Rev Bras Anestesiol. 2016;66(1):44–49

REVISTA BRASILEIRA DE ANESTESIOLOGIA
Official Publication of the Brazilian Society of Anesthesiology
www.sba.com.br

SCIENTIFIC ARTICLE

Comparison of tramadol and lornoxicam in intravenous regional anesthesia: a randomized controlled trial

Hande Çelik[a], **Ruslan Abdullayev**[b,*], **Erkan Y. Akçaboy**[c], **Mustafa Baydar**[c], **Nermin Göğüş**[d]

[a] *Anesthesiology Department, Kocaeli Gölcük Necati Çelik Hospital, Kocaeli, Turkey*
[b] *Anesthesiology Department, Adiyaman University Research Hospital, Adiyaman, Turkey*
[c] *Anesthesiology Department, Ankara Numune Research Hospital , Ankara, Turkey*
[d] *Anesthesiology Department, Hitit University Research Hospital, Çorum, Turkey*

Received 15 June 2014; accepted 7 July 2014
Available online 29 March 2015

KEYWORDS
Intravenous regional anesthesia;
IVRA;
Prilocaine;
Tramadol;
Lornoxicam

Abstract
Background and objectives: Tourniquet pain is one of the major obstacles for intravenous regional anesthesia. We aimed to compare tramadol and lornoxicam used in intravenous regional anesthesia as regards their effects on the quality of anesthesia, tourniquet pain and postoperative pain as well.
Methods: After the ethics committee approval 51 patients of ASA physical status I–II aged 18–65 years were enrolled. The patients were divided into three groups. Group P ($n = 17$) received 3 mg/kg 0.5% prilocaine; group PT ($n = 17$) 3 mg/kg 0.5% prilocaine + 2 mL (100 mg) tramadol and group PL ($n = 17$) 3 mg/kg 0.5% prilocaine + 2 mL (8 mg) lornoxicam for intravenous regional anesthesia. Sensory and motor block onset and recovery times were noted, as well as tourniquet pains and postoperative analgesic consumptions.
Results: Sensory block onset times in the groups PT and PL were shorter, whereas the corresponding recovery times were longer than those in the group P. Motor block onset times in the groups PT and PL were shorter than that in the group P, whereas recovery time in the group PL was longer than those in the groups P and PT. Tourniquet pain onset time was shortest in the group P and longest in the group PL. There was no difference regarding tourniquet pain among the groups. Group PL displayed the lowest analgesic consumption postoperatively.
Conclusion: Adding tramadol and lornoxicam to prilocaine for intravenous regional anesthesia produces favorable effects on sensory and motor blockade. Postoperative analgesic consumption can be decreased by adding tramadol and lornoxicam to prilocaine in intravenous regional anesthesia.

* Corresponding author.
E-mail: ruslan_jnr@hotmail.com (R. Abdullayev).

http://dx.doi.org/10.1016/j.bjane.2014.07.013

PALAVRAS-CHAVE
Anestesia regional intravenosa;
IVRA;
Prilocaína;
Tramadol;
Lornoxicam

Comparação de tramadol e lornoxicam em anestesia regional por via intravenosa, um estudo randomizado e controlado

