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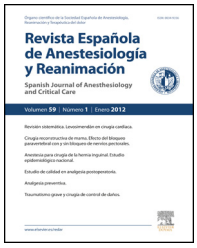

SPECIAL ARTICLE

Clinical practice guide for the choice of perioperative volume-restoring fluid in adult patients undergoing non-cardiac surgery☆,☆☆

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Abstract The present clinical practice guide responds to the clinical questions about security in the choice of fluid (crystalloid, colloid or hydroxyethyl starch 130) in patients who require volume replacement during perioperative period of non-cardiac surgeries. From the evidence summary, recommendations were made following the GRADE methodology. In this population fluid therapy based on crystalloids is suggested (weak recommendation, low quality evidence). In the events where volume replacement is not reached with crystalloids, the use of synthetic colloids (hydroxyethyl starch 130 or modified fluid gelatin) is suggested instead of 5% albumin (weak recommendation, low quality evidence). The choice and dosage of the colloid should be based in the product characteristics, patient comorbidity and anesthesiologist's experience.

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PALABRAS CLAVE
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Guía de práctica clínica para la elección del fluido de restauración volémica perioperatoria en los pacientes adultos intervenidos de cirugía no cardiaca

Resumen Esta Guía de Práctica Clínica responde a preguntas clínicas sobre seguridad en la elección de fluido (cristaloide, coloide o Hidroxietilalmidón 130) en pacientes que precisan restauración volémica en el periodo perioperatorio de cirugía no cardiaca. A partir del resumen de la evidencia, se elaboraron las recomendaciones siguiendo la metodología GRADE. En esta población se sugiere la fluidoterapia basada en la administración de cristaloides, (recomendación débil, calidad de la evidencia baja). En las situaciones en las que la restauración volémica no se alcance sólo con cristaloides, se sugiere utilizar coloides sintéticos (Hidroxietilalmidón 130 o gelatina fluida modificada) en lugar de Albúmina 5% (recomendación débil, calidad de la evidencia baja). La elección y dosificación de coloide deberán basarse en las características del producto, comorbilidad del paciente y experiencia del anestesiólogo.

Introduction

Fluid management has undergone major changes in clinical practice in recent years. The criteria for volume replacement described in classic anaesthesiology textbooks were based on weak scientific evidence. Since then, perioperative fluid management has undergone a paradigm shift influenced by factors such the higher mortality rate associated with perioperative fluid overload,[1] evidence proving the inexistence of a non-anatomical third space, and the need to preserve the vascular endothelium and glycocalyx.[2] Based on this improved scientific understanding, major changes in fluid administration criteria were proposed and accepted at the start of this century, and this led to the adoption of a generally more restrictive approach to fluid management.[3–5]

Technological developments, meanwhile, in the form of less invasive monitoring systems capable of measuring dynamic changes in volaemia and predicting the response to fluid administration, have given clinicians a far more sophisticated and simple method of guiding intravenous fluid management.[6,7]

In the context of this improved understanding of fluid management in clinical practice, situations have arisen that have scandalised scientific societies and created confusion among clinicians. First, most of the literature relating to fluid management was found to be fraudulent, and what little scientific evidence remained after journals retracted the articles published by Boldt had to be re-evaluated.[8,9] Furthermore, some heterogeneous studies published in recent years have questioned the safety of colloid administration in critical patients. This prompted the European Medicines Agency's Pharmacovigilance Risk Assessment Committee (PRAC)[10] to recommend suspending the marketing authorisation of medicines containing hydroxyethyl starch (HES) on the grounds that the benefits no longer outweighed the risks. A subsequent evaluation revoked the suspension and the product was authorised subject to strict conditions of use, which excluded critically ill patients.

Following these upheavals, we deemed it necessary to evaluate the existing scientific evidence relating to the safety of perioperative fluid management strategies and divulge our findings in these clinical practices guidelines (CPG). We have developed other guidelines for the intraoperative haemodynamic optimisation of adult patients undergoing non-cardiac surgery, and for this reason fluid management in this context is not discussed in these GPGs.

In drawing up these guidelines, we have excluded all articles published prior to 2000 for two reasons: First, we consider that the new century has ushered in a change in clinical practice, mainly following publication of the study by Rivers et al.[11] in 2001, showing that early, goal-directed fluid management improves evolution in patients with severe sepsis. This study in many ways marks the turning point in fluid management, and was followed by the implementation of laparoscopic and fast track surgery, both of which have considerably reduced the need for perioperative fluid administration.[12,13] Secondly, most of the studies published prior to this date discuss products that have been withdrawn from the market, or that have been largely sidelined. Furthermore, they obviously do not include products released in recent years.[14]

In these guidelines, therefore, we will restrict our analysis to articles that discuss the crystalloids and/or colloids most widely used in Spain today.[15] We have included crystalloids, albumin, gelatins and third-generation HES solutions, and have specifically excluded both dextrans and second-generation HES. Studies in cardiac surgery and critically ill patients have also been excluded from our analysis, insofar as fluid management strategies differ considerably in these contexts, and exceed the scope of this CPG.

Perioperative fluid management

The aim of fluid management is to maintain the body's hydration status and tissue perfusion at optimum levels and