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INTERFERENCE OF GLP-1 AGONISTS IN GENERAL AND DENTAL ANESTHESIA: AN ANALYSIS OF OZEMPIC

INTERFERÊNCIA DE AGONISTAS DE GLP-1 NA ANESTESIA GERAL E ODONTOLÓGICA: UMA ANÁLISE DE OZEMPIC

INTERFERENCIA DE LOS AGONISTAS DE GLP-1 EN LA ANESTESIA GENERAL Y DENTAL: UN ANÁLISIS DE OZEMPIC

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ABSTRACT

Objective: The aim of this narrative review of the literature is to address the potential difficulties faced by patients using glucagon-like peptide-1 (GLP-1) agonists during procedures under general and dental anesthesia, with an emphasis on the clinical and pharmacological implications of these medications in the anesthetic context. Methodology: For data collection, searches were performed in electronic databases, including PubMed, PROSPERO, SciELO, The Cochrane Library and ScienceDirect, in addition to using Google Scholar as a complementary tool. The search terms used involved combinations of "GLP-1 agonists", "general anesthesia", "dental anesthesia", "perioperative management", and "complications". Results: The studies analyzed indicate that the use of GLP-1 agonists, such as liraglutide, semaglutide and dulaglutide, may be associated with gastrointestinal adverse effects, such as nausea, vomiting and gastroparesis. These effects can directly interfere with preoperative fasting and gastric emptying, increasing the risk of pulmonary aspiration during general anesthesia. Furthermore, during dental procedures, there are reports of hypoglycemia in poorly monitored diabetic patients, especially when there is prolonged fasting associated with the use of insulin or other antidiabetics. The literature also highlights the need for adjustment or temporary suspension of medication before elective surgical procedures, since there are still no standardized protocols, and individualized evaluation is recommended. In the dental context, glycemic control and coordination between the medical and dental teams are essential to minimize intraoperative and postoperative risks. Conclusion: The use of GLP-1 agonists represents an important advance in the glycemic control of patients with type 2 diabetes, but their continued use has relevant implications for anesthetic management, both general and dental. The presence of gastroparesis, increased risks of aspiration, and metabolic alterations reinforce the need for rigorous and multidisciplinary preoperative evaluation.

Keywords: Glucagon-like peptide-1 receptor agonists; Dental anesthesia; Anesthesia; Dentistry.

RESUMO

Objetivo: O objetivo desta revisão narrativa da literatura é abordar as potenciais dificuldades enfrentadas por pacientes em uso de agonistas do peptídeo semelhante ao glucagon-1 (GLP-1) durante procedimentos sob anestesia geral e odontológica, com ênfase nas implicações clínicas e farmacológicas desses medicamentos no contexto anestésico. Metodologia: Para a coleta de dados, foram realizadas buscas em bases de

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dados eletrônicas, incluindo PubMed, PROSPERO, SciELO, The Cochrane Library e ScienceDirect, além do Google Acadêmico como ferramenta complementar. Os termos de busca utilizados envolveram combinações de "agonistas do GLP-1", "anestesia geral", "anestesia odontológica", "manejo perioperatório" e "complicações". Resultados: Os estudos analisados indicam que o uso de agonistas do GLP-1, como liraglutida, semaglutida e dulaglutida, pode estar associado a efeitos adversos gastrointestinais, como náuseas, vômitos e gastroparesia. Esses efeitos podem interferir diretamente no jejum pré-operatório e no esvaziamento gástrico, aumentando o risco de aspiração pulmonar durante a anestesia geral. Além disso, durante procedimentos odontológicos, há relatos de hipoglicemia em pacientes diabéticos mal monitorados, principalmente quando há jejum prolongado associado ao uso de insulina ou outros antidiabéticos. A literatura também destaca a necessidade de ajuste ou suspensão temporária da medicação antes de procedimentos cirúrgicos eletivos, uma vez que ainda não existem protocolos padronizados, sendo recomendada avaliação individualizada. No contexto odontológico, o controle glicêmico e a coordenação entre as equipes médica e odontológica são essenciais para minimizar os riscos intra e pós-operatórios. Conclusão: O uso de agonistas de GLP-1 representa um importante avanço no controle glicêmico de pacientes com diabetes tipo 2, mas seu uso contínuo tem implicações relevantes no manejo anestésico, tanto geral quanto odontológico. A presença de gastroparesia, riscos aumentados de aspiração e alterações metabólicas reforçam a necessidade de avaliação pré-operatória rigorosa e multidisciplinar.

Palavras-chave: Agonistas do Receptor do Peptídeo 1 Semelhante ao Glucagon; Anestesia Dentária; Anestesia; Odontologia.

