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SCIENTIFIC ARTICLE

A comparison of two different doses of morphine added to spinal bupivacaine for inguinal hernia repair☆

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KEYWORDS
Spinal anesthesia;
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Abstract
Background and objectives: The aim of this study was to compare the effects of two different doses of intrathecal morphine on postoperative analgesia, postoperative first mobilization and urination times and the severity of side effects.
Methods: After Institutional Ethical Committee approval, 48 ASA I-II patients were enrolled in this randomized double-blinded study. Spinal anesthesia was performed with 0.1 mg (Group I, $n = 22$) or 0.4 mg (Group II, $n = 26$) ITM in addition to 7.5 mg heavy bupivacaine. The first analgesic requirement, first mobilization and voiding times, and postoperative side effects were recorded. Statistical analyses were performed using SPSS 15.0 and $p < 0.05$ was considered as statistically significant. The numeric data were analyzed by the *t*-test and presented as mean ± SD. Categorical data were analyzed with the chi-square test and expressed as number of patients and percentage.
Results: Demographic data were similar among groups. There were no differences related to postoperative pain, first analgesic requirements, and first mobilization and first voiding times. The only difference between two groups was the vomiting incidence. In Group II 23% ($n = 6$) of the patients had vomiting during the first postoperative 24 h compared to 0% in Group I ($p = 0.025$).
Conclusion: For inguinal hernia repairs, the dose of 0.1 mg of ITM provides comparable postoperative analgesia with a dose of 0.4 mg, with significantly lower vomiting incidence when combined with low dose heavy bupivacaine.

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PALAVRAS-CHAVE
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Vômito

Comparação de duas doses diferentes de morfina adicionadas à bupivacaína em raquianestesia para herniorrafia inguinal

Resumo
Justificativa e objetivos: O objetivo deste estudo foi comparar os efeitos de duas doses diferentes de morfina intratecal (MIT) sobre a analgesia no pós-operatório, os tempos até a primeira mobilização e micção no pós-operatório e a gravidade dos efeitos colaterais.
Métodos: Após a aprovação do Comitê de Ética Institucional, 48 pacientes com estado físico ASA I-II foram incluídos neste estudo randômico e duplo-cego. A raquianestesia foi realizada com 0,1 mg (Grupo I, n = 22) ou 0,4 mg (Grupo II, n = 26) de MIT adicionados a 7,5 mg de bupivacaína hiperbárica. Os tempos até a primeira necessidade de analgésico, mobilização e micção e os efeitos colaterais no pós-operatório foram registrados. As análises estatísticas foram realizadas usando o programa SPSS 15.0 e $p < 0,05$ foi considerado estatisticamente significativo. Os dados numéricos foram analisados com o teste-*t* e expressos como média ± DP. Os dados categóricos foram analisados com o teste do qui-quadrado e expressos como número de pacientes e porcentagem.
Resultados: Os dados demográficos foram semelhantes entre os grupos. Não houve diferenças em relação à dor, tempos até a primeira necessidade de analgésicos, primeira mobilização e primeira micção. A única diferença entre os dois grupos foi a incidência vômito. No Grupo II, 23% (n = 6) das pacientes apresentaram vômito durante as primeiras 24 horas de pós-operatório, em comparação com 0% no Grupo I ($p = 0,025$).
Conclusão: Para herniorrafia inguinal, a dose de 0,1 mg de MIT fornece analgesia comparável à dose de 0,4 mg, com uma incidência de vômito significativamente menor quando combinada com uma dose baixa de bupivacaína hiperbárica.

Introduction

Pain after inguinal hernia repair is described as moderate to severe and may be associated with prolonged hospital stay. Furthermore, in the literature there are some clues that suggest that inadequate postoperative pain management may be a risk factor for persistent chronic pain after inguinal hernia repair.[1] It is well known that the combination of intrathecal low dose local anesthetics with opioids produce a synergistic effect without prolonging motor block and therefore delaying discharge.[2] Intrathecal morphine (ITM) may be a good alternative for postoperative pain management with its long duration of spinal analgesia. However, the side effects such as nausea, vomiting, pruritus and late respiratory depression may be restraining its application. In several studies, it is suggested that lower doses of ITM produce good quality and long duration postoperative analgesia while reducing the incidence of side effects.[3–5]

The primary aim of this study was to compare the effects of two different doses of ITM in combination with low dose heavy bupivacaine on postoperative pain management in inguinal hernia repair surgery. The secondary aim was to compare the first mobilization and voiding times and side effects between the two groups.

Methods

After Institutional Ethical Committee approval and patients' written informed consent, 48 ASA physical status I-II patients, aged 18–65 years, undergoing elective unilateral open inguinal hernia repair surgery were prospectively enrolled in this randomized double-blinded study. Exclusion criteria included contraindications to spinal anesthesia, central or peripheral neuropathies, severe respiratory or cardiac diseases, chronic analgesic use and history of substance abuse or allergy to local anesthetics.

The study was recorded to www.clinicaltrials.gov with the registration number of NCT 02001948.

Patients were randomly assigned into two Groups I and II, according to a sealed envelope method. In Group I ($n = 22$), patients received 0.1 mg morphine with 7.5 mg heavy bupivacaine intrathecally and in Group II ($n = 26$), patients received 0.4 mg morphine with 7.5 mg heavy bupivacaine intrathecally.

After standard monitoring (electrocardiography, heart rate, pulse oximetry and noninvasive arterial blood pressure) an 18-gauge intravenous (iv) cannula was inserted at the forearm opposite to the surgical side and routine iv premedication (midazolam 0.03 mg/kg) was given.

Spinal anesthesia was performed using the midline approach. Patients were placed in the lateral decubitus position with the operational side down. After local infiltration with 2% lidocaine, a 25 gauge Quincke spinal needle (Spinocan®, B Braun Melsungen Ag, D-Melsungen) was inserted at the L2-3 or L3-4 interspace. On aspiration of clear cerebrospinal fluid, 7.5 mg of 0.5% heavy bupivacaine was administered in combination with the assigned morphine dose. The drugs were combined in saline, and a total of 2 mL was administered. An anesthesiologist blinded to the