Repaglinide and Nateglinide (Meglitinides)

Repalglinide (Prandin) and nateglinide (Starlix) are oral hypoglycemic medications classified as meglitinides or “glinides.” By stimulating the pancreatic cells to release more insulin, these medications decrease blood glucose levels. A major side effect of meglitinides is hypoglycemia. Since these drugs have a short half life, instruct the patient to eat within 30 minutes of administration. Gemfibrozil (Lopid) decreases the metabolism rate of meglitinides and should not be administered to prevent drug accumulation leading to hypoglycemia.



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Mechanisms

Meglitinides

Magnum-tiger-stripes

Repaglinide and nateglinide are meglitinides that act as oral hypoglycemic medications. Their action of binding to the ATP-dependent potassium channels on pancreatic beta cells results in increased insulin release into the blood.

Increased Insulin Release

Up-arrow Insect-syringes being Released

Meglitinides inhibit the potassium channels on pancreatic beta cells and cause calcium to enter the cells. The influx of intracellular calcium results in increased insulin release into the bloodstream.

Indications

Type 2 Diabetes

Dyed-bead-pancreas in (2) Tutu

Since patients with type 2 diabetes have decreased amounts of circulating insulin, meglitinides stimulate pancreatic beta cells to increase insulin production to compensate. Meglitinides may be used alone or in combination with metformin or glitazone. Since nateglinide has a faster onset and shorter duration than repaglinide, this medication is often used for controlling blood glucose levels after eating.

Side Effect

Hypoglycemia

Hippo-glue-bottle

By stimulating the pancreatic beta cells, meglitinides cause increased insulin release. Since insulin promotes cells to absorb glucose, excessive amounts lead to low blood glucose levels. Inform the patient to be alert for symptoms of hypoglycemia (refer to Picmonic "Hypoglycemia Assessment"). To prevent symptoms of hypoglycemia, the patient should be instructed to eat within 30 minutes of drug administration.

Considerations

Eat Within 30 Minutes

Eating with (30) Dirty Clock

Since meglitinides are rapidly absorbed and excreted, instruct the patient to eat within 30 minutes of medication administration. Taking the medication within 30 minutes before eating stimulates the pancreas to produce insulin, which is the normal physiological response to eating. Do not administer this drug if a meal is missed.

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Gemfibrozil Increases Risk of Hypoglycemia

Gem-fly-bracelet Causing Up-arrow Risk of Hippo-glue-bottle

The cholesterol medication Gemfibrozil (Lopid) inhibits the metabolism of meglitinides and causes drug accumulation in the blood. Excessive amounts of meglitinides in the blood stimulate the pancreas to release excess insulin and cause hypoglycemia.

Short Half-Life

Shorts Half-life-clock

Repaglinide has a short half-life of one hour; however, nateglinide has a slightly faster onset (30 minutes) and half life of 1.5 hours. To avoid hypoglycemic episodes, the patients should be instructed to eat within 30 minutes prior to administration. Since these medications cause rapidly fluctuating plasma levels of insulin, the patient should be closely monitored for symptoms of hypoglycemia and hyperglycemia.

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