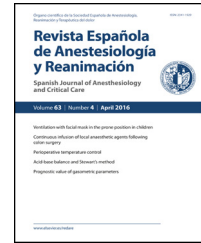




# Revista Española de Anestesiología y Reanimación

www.elsevier.es/redar



## ORIGINAL ARTICLE

# Whether preventive low dose magnesium sulphate infusion has an influence on postoperative pain perception and the level of serum beta-endorphin throughout the total abdominal hysterectomy<sup>☆</sup>

K. Haryalchi<sup>a</sup>, M. Abedinzade<sup>b</sup>, K. Khanaki<sup>c,\*</sup>, M. Mansour Ghanaie<sup>d</sup>,  
F. Mohammad Zadeh<sup>e</sup>

<sup>a</sup> Department of Anesthesiology, Reproductive Health Research Center, Guilan University of Medical Sciences, Rasht, Iran

<sup>b</sup> Department of Physiology, Medical Biotechnology Research Center, Faculty of Paramedical Sciences, Guilan University of Medical Science, Rasht, Iran

<sup>c</sup> Department of Clinical Biochemistry, Medical Biotechnology Research Center, Faculty of Paramedical Sciences, Guilan University of Medical Sciences, Rasht, Iran

<sup>d</sup> Department of Gynaecology, Reproductive Health Research Center, Guilan University of Medical Sciences, Rasht, Iran

<sup>e</sup> Bachelor of Science, Department of Anesthesiology, Reproductive Health Research Center, Faculty of Paramedical Sciences, Guilan University of Medical Sciences, Rasht, Iran

Received 2 August 2016; accepted 9 November 2016

### KEYWORDS

Magnesium sulphate;  
Serum  
beta-endorphin;  
Total abdominal  
hysterectomy;  
Postoperative pain  
management

### Abstract

**Objective:** Due to the known role of preventive low dose magnesium sulphate on postoperative pain management, in this randomized, double-blinded, placebo-controlled study, we tried to investigate the possible relationship between low dose intra-operative magnesium sulphate infusion, postoperative analgesia and the level of serum beta-endorphin during total abdominal hysterectomy under general anaesthesia.

**Methods:** Forty women undergoing total abdominal hysterectomy were randomly allocated into 2 groups (20 in each arm). Fifteen minutes before induction of anaesthesia, the case group received a continuous intravenous infusion of magnesium sulphate (15 mg/kg/h) and placebo control group received the same volume of isotonic saline. Pain scores were assessed at 0, 6, 12, and 24 h after operations using Verbal Numeric Rating Scale. Pethidine consumption was recorded precisely. Serum level of beta-endorphin just 15 min before the induction and at the end of the operations was determined by ELISA technique.

<sup>☆</sup> Please cite this article as: Haryalchi K, Abedinzade M, Khanaki K, Mansour Ghanaie M, Mohammad Zadeh F. Por qué la infusión preventiva de una dosis baja de sulfato de magnesio influye en la percepción del dolor postoperatorio y el nivel sérico de beta-endorfinas en las histerectomías abdominales totales. Rev Esp Anesthesiol Reanim. 2016. <http://dx.doi.org/10.1016/j.redar.2016.11.009>

\* Corresponding author.

E-mail addresses: [khanaki@gums.ac.ir](mailto:khanaki@gums.ac.ir), [khanaki.korosh\\_bio@yahoo.com](mailto:khanaki.korosh_bio@yahoo.com) (K. Khanaki).

**Results:** At 6 and 12 h after the operations, Verbal Numeric Rating Scale in the case group was significantly lower than that of placebo control group ( $p=0.0001$ ). Over 24 h after the operations, pethidine consumption was significantly lower in the case group compared with control group ( $p=0.0001$ ). In the case group, serum level of beta-endorphin was significantly decreased at the end of the operations compared with before the induction ( $p=0.04$ ).

**Conclusion:** We illustrated that preventive low dose intra-operative magnesium sulphate infusion reduces postoperative pain, has opioid sparing effect and declines serum beta-endorphin concentration during total abdominal hysterectomy.

