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Case Report

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Perioperative Management of a Breastfed Child Whose Mother Was Receiving Injectable Semaglutide: A Case Report Outlining Use of Gastric Point-of-Care Ultrasound

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Abstract

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs), including semaglutide, are increasingly used for the treatment of type 2 diabetes mellitus and for weight management. Although generally effective, specific end-organ effects, including delayed gastric emptying, may impact the perioperative care of patients receiving these agents. Given these concerns, guidelines have been suggested for the perioperative care of patients receiving GLP-1 RAs. However, these recommendations do not specifically address the increasingly encountered scenario in which a breastfeeding mother is taking a GLP-1 RA and the breastfed infant or young child is presenting for anesthetic care. We present a 15-month-old breastfed child who presented for surgery and whose mother was receiving once-weekly injectable semaglutide. Given limited evidence-based medicine to guide perioperative care in this clinical scenario, preoperative gastric point-of-care ultrasound (POCUS) was used to evaluate gastric volume before induction of anesthesia. Perioperative care of breastfed children of mothers receiving GLP-1 RAs is discussed, the role of gastric POCUS is presented, and options for perioperative care are reviewed.

Keywords: GLP-1 agonist; Breastfeeding; Gastric ultrasound; Semaglutide

Introduction

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs), including semaglutide, are increasingly used for the treatment of type 2 diabetes mellitus and for weight management. Semaglutide is a long-acting GLP-1 analogue that improves glycemic control and promotes weight loss through glucose-dependent insulin secretion, suppression of glucagon secretion, appetite regulation, and delayed gastric emptying [1]. Although delayed gastric emptying contributes to the therapeutic effect of these agents, it has important perioperative implications. Several anecdotal reports have raised physiologic concerns regarding continuing these agents during the perioperative period, including increased residual gastric contents, gastric regurgitation, and pulmonary aspiration in patients receiving GLP-1 RAs despite adherence to standard fasting guidelines [2, 3].

In response to these concerns, perioperative guidelines have been developed for patients who are taking GLP-1 RAs. Initial consensus-based recommendations emphasized withholding these medications before elective procedures, particularly for weekly preparations, while more recent multisociety guidance supports individualized risk assessment based on patient-specific factors, gastrointestinal symptoms, dose-escalation phase, and procedural risk [4, 5]. However, these recommendations primarily address the patient receiving the medication, and there remain no recommendations to address the breastfed infant whose mother is taking a GLP-1 RA. We are not aware of previous reports describing anesthetic care of a breastfed child whose mother was receiving a GLP-1 RA. We present a 15-month-old breastfed child who presented for surgery and whose mother was receiving once-weekly injectable semaglutide. Given limited evidence-based medicine to guide perioperative care in this clinical scenario, preoperative gastric point-of-care ultrasound (POCUS) was used to evaluate gastric volume prior to the induction of anesthesia. Perioperative care of breastfed infants and young children of mothers receiving GLP-1 RAs is discussed, the role of gastric POCUS is presented, and options for perioperative care are reviewed.

Case Report

Review of this case followed the guidelines of the Institutional Review Board of Nationwide Children's Hospital (Columbus, Ohio). Written consent was obtained for hospital/anesthetic

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care and for the use of de-identified information for publication.

