Activity 1

Medication Monograph

Medication Name: ....Liraglutide.....

Student Name: Manar Ibrahim Mohammed Ibrahim Mousa

Historical story:

Liraglutide, a medication initially developed for type 2 diabetes treatment, originates from research on the hormone GLP-1 in the late 1990s. GLP-1 stimulates insulin release to regulate blood sugar, but its effectiveness is limited due to rapid breakdown in the body. Novo Nordisk pursued a synthetic GLP-1 resistant to degradation, resulting in liraglutide, a long-acting GLP-1 receptor agonist.

Liraglutide, approved by the FDA in 2009 as Victoza, offers once-daily dosing and improves glycemic control and weight loss in type 2 diabetes patients. Its benefits extend to reducing cardiovascular risk and treating obesity, approved under the brand name Saxenda. While effective, liraglutide may cause side effects like nausea and vomiting. Consulting healthcare professionals is crucial for proper evaluation and prescription.

Routes of administration in the Egyptian market for this medication

Brand name	Route of administration
Saxenda ®	Subcutaneous use(S.C)
VICTOZA®	Subcutaneous use (S.C)
Lirafit™	Subcutaneous use (S.C)

Pharmacokinetics

Absorption	Liraglutide, injected under the skin, mimics a blood sugar-regulating hormone. It stimulates insulin release, reduces glucagon secretion, slows digestion, and promotes fullness, aiding in blood sugar control and weight loss. Absorption varies based on factors like injection site and dose. Following prescribed guidelines is essential.
Distribution	After entering the bloodstream, liraglutide spreads throughout the body, influenced by its binding to plasma proteins and tissue penetration. It primarily binds to albumin, affecting distribution and elimination. While it shows broad distribution to various organs and tissues, specifics are limited. Liraglutide targets organs involved in glucose metabolism like the pancreas and liver. Distribution varies based on individual factors like age and health. Consulting healthcare professionals or product labeling is advised for detailed information.
Metabolism	Liraglutide undergoes enzymatic degradation in the body, primarily by DPP-4 and NEP enzymes. Its metabolites are mainly eliminated through the kidneys, with a small portion in feces. The elimination half-life is approximately 13 hours. Factors like age and renal function affect metabolism. Consulting healthcare professionals or product labeling is advisable for details.
Excretion	Liraglutide is mainly eliminated via renal excretion, with metabolites excreted in urine. Excretion details vary among individuals due to factors like renal function. Its large molecule size may affect clearance rates. A smaller portion is eliminated via feces. Consult healthcare professionals or product labeling for specifics, especially in cases of impaired renal function.

Pharmacodynamics

Main mechanism of action	Side effects
Liraglutide stimulates GLP-1 receptors in the pancreas, boosting insulin, curbing glucagon, slowing digestion, inducing satiety, and moderating appetite. This aids in blood sugar control and weight loss. It's used for type 2 diabetes and obesity, following healthcare guidance.	Liraglutide can cause side effects, though not everyone experiences them. Common ones include gastrointestinal issues like nausea and diarrhea, hypoglycemia, injection site reactions, gallbladder problems, and a possible risk of thyroid C-cell tumors. Seek medical help for severe or persistent effects. Consult healthcare professionals or prescribing information for a full list of potential side effects.

Other reported pharmacological activities

Liraglutide, used for type 2 diabetes and obesity, shows promise beyond glycemic control and weight loss. Its reported additional effects include neuroprotection, cardiovascular benefits, anti-inflammatory properties, and potential in treating diseases like Alzheimer's. Ongoing studies aim to uncover its full therapeutic potential.

Drug interactions.

(Mention an example to each of the following if present)

IV admixture incompatibility	**Liraglutide, a peptide medication, is not meant for intravenous (IV) administration. It's formulated for subcutaneous injection via pre-filled pens or syringes. IV administration can cause severe adverse reactions. Always adhere to prescribed administration routes and consult healthcare professionals for any concerns.**
Drug-Drug interaction	**Liraglutide can interact with other drugs, affecting their effectiveness or safety. Interactions include delaying oral medication absorption, increasing hypoglycemia risk with insulin, affecting warfarin's INR levels, decreasing oral contraceptive absorption, and potentially altering digoxin absorption. Inform healthcare providers of all medications, including supplements, to minimize risks.**
Drug food interaction	**Liraglutide isn't usually affected by food interactions. However, it's advised to take it on an empty stomach to optimize absorption. Administering it at least 30 minutes before a meal, preferably at the same time daily, helps maintain stable blood levels and enhances therapeutic effects for managing type 2 diabetes or obesity. Consult healthcare professionals for personalized advice on its administration.**
Drug lab test interaction	Liraglutide generally doesn't interfere with common laboratory tests, but it's crucial to inform healthcare providers about all medications before undergoing tests. This ensures accurate interpretation of results and consideration of any medication effects on tests. Consult healthcare providers for personalized advice regarding specific concerns.

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