RESUMEN
Objetivo: El objetivo de esta revisión narrativa de la literatura es abordar las posibles dificultades que enfrentan los pacientes que utilizan agonistas del péptido similar al glucagón-1 (GLP-1) durante procedimientos bajo anestesia general y dental, con énfasis en las implicaciones clínicas y farmacológicas de estos medicamentos en el contexto anestésico. Metodología: Para la recolección de datos, se realizaron búsquedas en bases de datos electrónicas, incluyendo PubMed, PROSPERO, SciELO, The Cochrane Library y ScienceDirect, además de utilizar Google Scholar como herramienta complementaria. Los términos de búsqueda utilizados incluyeron combinaciones de "agonistas de GLP-1", "anestesia general", "anestesia dental", "manejo perioperatorio" y "complicaciones". Resultados: Los estudios analizados indican que el uso de agonistas de GLP-1, como liraglutida, semaglutida y dulaglutida, puede estar asociado con efectos adversos gastrointestinales, como náuseas, vómitos y gastroparesia. Estos efectos pueden interferir directamente con el ayuno preoperatorio y el vaciamiento gástrico, aumentando el riesgo de aspiración pulmonar durante la anestesia general. Además, durante los procedimientos odontológicos, existen reportes de hipoglucemia en pacientes diabéticos mal monitoreados, especialmente cuando hay ayuno prolongado asociado con el uso de insulina u otros antidiabéticos. La literatura también destaca la necesidad de ajuste o suspensión temporal de la medicación antes de procedimientos quirúrgicos electivos, ya que aún no existen protocolos estandarizados, y se recomienda una evaluación individualizada. En el contexto odontológico, el control glucémico y la coordinación entre los equipos médico y odontológico son esenciales para minimizar los riesgos intraoperatorios y postoperatorios. Conclusión: El uso de agonistas del GLP-1 representa un avance importante en el control glucémico de pacientes con diabetes tipo 2, pero su uso

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continuado tiene implicaciones relevantes para el manejo anestésico, tanto general como odontológico. La presencia de gastroparesia, el aumento del riesgo de aspiración y las alteraciones metabólicas refuerzan la necesidad de una evaluación preoperatoria rigurosa y multidisciplinaria.

Palabras clave: Agonistas del receptor del péptido 1 similar al glucagón; Anestesia dental; Anestesia; Odontología.

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INTRODUCTION

GLP-1 (glucagon-like peptide-1) receptor agonists, such as semaglutide (Ozempic/Wegovy), liraglutide and dulaglutide, constitute a therapeutic class widely used in the treatment of type 2 diabetes and obesity. These drugs exert multiple pharmacodynamic effects: they stimulate insulin secretion, suppress glucagon and delay gastric emptying, resulting in increased satiety and consequent reduction in body weight (Silveira et al., 2023; Hjerpsted et al., 2018). Semaglutide, especially at a dose of 2.4 mg weekly, has demonstrated, in trials such as STEP 2, weight reductions of more than 10% in patients with obesity (Friedrichsen et al., 2021; Silveira et al., 2023). In recent years, there has been an exponential expansion of its off-label use by normal-weight individuals, which has become known as “Ozempic fever” (AP, 2023; TGA, 2025). Although this popularization has expanded access to effective treatments, it has carried with it worrying risks, especially for people without adequate medical supervision. From an anesthesiological point of view, one of the most relevant adverse effects of GLP-1 agonists is the prolongation of gastric emptying (Nauck et al., 2011; Hjerpsted et al., 2018). Even after conventional fasting (8h for solids; 2h for clear liquids), patients using semaglutide often retain solid gastric residues, increasing the risk of pulmonary aspiration, one of the most serious complications of anesthesia (Silveira et al., 2023; ASA, 2023; AP, 2023). Clinical cases report episodes of regurgitation even after prolonged fasting (≥18h), including under sedation or general anesthesia (Fezza et al., 2023; Hobai, 2023).