A 15-month-old girl weighing 8.85 kg was scheduled for elective excision of a nasal dermoid cyst with possible intracranial extension. She was otherwise healthy, breastfed, and classified as American Society of Anesthesiologists (ASA) physical status II. Her mother was receiving once-weekly injectable semaglutide for postpartum weight loss. According to local institutional practice, maternal semaglutide is withheld for 7 days before anesthesia in a breastfed child; however, the mother's most recent dose had been administered 5 days before the planned procedure. The child met standard preoperative fasting guidelines, with the last breastfeeding occurring approximately 6 h before anesthesia. Given the absence of clear perioperative guidance for breastfed children whose mothers are receiving GLP-1 RA therapy, uncertainty remained regarding the clinical relevance of potential semaglutide transfer into breast milk and subsequent infant oral absorption. The family was counseled regarding the theoretical concern for delayed gastric emptying and aspiration risk. To further assess aspiration risk, gastric POCUS was performed immediately before induction of anesthesia. The examination was performed in the supine position by an anesthesiologist with expertise in gastric ultrasound (training during residency and fellowship, American Board of Anesthesiology (ABA) POCUS programs, ongoing use during his initial years in practice). Preinduction gastric ultrasound in the right lateral decubitus position demonstrated an empty stomach with the characteristic "bull-seye" appearance of an empty gastric antrum. Based on the reassuring gastric ultrasound findings, standard anesthetic management was pursued. Rapid sequence induction was not performed. The child underwent routine inhalational induction without regurgitation or aspiration. Direct laryngoscopy with a size 1.5 Wis-Hipple blade demonstrated a grade I view, and the trachea was intubated with a 3.5-mm cuffed endotracheal tube. Anesthesia was maintained with controlled ventilation. The surgical procedure was completed uneventfully. The child recovered without respiratory or gastrointestinal complications and was discharged from the postanesthesia care unit without any adverse events.

Discussion

The clinical relevance of maternal semaglutide therapy on the breastfed child remains uncertain. Drug transfer into human milk is influenced by several pharmacologic factors, including molecular size, protein binding, lipid solubility, maternal plasma concentration, half-life, and infant oral bioavailability [6, 7]. Semaglutide has a relatively large molecular weight and substantial albumin binding, factors that would be expected to limit transfer into breast milk [1]. Animal and human data have demonstrated that although GLP-1 receptor agonists can be excreted into breast milk in animal models, transfer into human breast milk is limited. In humans, injectable GLP-1 receptor agonists (such as semaglutide and tirzepatide) have generally been reported to be undetectable or present only in negligible concentrations [8]. Their large molecular structures limit their passage through the mammary epithelial barrier. Recent lactation data are reassuring, as in a study of eight breastfeeding women receiving subcutaneous semaglutide, semaglutide was not detectable in human milk samples, and no adverse effects were reported among exposed breastfed infants [9]. LactMed similarly reports that subcutaneous semaglutide was not detectable in milk in available studies, although caution is advised with oral semaglutide formulations because of the absorption enhancer, salcaprozate sodium. Despite these reassuring pharmacologic and lactation data, there remains limited perioperative literature to guide anesthesia decision-making for the breastfed child when maternal GLP-1 RA therapy has not been withheld.

Existing perioperative recommendations do not fully answer this question. The available recommendations were developed in response to concerns regarding delayed gastric emptying and aspiration events among patients taking GLP-1 RAs themselves [4, 5]. These documents are helpful for patients directly receiving these medications but are not directly applicable to the breastfed child, because the child is not the treated patient. For a pharmacologic effect on the child's gastric emptying to plausibly occur, semaglutide would need to transfer into breast milk, be ingested by the child, survive gastrointestinal degradation, be absorbed in a clinically meaningful quantity, and then produce a measurable gastric-emptying effect. Current lactation evidence suggests that this sequence is unlikely with maternal subcutaneous semaglutide exposure. However, there is no known dosing at which the infant will begin having delayed gastric emptying.

This scenario should therefore be interpreted using principles of lactation pharmacology rather than by directly applying guidance intended for patients receiving GLP-1 RA therapy themselves. Drugs most likely to pass into breast milk in clinically significant quantities are generally those with lower molecular weight, lower maternal plasma protein binding, greater lipid solubility, and favorable oral bioavailability in the infant [6]. In addition, peptide-based drugs typically have limited oral bioavailability because of gastrointestinal degradation and poor absorption, although this general principle cannot replace drug-specific lactation data. This distinction is important in the present case because the mother was using injectable, rather than oral, semaglutide.

