Acarbose (Precose) and Miglitol (Glyset) (Alpha Glucosidase Inhibitors)

Acarbose (Precose) and miglitol (Glyset) are alpha glucosidase inhibitors used to help control blood glucose levels in diabetic patients. By inhibiting an intestinal enzyme that converts complex carbohydrates into digestible forms, these medications decrease the rate of carbohydrate digestion and absorption. This action decreases the rise of glucose levels caused by eating. These medications are indicated for patients with type 2 diabetes. Side effects include flatulence, cramps, diarrhea, and anemia. Since these drugs may cause liver damage, liver function tests should be monitored frequently. In the event of hypoglycemia, glucose (not sucrose) should be administered.



PLAY PICMONIC

Mechanisms

Alpha Glucosidase Inhibitors

Inhibiting-chains on Afro-guy with Glue-daisies

The enyzme alpha-glucosidase is responsible for breaking down oligosaccharides and complex carbohydrates into digestible monosaccharides. Acarbose and miglitol inhibit this enzyme and decrease the rate of carbohydrate digestion. Delaying carbohydrate digestion slows down carbohydrate absorption that causes increased glucose levels. Unlike other oral antidiabetics, the mechanism of acarbose and miglitol does not rely on the presence of insulin.

Delays Absorption of Carbohydrates

Carbs Delayed from Absorbing-sponge

Eating results in increased blood glucose levels. Acarbose and miglitol target the enzyme located in the intestines. These medications inhibit the digestion and absorption of carbohydrates. By delaying carbohydrate absorption, these drugs decrease glucose levels after eating (postprandial glucose).

Indications

Type 2 Diabetes

Dyed-bead-pancreas in (2) Tutu

Acarbose and miglitol are oral antidiabetics indicated for patients with type 2 diabetes uncontrolled by diet and exercise. These drugs may be administered alone or with insulin, metformin, or sulfonylureas. By decreasing carbohydrate absorption, these medications improve overall glycemic control by lowering postprandial blood glucose levels as well as hemoglobin A1C levels (refer to Picmonic "Hemoglobin A1C Lab Value").

Side Effects

Flatulence

Farting

Since acarbose and miglitol decrease carbohydrate absorption, bacteria and digestive enzymes ferment leftover carbohydrates in the colon. The buildup of gas may cause abdominal distention and is released as flatulence. This is common in the first few days and should decrease with continued use.

Diarrhea

Toilet

Since these medications decrease glucose digestion, some carbohydrates remain undigested when entering the colon. Diarrhea is the byproduct of bacterial fermentation of complex carbohydrates in the colon. Instruct the patient to avoid sugary foods and to drink fluids for fluid replacement.

Anemia

Anemone

Acarbose and miglitol decrease the small intestine's ability to absorb iron. A lack of iron prevents the body from creating enough red blood cells and the patient may develop anemia. Assess the patient's hemoglobin and hematocrit levels and monitor the oxygen saturation.

Sign up for FREE at picmonic.com

Cramps

Clamps

These drugs alter normal digestion and may cause cramps. Inform the patient that stomach pains will decrease as the body adjusts to these medications. Gradually increasing the initial dose may improve drug tolerance.

Considerations

Monitor LFTs

Monitor Liver-with-test-tubes

Monitor the patient's liver function tests (AST, ALT) every three months during the first year of therapy and periodically after, as long term therapy may lead to liver dysfunction. Discontinuing acarbose will reverse liver damage. Liver dysfunction has not been found with miglitol administration.

Oral Glucose for Hypoglycemia

Oral Glue-bottle for Hippo-glue-bottle

Administering an alpha glucosidase inhibitor with insulin or a sulfonylurea may cause hypoglycemia. Give the patient glucose. Do not give the hypoglycemic patient sucrose because alpha glucosidase inhibitors interfere with sucrose hydrolysis and delay its effects. Examples of sucrose include fruit juice and starchy carbohydrates.

Sign up for FREE at picmonic.com