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Review

Guidelines on the perioperative management of chronic medication in surgical patients

Laura Victoria Valdeolmillos Carbó[a], María Jesús Esteban Gómez[b,*], Irene Ruiz-Jarabo Gómez[c], Almudena Ribed Sánchez[d], Noelia Vicente Oliveros[e], Ana Belén Guisado Gil[f], Ainara Campino Villegas[g], Pilar Campillos[h], Pilar Olier Martínez[i] and Jan Thomas de Pourcq[j]

[a] *Servicio de Farmacia, Clínica Universidad de Navarra, Pamplona, Spain*
[b] *Servicio de Farmacia, Hospital Universitario de Fuenlabrada, Fuenlabrada, Madrid, Spain*
[c] *Servicio de Farmacia, Hospital de Getafe, Getafe, Madrid, Spain*
[d] *Servicio de Farmacia, Hospital Gregorio Marañón, Madrid, Spain*
[e] *Servicio de Farmacia, Hospital Ramón y Cajal, Madrid, Spain*
[f] *Servicio de Farmacia, Hospital Universitario Virgen del Rocio, Sevilla, Spain*
[g] *Servicio de Farmacia, Hospital de Cruces, Barakaldo, Vizcaya, Spain*
[h] *Servicio de Farmacia, Hospital Dr Peset, Valencia, Spain*
[i] *Hospital Universitario Miguel Servet, Zaragoza, Spain*
[j] *Servicio de Farmacia, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain*

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ABSTRACT

Introduction: In the perioperative setting, appropriate management of chronic medications is of great importance in determining which medications to discontinue and when to reintroduce them. Although individual decisions based on patient and surgical risk are required, the need for national consensus has been identified.
Objective: To provide a set of specific recommendations for the perioperative management of chronic medication, based on recent scientific evidence and expert consensus, with the aim of improving the safety of surgical patient care.
Method: A review of the available literature was conducted on perioperative recommendations for the drugs most commonly included in the chronic medication regimens of patients undergoing surgery. The review encompassed drug datasheets, literature from Medline and the Cochrane Library, as well as information from other databases such as UpToDate® and Micromedex®.
Results: Recommendations are summarized for various medications grouped by pharmacotherapeutic group, specific medications for the treatment of immune-mediated diseases, and finally natural supplements and herbal therapy.
Conclusions: The information collected in this article can help the healthcare team to determine the approach to the patient's chronic medication.

Guía para el manejo perioperatorio de la medicación crónica en pacientes quirúrgicos

Palabras clave:
Periodo perioperatorio
Conciliación de la medicación
Seguridad

RESUMEN

Introducción: en el entorno perioperatorio es de gran importancia la correcta gestión de la medicación crónica, decidiendo qué medicamentos serán suspendidos y cuándo serán reintroducidos. Aunque se deben tomar decisiones individuales basadas en el paciente y el riesgo de la cirugía, se ha detectado la necesidad de un consenso nacional.

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* Corresponding author.
E-mail address: mjesus.esteban@salud.madrid.org (M.J. Esteban Gómez).

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Cirugía
Paciente quirúrgico

Objetivo: el objetivo es recoger las distintas recomendaciones específicas para el manejo perioperatorio de la medicación crónica, basadas en la evidencia y en el consenso de expertos, con el objetivo de mejorar la seguridad en la atención al paciente quirúrgico.
Método: se realizó una revisión de la literatura disponible sobre recomendaciones perioperatorias de los fármacos que más frecuentemente forman parte de la medicación crónica en pacientes que van a ser intervenidos quirúrgicamente. Se revisaron las fichas técnicas, la bibliografía en Medline y Cochrane Library, además de información de otras bases de datos como UpToDate® o Micromedex®.
Resultados: se sintetizan las recomendaciones relacionadas con los distintos fármacos agrupados por categoría farmacoterapéutica, los medicamentos específicos para tratar enfermedades inmunomediadas y, por último, los suplementos naturales y la fitoterapia.
Conclusiones: la información recogida en el artículo puede servir al equipo asistencial para decidir la actitud a seguir con la medicación crónica del paciente.

