SGLT2 Inhibitors

Sodium-glucose co-transporter 2 (SGLT2) inhibitors are effective for all stages of type 2 diabetes in combination with diet and exercise improvements. They commonly end in "gliflozin" and include medications such as canagliflozin and empagliflozin. SGLT2 inhibitors lower hemoglobin A1c and reduce cardiovascular mortality from diabetes by blocking glucose reabsorption via SGLT2 in the proximal tubule. Side effects of these drugs include a reduction in blood pressure (from promoting polyuria), weight loss, hyperkalemia, and urinary tract infections. Chronic kidney disease is a contraindication as renal tubular function must be intact in order for these drugs to be most effective.



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"-gliflozin" Suffix
Cliff-zone
SGLT2 inhibitors end in the suffix "-gliflozin." The most common SGLT2 inhibitors include canagliflozin (Invokana), dapaglifllozin (Farxiga), and empagliflozin (Jardiance).

Mechanism of Action

Blocks Glucose Reabsorption in Proximal Tubule
Block-man Glue-bottle P-rocks
SGLT2 inhibitors work by inhibiting glucose reabsorption via sodium-glucose co-transporter 2 in the proximal tubule. This promotes glycosuria leading to lower fasting plasma glucose levels and thus mild hemoglobin A1c reduction.

Indications

Type 2 Diabetes Mellitus
Dyed-bead Pancreas
SGLT2 inhibitors are FDA-approved as adjunctive treatment for patients with type 2 diabetes mellitus. Exercise caution when administering to patients with significant diabetic nephropathy.

Side Effects

Weight Loss
Skinny Man with Baggy-pants
Weight loss occurs from loss of calories and fluid in the urine. This improves cardiovascular health.

Lower Blood Pressure
Down-arrow Blood Pressure cuff
Systolic blood pressure may be reduced due to diuresis from SGLT2 inhibitors. This improves the cardiovascular health of patients with high and normal blood pressure. Also monitor for dehydration and hypotension.

Hyperkalemia
Hiker-banana
Hyperkalemia (>5.5 mEq/mL) may be seen in patients with renal impairment. This may be due to increased NaCl delivery to the distal tubule because of SGLT2 inhibition causing a transient inhibition on RAAS.

Urinary Tract Infections (UTIs)
Bladder and Kidneys in Flames
UTIs may be increased due to glycosuria creating an ideal environment for bacteria or fungi to grow. A rare but serious possible infection is necrotizing fasciitis of the perineum (Fournier's gangrene), which is a flesh eating infection.

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