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SCIENTIFIC ARTICLE

Subcostal transversus abdominis plane block can improve analgesia after laparoscopic cholecystectomy

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KEYWORDS

Subcostal block;
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Abstract

Background and goal of study: After laparoscopic cholecystectomy, patients have moderate pain in the early postoperative period. Some studies shown beneficial effects of subcostal transversus abdominis plane block on reducing this pain. Our goal was to investigate influence of subcostal transversus abdominis plane block on postoperative pain scores and opioid consumption.

Materials and methods: We have randomized 76 patients undergoing laparoscopic cholecystectomy to receive either subcostal transversus abdominis plane block ($n=38$) or standard postoperative analgesia ($n=38$). First group received bilateral ultrasound guided subcostal transversus abdominis plane block with 20 mL of 0.33% bupivacaine per side before operation and tramadol 1 mg.kg⁻¹ IV for pain breakthrough (≥ 6). Second group received after operation tramadol 1 mg.kg⁻¹/6 h as standard hospital analgesia protocol. Both groups received acetaminophen 1 g/8 h IV and metamizole 2.5 g/12 h. Pain at rest was recorded for each patient using NR scale (0–10) in period of 10 min, 30 min, 2 h, 4 h, 8 h, 12 h and 16 h after the surgery.

Results and discussion: We obtained no difference between groups according age, weight, intraoperative fentanyl consumption and duration of surgery. Subcostal transversus abdominis plane block significantly reduced postoperative pain scores compared to standard analgesia in all periods after surgery. Tramadol consumption was significantly lower in the subcostal transversus abdominis plane (24.29 ± 47.54 g) than in the standard analgesia group (270.2 ± 81.9 g) ($p=0.000$).

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PALAVRAS-CHAVE

Bloqueio subcostal;
Colecistectomia
laparoscópica;
Analgesia;
Anestesia regional

Conclusion: Our results show that subcostal transversus abdominis plane block can provide superior postoperative analgesia and reduction in opioid requirements after laparoscopic cholecystectomy.

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O bloqueio do plano transversal abdominal subcostal pode melhorar a analgesia após colecistectomia laparoscópica

Resumo

Justificativa e objetivo: Após a colecistectomia laparoscópica, os pacientes apresentam dor moderada no pós-operatório imediato. Alguns estudos mostraram efeitos benéficos do bloqueio do plano transversal abdominal subcostal na redução dessa dor. Nosso objetivo foi investigar a influência do bloqueio do plano transversal abdominal subcostal nos escores de dor no pós-operatório e no consumo de opioides.

Materiais e métodos: No total, 76 pacientes submetidos à colecistectomia laparoscópica foram randomizados para receber o bloqueio do plano transversal abdominal subcostal (n = 38) ou analgesia padrão no pós-operatório (n = 38). O primeiro grupo recebeu bloqueio do plano transversal abdominal subcostal bilateral guiado por ultrassom com 20 mL de bupivacaína a 0,33% em cada lado antes da operação e tramadol IV (1 mg.kg⁻¹) para controle da dor (≥ 6). O segundo grupo recebeu tramadol (1 mg.kg⁻¹/6 h) como protocolo padrão de analgesia hospitalar pós-cirurgia. Ambos os grupos receberam acetaminofeno IV (1 g/8 h) e dipirona (2,5 g/12 h). A dor em repouso foi registrada para cada paciente usando a escala NR (0-10) nos períodos de 10 min, 30 min, 2 h, 4 h, 8 h, 12 h e 16 h após a cirurgia.

Resultados e discussão: Não houve diferença entre os grupos em relação à idade, peso, consumo intraoperatório de fentanil e duração da cirurgia. O bloqueio do plano transversal abdominal subcostal reduziu significativamente o escore de dor no pós-operatório em comparação com a analgesia padrão em todos os períodos após a cirurgia. O consumo de tramadol foi significativamente menor no grupo bloqueio do plano transversal abdominal subcostal (24,29 ± 47,54 g) que no grupo analgesia padrão (270,2 ± 81,9 g) (p = 0,000).

Conclusão: Nossos resultados mostram que o bloqueio do plano transversal abdominal subcostal pode proporcionar analgesia superior no pós-operatório e redução da necessidade de opioides após colecistectomia laparoscópica.

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Introduction

In ambulatory surgery practice laparoscopic cholecystectomy is very common procedure with usually moderate intensity of pain in the early postoperative period. Although pain is lower than after open cholecystectomy it is still clearly present. Traditional opioid analgesia increases possibility of side effects like nausea, vomiting and sedation and postpone hospital discharge.¹ Different methods as intraperitoneal lavage or port site infiltration of local anesthetic were successfully used in the past years to decrease pain scores and opioid requirements.² Transversus abdominis plane (TAP) block has got a substantial role in postoperative analgesia after abdominal surgery because deposition of local anesthetics in transversus abdominis fascial plane can produce sensory block over the anterior abdominal wall from T7 to L1.³ Many clinical studies reported beneficial effects of TAP but results were mainly connected to lower

abdominal surgery.³⁻⁵ Since the major part of pain after laparoscopic cholecystectomy derives from abdominal wall incisions, some trials investigated TAP block as potential analgesic option. Some studies showed that TAP block can reduce opioid requirements and pain scores but the results were not conclusive enough because many differences in study designs.⁶⁻¹⁰

The ultrasound-guided subcostal transversus abdominis plane block (STAP), first described by Hebbard 2008, is a variation of TAP which successfully solve the problem of unreliable supraumbilical distribution of the block.¹¹ Results obtained in a few small studies showed significantly better analgesia after laparoscopic cholecystectomy compare to traditional opioid analgesia, port-site infiltration and standard TAP.^{2,12-14} Number of patients in this studies is not enough so new prospective studies is still necessary to resolve whether a STAP block is right analgesic choice after laparoscopic cholecystectomy. The goal

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