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SCIENTIFIC ARTICLE

Evaluation of spinal anesthesia blockade time with 0.5% hyperbaric bupivacaine, with or without sufentanil, in chronic opioid users: a randomized clinical trial

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KEYWORDS
Spinal anesthesia;
Chronic opioid use;
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Abstract
Objective: The primary outcome of this study was to evaluate the effect of adding sufentanil to hyperbaric bupivacaine on duration of sensory blockade of spinal anesthesia in chronic opioid users in comparison with non-addicts.
Methods: Sixty patients scheduled for orthopedic surgery under spinal anesthesia were allocated into four groups: group 1 (no history of opium use who received intrathecal hyperbaric bupivacaine along with 1 mL saline as placebo); group 2 (no history of opium use who received intrathecal bupivacaine along with 1 mL sufentanil [5 μg]); group 3 (positive history of opium use who received intrathecal bupivacaine along with 1 mL saline as placebo) and group 4 (positive history of opium use who received intrathecal bupivacaine along with 1 mL sufentanil [5 μg]). The onset time and duration of sensory and motor blockade were measured.
Results: The duration of sensory blockade in group 3 was 120 ± 23.1 min which was significantly less than other groups (G1 = 148 ± 28.7, G2 = 144 ± 26.4, G4 = 139 ± 24.7, $p = 0.007$). The duration of motor blockade in group 3 was 145 ± 30.0 min which was significantly less than other groups (G1 = 164 ± 36.0, G2 = 174 ± 26.8, G4 = 174 ± 24.9, $p = 0.03$).
Conclusions: Addition of 5 μg intrathecal sufentanil to hyperbaric bupivacaine in chronic opioid users lengthened the sensory and motor duration of blockade to be equivalent to blockade measured in non-addicts.

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PALAVRAS-CHAVE
Raquianestesia;
Uso crônico de opioides;
Bupivacaína;
Sufentanil

Avaliação do tempo de bloqueio da raquianestesia com bupivacaína a hiperbárica 0,5%, com ou sem sufentanil, em usuários crônicos de opioides: um estudo clínico randômico

Resumo
Objetivo: Avaliar o efeito da adição de sufentanil à bupivacaína hiperbárica na duração do bloqueio sensorial da raquianestesia em usuários crônicos de opioides em comparação com não adictos.
Métodos: Foram distribuídos em quatro grupos 60 pacientes agendados para cirurgia ortopédica sob raquianestesia: Grupo 1 (sem história de uso de ópio, recebeu bupivacaína hiperbárica intratecal juntamente com 1 mL de solução salina como placebo); Grupo 2 (sem história de uso de ópio, recebeu bupivacaína intratecal juntamente com 1 mL de sufentanil [5 μg]); Grupo 3 (com história de uso de ópio, recebeu bupivacaína intratecal juntamente com 1 mL de solução salina como placebo) e Grupo 4 (Com história de uso de ópio, recebeu bupivacaína intratecal juntamente com 1 mL de sufentanil [5 μg]). O tempo de início e a duração dos bloqueios sensitivo e motor foram registrados.
Resultados: A duração do bloqueio sensorial no Grupo 3 foi de 120 ± 23,1 min, um tempo significativamente menor que nos outros grupos (G1 = 148 ± 28,7, G2 = 144 ± 26,4, G4 = 139 ± 24,7, p = 0,007). A duração do bloqueio motor no Grupo 3 foi de 145 ± 30,0 min, um tempo significativamente menor que nos outros grupos (G1 = 164 ± 36.0, G2 = 174 ± 26.8, G4 = 174 ± 24,9; p = 0,03).
Conclusões: A adição de 5 μg de sufentanil intratecal à bupivacaína hiperbárica em usuários crônicos de opioides aumentado a duração dos bloqueios sensorial e motor de forma equivalente ao bloqueio avaliado em não adictos.

Introduction

Motor vehicle trauma may result in lower limb fractures requiring operative intervention, and may occur in the setting of opium abuse. Since spinal anesthesia is a popular anesthetic technique in lower limb surgeries,[1,2] the characteristics of spinal anesthesia in this population are important.

In the studied geographical region, Iran, determining a definite estimate of prevalence and incidence of substance abuse is not possible due to social stigmatization along with legal restrictions. Between different substances, most commonly, opioids are abused and inhalation the most frequent route of abuse.[3] Furthermore, many of the victims of motor vehicle accidents are chronic opioid users and the accidents are the result of driver's drug abuse.[4]

The sensory and motor blockade behavior of spinal anesthesia in long-term chronic opioid users has not been previously studied thoroughly.

In a study conducted by Dabbagh et al., duration of spinal anesthesia with hyperbaric bupivacaine in chronic opium abusers undergoing lower extremity orthopedic surgery was studied. It was shown that the duration of sensory block was much shorter in chronic opium abusers compared with non-abusers.[5] The hypothesis of our study was that the duration of spinal anesthesia in chronic opioid users is shorter than non-addict patients and adding intrathecal sufentanil can increase spinal anesthesia blockade time in chronic opioid user.

The primary outcome of this study was to evaluate the effect of adding sufentanil to intrathecal bupivacaine on duration of sensory and motor blockade of spinal anesthesia chronic opioid users compared to non-addict patients. The onset of sensory and motor blockade was considered secondary outcomes.

Materials and methods

The study protocol was approved by the Institutional Ethics Committee of Tehran University of Medical Sciences, and after a thorough detailed explanation of the nature of the study to the participants, an informed, written consent was obtained from all the patients.

Sixty American Society of Anesthesiologist physical status (ASA) class I and II, male and current smoker patients, aged between 18 and 60, who were scheduled for elective lower limb orthopedic surgery under spinal anesthesia (lasting less than 2 h) were enrolled in this randomized, double-blinded clinical trial. Patients with any contraindications to spinal anesthesia, patients with addiction to any substance other than opium and cigarettes, and patients with history of cardiac, respiratory, or psychological disease were not entered in the study. It had been considered that in instances of failed spinal anesthesia or when surgery took longer than two hours new patients were replaced in the study.

Prior to spinal anesthesia all the required drugs were prepared by an anesthetist who was neither involved in the administration nor observation of the patient; thus, both