Anesthesia Implications of Glucagon-Like Peptide-1 Receptor Agonists

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Background

Glucagon- like peptide-1 receptor agonists (GLP-1RA)

- Traditionally utilized as second-line therapy for II diabetics when metformin contradicted or ineffective
- Current use drastically increased due to the U.S. Food and Drug Administration's 2017 approval for weight management
- In 2023 Ozempic prescriptions increased by 152% compared to 2022
- Significant weight loss results
- Adverse effects include pronounced delay of gastric emptying
- This delay provides significant risk of pulmonary aspiration of stomach contents which varies amongst patient population

Clinical Question

Given the increased use of GLP-1RAs amongst a variety of patients, what anesthesia implications should be considered to optimize patient safety?

Names of GLP-1RAs

	DOSAGE	APPROVED FOR	WHO CAN TAKE IT?
Ozempic (SEMAGLUTIDE)	1 WEEKLY	TYPE 2 DIABETES	ADULTS
Rybelsus (SEMAGLUTIDE)	1 DAILY	TYPE 2 DIABETES	ADULTS
Wegovy (SEMAGLUTIDE)	1 WEEKLY	WEIGHT LOSS	12+ KIDS + ADULTS
Trulicity (DULAGLUTIDE)	1 WEEKLY	TYPE 2 DIABETES	10+ KIDS + ADULTS
Victoza (LIRAGLUTIDE)	1 DAILY	TYPE 2 DIABETES	10+ KIDS + ADULTS
Saxenda (LIRAGLUTIDE)	1 DAILY	WEIGHT LOSS	12+ KIDS + ADULTS
Byetta (EXENATIDE)	2 DAILY	TYPE 2 DIABETES	ADULTS
Bydureon BCise (EXENATIDE)	1 WEEKLY	TYPE 2 DIABETES	10+ KIDS + ADULTS
Mounjaro (TIRZEPATIDE)	1 WEEKLY	TYPE 2 DIABETES	ADULTS

https://www.goodrx.com/classes/glp-1-agonists/glp-1-drugs-comparison

Case Report

A 52-year-old female with a body mass index of 33.4kg/m2 was scheduled for an esophagogastroduodenoscopy

- Seven-day symptoms included:
  - nausea
  - vomiting
  - abdominal pain
  - bloating
  - an inability to tolerate solid food
- Pertinent medical history:
  - diabetes mellitus, hypertension
  - gastroesophageal reflux disease
  - obesity
  - *semaglutide 1 mg subq, weekly*
- Monitored anesthesia care technique
  - glycopyrrolate 0.2 mg IV
  - lidocaine 100 mg IV
  - fentanyl 50mcg IV
  - propofol 80 mg IV
- Endoscopic exam revealed copious amounts of solid, undigested food

Evidence Based Discussion

- GLP-1RA mechanism of action**:** emulates endogenous incretin hormones; stimulate insulin secretion and increase glucose-dependent insulin synthesis from pancreas beta cells; inhibits glucagon production
- One research demonstrated increased incidence of residual gastric content in GLP-1RA users independent of age or diabetes history (0.49% vs 5.4%, P= 0.004)
- Increase of GLP-1RA use is recent with very little published research currently
- 2011 American Society of Anesthesiologists (ASA) fasting protocols lack adequate protection for GLP-1RA users; Recently updated in June 2023
- Many providers unaware of best practices for those on GLP-1RA medications

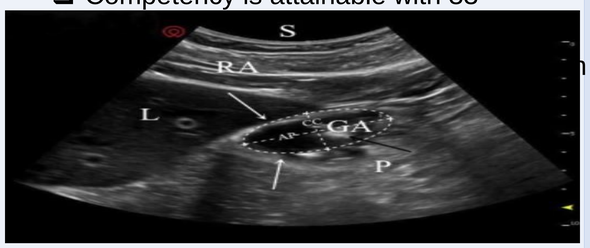
Translation to Practice

Addressing Anesthesia Implications:

- Consider adopting the ASA preoperative practice guidelines for GLP-1RAs
  - Hold daily GLP-1RAs on the day of the surgical procedures.
  - Hold weekly preparations, a week prior to surgical procedures.
  - Continue with surgical procedures when GLP-1RA is not held only in the absence of GI symptoms.
  - Consider delaying surgical procedures and educating the patient and proceduralist if nausea, vomiting, retching, abdominal pain, and bloating manifest.
  - In the absence of GI symptoms and failure to abide by guidance recommendations, assume the patient has a full stomach or consider gastric ultrasound.
  - Consider delaying the case if gastric ultrasound is inconclusive or unavailable.
  - Consider proceeding if gastric ultrasound indicated the stomach is empty.
- Consider awake extubation as a standard of care
- Employ a low threshold or performing a rapid sequence induction.

Gastric Ultrasound Use

- Consider utilizing gastric ultrasound as preop exam for those on GLP-1RAs
- Gastric ultrasound is inexpensive
- Competency is attainable with 33



https://www.sciencedirect.com/science/article/pii/S1015958420300506

Implementation

- Develop protocol for a POCUS training pilot study to evaluate gastric contents in those taking GLP-1RAs
  - Define clinical outcomes t determine proficiency utilizing POCUS
  - Create post assessment tool to evaluate POCUS proficiency
  - Collaborate with team leaders to develop an orientation path
  - Determine if safety is optimized utilizing these anesthesia considerations
  - Is the practice change cost effective
  - Is there compliance amongst the care team
  - Record assessments to evaluate continues effectiveness

Future Research Goals

- Develop standardized risk stratification tools to identify high risk patients
- Identify additional supplemental preoperative tools to minimize risk
- Create a pharmacological regimen to decrease gastric delay and increase gastric motility without interfering with benefits of the GLP-1RA drugs

EBP Framework Algorithm and References

Scan this QR code for the algorithm and a complete reference list.

Questions?

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