Resumo
Justificativa e objetivos: A dor relacionada ao torniquete é um dos maiores obstáculos para a anestesia regional intravenosa (ARIV). Nosso objetivo foi comparar tramadol e lornoxicam usados em ARIV em relação aos seus efeitos sobre a qualidade da anestesia, dor relacionada ao torniquete e dor no pós-operatório.
Métodos: Após a aprovação do Comitê de Ética, 51 pacientes com estado físico ASA I–II e idades entre 18–65 anos foram inscritos. Os pacientes foram divididos em três grupos. Grupo P (n = 17) recebeu 3 mg/kg de prilocaína a 0,5%; Grupo PT (n = 17) 3 mg/kg de prilocaína a 0,5% + 2 mL (100 mg) de tramadol e Grupo PL (n = 17) de 3 mg/kg de prilocaína a 0,5% + 2 mL (8 mg) de lornoxicam para ARIV. O início do bloqueio sensorial e motor e os tempos de recuperação foram registrados, bem como a dor relacionada ao torniquete e o consumo de analgésico no pós-operatório.
Resultados: Os tempos de início do bloqueio sensorial foram mais curtos nos grupos PT e PL, enquanto que os tempos de recuperação correspondentes foram mais longos que os do Grupo P. Os tempos de início do bloqueio motor nos grupos PT e PL foram menores que no Grupo P, enquanto que o tempo de recuperação do grupo PL foi maior que os dos grupos P e PT. O tempo para início da dor relacionada ao torniquete foi menor no Grupo P e maior no Grupo PL. Não houve diferença em relação à dor relacionada ao torniquete entre os grupos. O Grupo PL apresentou o menor consumo de analgésicos no pós-operatório.
Conclusão: A adição de tramadol e lornoxicam à prilocaína para ARIV produz efeitos favoráveis sobre o bloqueio sensorial e motor. O consumo de analgésicos no pós-operatório pode ser reduzido com a adição de tramadol e lornoxicam à prilocaína em ARIV.

Introduction

Intravenous regional anesthesia (IVRA), commonly named a Bier Block, has been introduced in 1908 by Karl August Bier.[1] Ease of application of the method, fast onset of anesthesia, lower cost compared with general anesthesia and no need for deep sedation makes the Bier Block a method of choice for surgical procedures on extremities lasting less than an hour.[2,3] IVRA can be used for emergency operations on extremities for the patients with full stomach. It has a success rate of 96%–100% for upper extremity and is a good alternative for peripheral nerve block.[4,5] Compared with general anesthesia IVRA shortens hospital length of stay, necessitates 30% less nurse care and 84% less drug need.[6]

Because of the high potential of systemic toxicity bupivacaine and etidocaine are not preferred for IVRA. Lidocaine and prilocaine are the most commonly used local anesthetics for this. Prilocaine metabolism is the fastest among all local anesthetics.

One of the most important factors preventing the use of IVRA is tourniquet pain. Many adjuvant drugs have been used to decrease the tourniquet pain, increase anesthesia quality and decrease postoperative pain. Among these are tramadol, ketorolac, lornoxicam, clonidine, dexamethasone, paracetamol.[7–9]

We aimed in our study to compare the effects of tramadol and lornoxicam added to prilocaine for IVRA for patients undergoing upper extremity surgery.

Methods

Fifty-one patients of ASA physical status I and II, aged 18–65 years old undergoing hand and wrist surgery (carpal tunnel release, tendon repair, phalanx fracture repair, cystic hygroma, dupuytren contracture repair) were enrolled in the study after clinical trials ethical committee approval (T.C. Ankara Valiliği İl Sağlık Müdürlüğü, 12.05.2009, n° 051920). The study was conducted in the Ankara Numune Research Hospital in 2009. Written informed consent was taken from all the patients.

Patients were premedicated by midazolam 0.15 mg/kg and atropine 0.01 mg/kg given intravenously from iv line opened on the antecubital side of the non-operative arm 5 mL/kg/h isotonic physiologic saline solution was started afterwards. In the operation room 24 gauge iv line was placed on the dorsal part of the arm that will undergo operation. Routine monitorization included non-invasive blood pressure (NIBP), electrocardiography (ECG) and peripheral oxygen saturation (SpO_2). Extremity that will undergo operation was elevated for 3 min before application of Esmarch bandage. After the application of bandage the proximal cuff of the double-cuffed tourniquet (Tourniquet 2800 ELC, UMB Medizintecknik, GmbH, Germany) was inflated 100 mmHg above the systolic arterial pressure of the same extremity (to at least 250 mmHg). Esmarch bandage was removed after the inflation of the tourniquet. Existence of the occlusion pressure was confirmed by cessation of the radial pulse and pulse oximetry trace.