Glucagon (GlucaGen)

Glucagon (GlucaGen) is a polypeptide hormone that causes the hepatic conversion of stored glycogen into readily-available glucose. This medication is indicated for hypoglycemia caused by insulin overdose and not related to starvation. It is given when IV glucose is not available. Side effects may include nausea and vomiting. This drug must be reconstituted with a powder supplied by the manufacturer. Once conscious, the patient should be given oral carbohydrates within an hour to avoid rebound hypoglycemia. If the patient shows no improvement, IV 50% glucose may be given for immediate results.



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Mechanism

Increases Glucose
Up-arrow Glue-bottle
Made by the alpha cells of the pancreas, glucagon increases the amount of circulating glucose readily available for use (refer to Picmonic "Pancreas"). Glycogen is a form of glucose stored in the liver that converts to glucose when necessary. Glucagon promotes glycogenolysis or the hepatic conversion of stored glycogen into glucose to be released into the bloodstream. This drug also inhibits glycolysis or the conversion of glucose to stored glycogen. Glucagon increases the biosynthesis of readily-available glucose.

Indications

Hypoglycemic Emergency
Hippo-glue-bottle with Emergency-light
Insulin overdose causes a significant decrease in glucose and results in emergent hypoglycemia (Refer to Picmonic "Hypoglycemia Assessment"). Emergent hypoglycemia should be treated immediately to prevent irreversible brain damage, coma, and ultimately death. Glucagon is not indicated for patients with hypoglycemia related to starvation due to the lack of glycogen stores.

Side Effects

Nausea and Vomiting
Vomiting
Nausea and vomiting are common side effects related to the sudden increase in blood sugar levels. Administer glucagon slowly to minimize the risk of nausea and vomiting. If the patient is unconscious, turn the patient on the side to prevent aspiration.

Considerations

Reconstitute Powder
Powder with Fluid
This powder medication must be immediately reconstituted with a sterile diluent provided by the manufacturer prior to use. The reconstituted solution is a concentration of 1 mg/mL or less and a dose of 0.5-1.0 mg is typically administered IM, SQ, or IV.

Consume Oral Carbohydrates
Orally Consumed Bread
Since glucagon is metabolized within an hour, the patient's blood sugar will rapidly drop and experience rebound hypoglycemia. If the patient is conscious and able to swallow, administer oral carbohydrates to replenished glycogen stores in the liver.

50% Dextrose IV (If No Effect)
(50) Cent Sugar-rose IV-stand
If glucagon fails to improve the patient's condition, IV 50% glucose may be given to immediately to raise the patient's plasma glucose levels. The patient usually regains consciousness within 20 minutes of IV 50% glucose.

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