses can lead to hepatotoxicity, as well.

PLAY PICMONIC

Mechanism of Action

Non-sulfa Drug

Nun-sulfur-match with Drugs

Ethacrynic acid is not a sulfonamide. Hence, this drug is suitable for use in patients who have sulfa allergies and cannot take the loop diuretic medication furosemide (Lasix).

Phenoxyacetic Acid Derivative

Phoenix-stick with Acidic-lemon

Ethacrynic acid is a phenoxyacetic acid derivative, and is composed of a ketone group and a methylene group.

Loop Diuretic

Loop-hen on Die-rocket

This medication is classified as a loop diuretic, as it works in the ascending portion of the loop of Henle. It inhibits the Na-K-2Cl cotransporter, and this leads to water having less of an osmotic driving force to leave the collecting duct system. This ultimately results in increased urine production.

Inhibits Na+-K+-2Cl- Cotransporter

Inhibiting-chains with Salt-shaker, Banana, and Chlorine-dispenser

Ethacrynic acid acts on the Na-K-2Cl cotransporter in the thick ascending limb of the loop of Henle to inhibit sodium and chloride reabsorption. By disrupting the reabsorption of these ions, loop diuretics create an osmotic gradient for water to stay in the collecting ductile, to be expelled as urine. This diuresis leaves less water to be reabsorbed into the blood, resulting in a decrease in blood volume.

Thick Ascending Loop of Henle

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The Na-K-2Cl cotransporter that ethacrynic acid inhibits is located in the thick ascending loop of Henle. This site of action is what gives this drug it's classification as a "loop" diuretic.

Clinical Use

Diuresis

Die-rocket

This medication is indicated for diuresis, decreasing the patient's blood volume. This is helpful in treating patients who have hypertension or edema.

Side Effects

Hypokalemia

Hippo-banana

This drug inhibits Na-K-2Cl cotransporter to inhibit sodium, potassium and chloride reabsorption. Due to the renal losses of sodium and potassium, creating a gradient for water, patients lose sodium and potassium. This drug can lead to hypokalemia in patients. Furthermore, due to chloride losses, with large doses or prolonged use, patients may also develop hypochloremic metabolic alkalosis.

Ototoxicity

Ear with Toxic-green-glow

Like another loop diuretic, furosemide, this drug is associated with ototoxicity. It has been known to cause reversible or permanent ototoxicity in patients.

Gout

Gout-goat

This medication leads to decreased renal excretion of uric acid, and may lead to acute gouty attacks. Patients who are having a gouty attack should not be given ethacrynic acid, nor those who are easily predisposed to gout.