Introduction

At least 50% of patients undergoing surgery take medication on a regular basis. Medications may interfere with anesthesia or contribute to the occurrence of surgical complications. However, withholding regular medications abruptly may exacerbate the patient's underlying conditions.[1] The perioperative period extends from the period before surgery through the day of the procedure and the postoperative recovery period. It is in the perioperative period when decisions are made concerning the continuation or suspension of chronic medications.[2]

Inappropriate management of chronic medicines often poses patients at risk and may lead to procedure cancelation. Previous studies estimate a surgery cancelation rate of 2.4% for reasons related to suboptimal management of chronic medications, with anticoagulation or antiplatelet drugs being frequently involved. Inappropriate management of regular medication was due to the patient's difficulties in understanding anaesthesiology recommendations and lack of a preanesthesia evaluation.[3]

Medication reconciliation is the process of identifying and comparing a patient's chronic medication to their medication orders to detect and resolve discrepancies throughout the patient's treatment pathway. All treating physicians alongside the patient or their caregiver(s) should be involved in the medication reconciliation process.[4] The first step in this process involves obtaining an accurate list of a patient's current medications, including over-the-counter drugs, dietary supplements and medicinal herbs. Polypharmacy patients are at a higher risk for poor perioperative outcomes owing to complications and functional deterioration. Adjusting perioperative medication is essential to ensure optimal care transition and guarantee patient safety and the delivery of care at the highest standards.[5]

The management of regular medication in the perioperative period should be approached according to whether surgery is high-, intermediate- or low-risk. Other relevant considerations include the type of anesthesia, patient's characteristics (age, comorbidities, frailty) and medication (indications, adverse events and drug-to-drug interactions).[2]

The risks and benefits of continuing, withholding or modifying medication in the perioperative period should be assessed by an interdisciplinary team involving anesthesiologists, surgeons, and the patient's treating physicians. The involvement of a pharmacist in this interdisciplinary team helps prevent medication-related problems, potentially influencing surgical outcomes and the patient's regular medication.[6] Previous studies suggest that pharmacists should be integrated into multidisciplinary teams to identify and solve medication-related problems, perform medication reconciliation, validate medical orders, and engage in patient education to ultimately optimize clinical outcomes. As members of the preoperative team, pharmacists play a major role in the management of perioperative medication.[5–8]

Although consensus recommendations for the perioperative management of certain medications are available, only a small number of randomized, placebo-controlled studies have been conducted to assess the impact of continuing or withholding regular medication. Most recommendations are derived from scientific societies, expert opinions, case reports, or the generalization of data for similar drugs. Therefore, inconsistencies may be found across publications. Continuation or suspension of regular medication should be addressed on a case-by-case basis according to the patient's risk factors and comorbidities.[2]

The objective of this study was to perform a review of consensus evidence-based recommendations for the perioperative management of chronic medication with the ultimate purpose of improving surgical patient safety. This review addresses several key questions, including: What medications should be continued or withheld during the perioperative period? What is the optimal timing of restarting regular medication after a procedure? What risks does continuance or withholding entail? The information gathered is presented in structured tables by pharmacological group to provide a practical, up-to-date decision-making support tool.

Materials and methods

A working group was created involving 10 pharmacists from different hospitals, experienced in patient management. The working group detected a gap of knowledge and a lack of consensus concerning the management of chronic medication in the perioperative period. Between February 2022 and February 2024, a review was performed of the literature available containing recommendations for the perioperative management of the most commonly used chronic medications among surgical patients.

A review was performed of the summaries of product characteristics of medications approved by the AEMPS or EMA. Additionally, information was collected from the databases UpToDate® and Micromedex®. A literature search was conducted on PubMed and Cochrane Library for articles published in the last 10 years (2015–2024) without any language restrictions and using the following MeSH terms: perioperative medication y/o perioperative management. Following inspection of the records retrieved, seven clinical guidelines,[9–15] three consensus documents[16–18] and eight articles[19–26] were selected. Medications were categorized by pharmaceutical group. Specific recommendations for each pharmaceutical group were presented in tables. To formulate the recommendations, two pharmacists per pharmaceutical group independently identified and selected those supported by the most up-to-date and methodologically robust publications. Discrepancies

between publications or between the two evaluators were resolved by a third reviewer.

Recommendations were summarized by pharmaceutical group in 10 tables. Recommendations regarding biological therapies, natural supplements and medicinal herbs were synthesized in separate tables (see Supplementary Material). A total of 10 pharmaceutical groups were analyzed and further categorized into 76 subgroups by mechanism of action for the management of chronic patients. The tables containing information by pharmaceutical group include clinical considerations regarding treatment continuance or withholding; preoperative, intraoperative and postoperative recommendations; prolongation of fasting; and oral route availability. For establishing recommendations, thrombotic and hemorrhagic risk, prolongation of fasting, and oral route availability were considered. The table for biological therapies contains information about the mechanism of action, dosage regimen, half-life, and preoperative recommendations. The table for natural supplements and medicinal herbs contains clinical considerations and preoperative recommendations.

Results

A total of 18 clinical guidelines and reviews were selected as the most up-to-date evidence available for the management of chronic medication in the perioperative period.

In the case of medications categorized by pharmacological group, 64.47% of publications recommend continuing medication until the day of surgery. The vast majority of drugs can be restarted as soon as the oral route becomes available. In relation to drug therapies for immune-mediated diseases, withholding medication before the procedure is recommended in all cases. Similarly, suspending medicinal herbs and natural supplements before surgery is also recommended, although the suggested time frame prior to the scheduled surgery varies.