© 2017 Sociedad Española de Anestesiología, Reanimación y Terapéutica del Dolor. Published by Elsevier España, S.L.U. All rights reserved.

## PALABRAS CLAVE

Sulfato de magnesio;  
Beta-endorfinas  
séricas;  
Histerectomía  
abdominal total;  
Tratamiento del dolor  
postoperatorio

## Por qué la infusión preventiva de una dosis baja de sulfato de magnesio influye en la percepción del dolor postoperatorio y el nivel sérico de beta-endorfinas en las histerectomías abdominales totales

### Resumen

**Objetivo:** Debido al conocido papel preventivo que juegan las bajas dosis de sulfato de magnesio en el tratamiento del dolor postoperatorio, en este estudio aleatorizado a doble ciego y controlado con placebo tratamos de investigar la posible relación entre la infusión intraoperatoria de sulfato de magnesio, la analgesia postoperatoria y el nivel de beta-endorfinas séricas en las histerectomías abdominales totales realizadas bajo anestesia general.

**Métodos:** Se distribuyó aleatoriamente a 40 mujeres sometidas a histerectomía abdominal total en 2 grupos (20 en cada uno de ellos). Quince minutos antes de la inducción de anestesia, al grupo de estudio se le administró una infusión intravenosa de sulfato de magnesio (15 mg/kg/h), y al grupo control con placebo se le administró el mismo volumen de solución salina isotónica. Las puntuaciones del dolor se evaluaron a las 0, 6, 12 y 24 h posteriores a la intervención, utilizando la escala de calificación numérica verbal. Se registró de manera precisa el consumo de petidina. Se determinó el nivel sérico de beta-endorfinas 15 min antes de la inducción y al finalizar las intervenciones, utilizando el método ELISA.

**Resultados:** A las 6 y 12 h posteriores a las intervenciones, el valor de la escala de calificación numérica verbal en el grupo de estudio fue considerablemente menor que en el grupo control con placebo ( $p=0,0001$ ). A las 24 h de la intervención, el consumo de petidina fue significativamente inferior en el grupo de estudio en comparación con el grupo control ( $p=0,0001$ ). En el grupo de estudio, el nivel sérico de beta-endorfinas descendió considerablemente al final de las intervenciones, en comparación con el momento anterior a la inducción ( $p=0,04$ ).

**Conclusión:** Demostramos que la baja dosis preventiva e intraoperatoria de sulfato de magnesio reduce el dolor postoperatorio, tiene un efecto opioide moderado y disminuye la concentración sérica de beta-endorfinas en las histerectomías abdominales totales.

© 2017 Sociedad Española de Anestesiología, Reanimación y Terapéutica del Dolor. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

## Introduction

Pain is one of the most common fears of patients scheduled for all types of surgeries, and can influence postoperative recovery and patient satisfaction. For many years, opioids have been used to alleviate intra- and postoperative pain<sup>1</sup>; however, because of their side effects, much research has been done to find less harmful pain relief alternatives.<sup>2</sup> Pain perception is multi-factorial, and can be modified by environmental factors, individuality, socioeconomic status, prior pain perception, etc.,<sup>3</sup> and these factors seem to complicate postoperative pain management.<sup>2</sup>

In the recent years, attention has focused on adjuvant analgesics for postoperative pain management, one of these being magnesium, which is known to be an analgesic due to its calcium channel blocking action and N-methyl-D-aspartate (NMDA) receptor antagonism (possibly by preventing nociceptive central sensitization). Furthermore, the role of magnesium in decreasing catecholamine release has been shown to improve management of adrenergic response during surgery.<sup>4,5</sup> As an intravenous (IV) adjuvant, magnesium sulphate can be used in multiple ways, including preventive low-dose infusion.<sup>3,6</sup> Nevertheless, the beneficial effect of IV magnesium sulphate on postoperative

Download English Version:

<https://daneshyari.com/en/article/8622701>

Download Persian Version:

<https://daneshyari.com/article/8622701>

[Daneshyari.com](https://daneshyari.com)