In response to these reports, the American Society of Anesthesiologists (ASA) recommended that patients discontinue semaglutide on the day of the procedure (for daily doses) or at least one week before (for weekly doses) (ASA, 2023). Some institutions at the international level, such as Australian centers, have extended this period to up to 3 weeks for maximum safety (AP, 2023; TGA, 2025). In addition, societies such as the ASA advise the use of gastric ultrasound before induction in suspected cases of a full stomach, in addition to the adoption of techniques such as rapid sequence induction and early intubation (ASA, 2023; Fezza et al., 2023). Although tests such as ultrasound (POCUS) confirm that up to 40% of patients recently using semaglutide have solid residues after fasting for 8–10 hours (Nersessian et al., 2024), anesthetic protocols have not yet fully incorporated this evidence. There is a growing consensus that the current pattern of fasting and medication discontinuation has significant gaps, especially in suburban populations undergoing elective procedures (Nersessian et al., 2024; AP, 2023). In addition, this change

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in the user profile, now including non-diabetic individuals, requires a review of preoperative protocols and dietary tracking. Many patients do not report use because they believe it is a medication for aesthetic weight loss, which compromises the assessment of anesthetic risk (Silveira et al., 2023; AP, 2023).

The aim of this narrative review of the literature is to address the potential difficulties faced by patients using glucagon-like peptide-1 (GLP-1) agonists during procedures under general and dental anesthesia, with an emphasis on the clinical and pharmacological implications of these medications in the anesthetic context.

METHODOLOGY

Rother's work (2007) is an article that addresses two different types of review articles: narrative review and systematic review. In this study, the author addresses the approaches, structure, characteristics and elements of these two types of review articles, serving as a guide, which presents what each article of these two types should be like. Thus, this article was used as a basis and guide throughout the development of this narrative review article, contributing to its classification. In addition, searches were carried out in online databases in order to acquire the maximum number of articles related to the topic of the work, searches carried out in the following databases: PubMed; PROSPERO; Scielo; The Cochrane Library; Science Direct in conjunction with Google Academy. In order to acquire only results related to the topic of the study, the following descriptors were used during the searches in the online databases: Glucagon-Like Peptide 1 Receptor Agonists; Dental Anesthesia; Anesthesia; Dentistry. Grey literature also served to enrich and contribute to the development of this review.

RESULTS

GLP-1 AGONISTS: PHARMACOLOGY, EFFECTS AND RISKS

GLP-1 (glucagon-like peptide-1) receptor agonists, such as liraglutide, dulaglutide and semaglutide, are synthetic analogues of the endogenous peptide produced by intestinal L cells, exerting pleiotropic effects on glycemic and energy metabolism (Drucker, 2018). These drugs act mainly by stimulating insulin secretion in response to glucose, suppressing glucagon secretion, delaying gastric emptying and promoting satiety centrally, through hypothalamic receptors (Drucker, 2018; Wildingetal., 2021). Delayed gastric emptying, which is important for weight loss, can result in adverse effects such as nausea (present in

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up to 30% of patients), vomiting, diarrhea, and constipation (Wildingetal., 2021; Marsoetal., 2016). The significant weight loss observed in semaglutide users (average of 15% of body weight in clinical studies) is mainly due to reduced appetite and slowed digestion (Wildingetal., 2021).

Despite the benefits in glycemic control and obesity, there are growing concerns about the impact of this reduced gastric motility in preoperative fasting scenarios, especially in procedures requiring general anesthesia or deep sedation (Silveiraetal., 2023). In addition to gastrointestinal effects, studies indicate a slight increase in the risk of cholelithiasis (gallstones), possibly secondary to rapid weight loss, and pancreatitis, although the latter is controversial (Drucker, 2018; Wildingetal., 2021). The relationship with carcinogenicity (e.g., medullary thyroid cancer in animal models) has not yet been proven in humans, but is a reason for caution (Marsoetal., 2016).

USE OF GLP-1 AGONISTS AND GENERAL ANESTHESIA

Recent literature highlights a significant risk of pulmonary aspiration in users of GLP-1 agonists during general anesthesia, due to the presence of persistent gastric residues even after prolonged fasting (Silveiraetal., 2023; Van Zuylenetal., 2024). Perioperative gastric ultrasound has shown that 40% to 50% of these patients have solid or liquid gastric content in quantities greater than expected for a conventional 8-hour fast (Nersessianetal., 2023).

Cases of severe regurgitation during anesthetic induction have been documented, especially in semaglutide users, even with an 18-hour fast (Fezzaetal., 2023). These episodes reinforce that conventional fasting may not be sufficient to reduce the risk of aspiration in patients treated with GLP-1 agonists.

The American Society of Anesthesiologists (2023) recommends discontinuing short-acting GLP-1 agonists for one day before surgery and long-acting GLP-1 agonists (semaglutide, for example) for at least seven days, whenever possible. Some international studies suggest that an even longer period (up to three weeks) may be necessary to ensure normalization of gastric motility (Van Zuylenetal., 2024). Furthermore, ultrasound evaluation of the stomach before anesthetic induction has been proposed as a complementary tool for risk stratification (Therapeutic Goods Administration, 2024). These findings directly impact anesthetic management, requiring adapted protocols that consider the pharmacokinetics of these drugs and the individual profile of the patient.