Despite reassuring pharmacologic and lactation data, perioperative uncertainty remains. Available lactation studies were not designed to evaluate anesthesia outcomes in breastfed infants or young children. Furthermore, they do not provide specific recommendations regarding surgical scheduling, fasting instructions, induction technique, or aspiration-risk assessment when maternal GLP-1 RA therapy has not been withheld according to local practice. In our case, institutional practice recommended withholding maternal semaglutide for 7 days before anesthesia in a breastfed child, but the mother's last injectable dose was 5 days before the procedure. Although the child had been breastfed 6 h before anesthesia and met standard fasting criteria, the incomplete medication-holding interval created a practical decision point for the anesthesia team.

Point-of-care gastric ultrasound has emerged as a practical bedside tool to assess gastric contents and support aspiration-risk

stratification when fasting status or gastric emptying is uncertain. The increasing clinical applications of POCUS in various clinical scenarios have led to formal training and accreditation for ultrasound through the ASA. This training is being incorporated more frequently into residency and fellowship training programs. Currently, ASA accreditation requires evidence of a formal training course or residency/fellowship training that incorporates POCUS, online case reviews, image acquisitions that are reviewed by a POCUS expert/proctor, and a final examination. Such training will facilitate the assurance that these highly technical skills are appropriately taught with demonstration of clinical excellence to limit inter-provider variability.

Pediatric studies and reviews suggest that gastric POCUS can help identify an empty stomach, clear fluid, or solid contents, and may influence decisions to proceed, delay, cancel or modify the anesthetic plan in selected patients [10, 11]. In our patient, gastric POCUS was reassuring and documented the absence of liquid or particulate matter in the stomach, thereby reassuring our clinical assessment that the impact of the maternal use of semaglutide was negligible.

Learning points

We describe the incorporation of gastric POCUS into perioperative management of a breastfed 15-month-old child whose mother was receiving weekly injectable semaglutide, with the use of preinduction gastric POCUS to guide clinical decision-making. This case highlights a gap in current perioperative guidance and illustrates the potential role of gastric POCUS as an adjunct when uncertainty exists regarding anesthesia management in breastfed children whose mothers are receiving GLP-1 RA therapy. Gastric POCUS may be particularly useful in this and other similar situations because it provides real-time, patient-specific information about gastric volume rather than relying solely on medication history, theoretical exposure, or extrapolation from guidance intended for direct drug exposure. In pediatric practice, the gastric antrum can be assessed qualitatively for an empty stomach, clear fluid, or solid contents and, when appropriate, quantitatively by measuring antral cross-sectional area to estimate gastric volume. This qualitative and quantitative information can then be utilized to risk-stratify the aspiration risk of patients [9, 10]. The technique remains operator-dependent, and each exam should be interpreted in the appropriate clinical context.

In the present case, preinduction gastric ultrasound was performed by a pediatric anesthesiologist and demonstrated an empty stomach with the classic "bullseye" appearance of an empty gastric antrum. This finding supported proceeding with routine inhalational induction rather than rapid sequence induction. GLP-1 agents likely do not pass into breast milk in clinically meaningful concentrations based on their structure and molecular weight; however, this assumption should be interpreted in the context of drug-specific lactation data and the clinical setting. The importance of this case lies not in proving that maternal semaglutide therapy is universally safe during breastfeeding. Rather, it illustrates how a theoretical concern can create uncertainty when local medication-holding practices are not met and when published guidance does not directly address the clinical scenario. In this setting, gastric POCUS served as a practical adjunct to shared decision-making by allowing the anesthesia team to assess the child's actual gastric status immediately before induction.

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None to declare.

Financial Disclosure

None to declare.

Conflict of Interest

None to declare.

Informed Consent

Review of this case followed the guidelines of the Institutional Review Board of Nationwide Children's Hospital (Columbus, Ohio). Written consent was obtained for hospital/anesthetic care and for the use of de-identified information for publication.

Author Contributions

NA prepared initial, subsequent and final drafts, and provided direct patient care. JDT was responsible for the concept, literature review, review of drafts, and final documents. KS reviewed drafts, including the final version, and provided direct patient care.

Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author.

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