When data were available, considerations in relation to treatment suspension included the type of procedure, duration of oral route compromise, and the risk/benefit balance of continuing chronic medications.

In the group of medications for immune-mediated diseases, general recommendations include withholding treatment 2–3 half-lives before surgery when the procedure entails a low risk of infection, and 5 half-lives when the risk of postoperative infection is high. In all cases, therapy is recommended to be restarted at 14 postoperative days, once the wound shows evidence of healing and in the absence of any signs and symptoms of infection.[15,20–23] When available, specific recommendations were based on the type of surgical wound (clean/dirty surgery) and the type of procedure (orthopedic surgery or other types).

Recommendations were also available concerning 24 medicinal herbs, plant extracts or natural supplements. As a general recommendation, the American Society of Anesthesiologists recommends withholding any medicinal herb 1–2 weeks before the procedure.[25]

Discussion

This review collects the latest updates on the perioperative management of regular medication. The tables designed are intended to serve as a practical decision support tool for determining whether and when medication should be withheld and restarted based on a high level of evidence.

The perioperative management of chronic medication in patients undergoing surgery is challenging and requires a multidisciplinary approach to ensure patient safety and prevent complications. In this review, we identified inconsistencies in recommendations for the perioperative management of chronic medications, with variability across hospitals. Hence, further studies are required to generate more robust conclusions and support the recommendations provided in this study. The evidence provided warrants the development of new consensus guidelines.

The perioperative management of medications influencing coagulation is challenging and requires considering the hemorrhagic and thrombotic risk associated with the patient and the procedure. The pharmacokinetic and pharmacodynamic characteristics of the antithrombotic drugs used by the patient are other relevant considerations. Hence, an interdisciplinary team should conduct a preoperative assessment to classify ischemic and hemorrhagic risks associated with the patient (cardiologist, neurologist, vascular specialist and hematologist) and the surgical risk (surgeon and anesthesiologist).[26] For these reasons, only general recommendations were considered in this group.

Special attention should be paid to the management of treatments for immune-mediated diseases. The elimination half-life (t1/2) of each medication will guide the timing of the surgical procedure. In relation to most dosing regimens, it is recommended to wait 2–3 half-lives for procedures with a low risk of infection, and 5 half-lives for surgical procedures entailing a high risk of infection. In American guidelines, recommendations are determined according to the dosing interval of the medication rather than its half-life, given that half-life does not reliably reflect the duration of pharmacological activity. In this case, it is recommended to schedule surgery at the end of the dosing interval, just before the next dose is administered. According to these guidelines, the timing of surgery should be determined on a case-by-case basis, taking into account the patient's individual risk factors and comorbidities.[10,15,20–23]

On another note, the use of medicinal herbs in the general population should be taken into account. Publications suggest that some herbs may increase perioperative morbidity as a result of interaction with anesthetic agents (e.g., kava, Valerian) or coagulation problems (e.g. *Ginkgo biloba*, Ginseng, garlic), which may cause surgery delays or an increased risk for complications. Therefore, the recommendations provided in this article emerge as a valuable tool for use in routine practice.[24,25]

The formal consensus method implemented is a usable tool, providing practical recommendations that enhance accessibility and understanding among healthcare professionals involved in perioperative patient care.

One of the strengths of this study is its systematic review design based on widely accepted sources such as Medline, Cochrane Library, UpToDate® and Micromedex®, alongside updated clinical guidelines and consensus documents. Other strengths include the involvement of a multidisciplinary team of pharmacy experts in surgical patients and the peer review performed to resolve discrepancies. Additionally, presenting recommendations in tables facilitates their use in routine practice.

A limitation of this study is the scarcity of randomized, controlled clinical trials assessing the perioperative management of the majority of medications. This problem led us to base some of our recommendations on expert consensus documents or on the generalization of data. Similarly, the heterogeneity of criteria across sources and the need for individualized decision-making based on the particularities of the patient and the procedure could limit the generalization of results. Finally, further studies are required to generate more robust conclusions and support the development of more consistent consensus guidelines.

Conclusions

The information gathered in this article will support decision-making concerning the suitability or not of withholding a chronic medication and the duration of suspension. This study also describes the effects of continuing and withholding chronic medication for a closer postoperative monitoring of surgical patients. Hence, the results of

this article will help improve the safety of perioperative management of chronic medication.

Ethical considerations

The submitted article does not disclose any personal data from patients.

This manuscript has not been presented at any conference or scientific meeting.

Authorship

All authors contributed to the manuscript design, drafting and critical review of the manuscript. All authors approved the final version of the manuscript submitted for publication.

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Conflict of interest

The authors confirm that there are no known conflicts of interest associated with this publication.

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Appendix A. Supplementary data

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