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EFFECTS AND RISKS IN DENTISTRY

In the dental context, most procedures occur under local anesthesia, which presents minimal risks for pulmonary aspiration (Agência Einstein, 2024). However, in situations that require deep sedation or general anesthesia (e.g., orthognathic surgery, complex extractions in a hospital setting, treatment of patients with special needs), the impact of delayed gastric emptying becomes more important (Fezzaetal., 2023; Van Zuylenetal., 2024). Dentists should be aware of this issue during preoperative anamnesis, considering that many patients use GLP-1 agonists for weight loss off-label, not to mention the medication spontaneously (Agência Einstein, 2024). A careful pharmacological anamnesis and communication with the anesthetic team are essential to avoid complications.

From a pharmacological point of view, another relevant point in Dentistry is the potential for drug interactions. Although GLP-1 agonists do not directly inhibit cytochrome P450 enzymes, gastric delay may modify the oral absorption of drugs used in dental practice, such as anxiolytics and analgesics administered orally preoperatively (Drucker, 2018; Nersessianetal., 2023). Furthermore, reports of hypoglycemia are rare in monotherapy with GLP-1 agonists, but may occur in combination with sulfonylureas or insulin (Marsoetal., 2016). Therefore, diabetic patients using these combinations should be closely monitored during prolonged dental procedures.

DISCUSSION

The growing popularity of GLP-1 agonists, especially semaglutide, has transcended the boundaries of type 2 diabetes treatment and has reached the realm of aesthetic weight loss. This “Ozempic craze” illustrates not only the impact of social media and thin body culture, but also raises serious concerns in the clinical, anesthetic, and dental settings.

From an anesthetic perspective, the main challenge lies in the ability of these drugs to delay gastric emptying for prolonged periods, even with adequate preoperative fasting. This condition predisposes to bronchoaspiration events during anesthetic induction, increasing the risk of serious complications, such as aspiration pneumonia and the need for prolonged invasive ventilation. Current guidelines from major scientific societies, such as the ASA, recommend additional measures, including temporary discontinuation of the drug before elective procedures and the use of gastric ultrasound to assess residual gastric residue. Patient safety therefore requires that anesthesiologists routinely review patients'

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pharmacological history, something that was often not considered as relevant in low-risk surgeries.

In the dental context, although most procedures are performed under local anesthesia and therefore present a low risk of pulmonary aspiration, the reality changes when there is a need for deep sedation or general anesthesia, such as in cases of extensive oral surgeries, biopsies in a hospital environment or care for patients with special needs. In these cases, the same concerns regarding gastric motility and anesthetic safety apply. It is essential that the dentist understands the pharmacokinetics and pharmacodynamics of these medications, in addition to openly discussing with the anesthesiologist the presence of GLP-1 agonists in the patient's therapeutic regimen.

Another point to highlight is the trivialization of the off-label use of these drugs. Initially indicated for glycemic control and cardiovascular risk reduction in diabetic patients, these medications have become widely prescribed and often self-administered by people without a diagnosis of diabetes, solely in search of rapid weight loss. This misuse can lead not only to adverse effects such as nausea, vomiting and constipation, but also to a mismatch between the real therapeutic need and the patient's expectations. In addition, the shortage of supplies for diabetic patients, who depend on the medication to control their underlying disease, highlights the social and ethical consequences of this trend. In addition, there is a cultural and behavioral aspect that must be considered. Rapid weight loss and the medicalization of aesthetics often overlap with integrated health approaches, such as lifestyle changes and nutritional monitoring. This phenomenon reinforces the need for educational programs and public health policies that combat inappropriate medicalization and promote a broader vision of health care.

In short, the “Ozempic craze” highlights not only the efficacy of GLP-1 agonists in the treatment of metabolic conditions, but also the ethical and clinical dilemmas that arise when their use goes beyond formal indications. In the anesthetic field, adequate fasting and careful assessment of gastric emptying are essential measures. In Dentistry, interdisciplinary communication and detailed anamnesis become crucial tools to ensure patient safety in procedures that require sedation or general anesthesia. These contemporary challenges demand constant updating and commitment to safe and ethical clinical practice.

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CONCLUSION

The use of GLP-1 agonists represents an important advance in the glycemic control of patients with type 2 diabetes, but their continued use has relevant implications for anesthetic management, both general and dental. The presence of gastroparesis, increased risks of aspiration, and metabolic alterations reinforce the need for rigorous and multidisciplinary preoperative evaluation.

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