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Use of Preoperative TAP – Block with Two Different Concentrations of Ropivacaine: A Comparison in the Perspective of an Opioid-Sparing Approach in Emergency Abdominal Surgery

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Use of Preoperative TAP - Block with Two Different Concentrations of Ropivacaine: A Comparison in the Perspective of an Opioid-Sparing Approach in Emergency Abdominal Surgery

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Abstract: Transversus abdominis plane (TAP) blocks can provide postoperative analgesia for a variety of surgical procedures. A lot of clinical studies have evaluated TAP block showing positive analgesic effects [1]. In the literature there are not many reports on the use of TAP - Block in abdominal surgery in emergency - urgency setting. We evaluated 12 patients divided into two groups (A, B) who underwent pre-operative TAP - Blocks with two different mixtures of local anesthetic: group A was administered the mixture with Ropivacaine 0.375% and adjuvants, while group B the mixture with Ropivacaine 0.45%, Mepivacaine 0.5% and adjuvants was administered. In group B there was a lower need for opioid administration both intraoperatively and postoperatively. Furthermore, in most cases pain control upon awakening was superior in group B compared to group A.

Keywords: TAP; TAP – Block; Abdominal surgery; Emergency setting

1. Introduction

Transversus abdominis plane (TAP) blocks can provide postoperative analgesia for a variety of surgical procedures. A lot of clinical studies have evaluated TAP block showing positive analgesic effects [1]. Multimodal opioid-sparing analgesia is a key component of the enhanced recovery after surgery (ERAS) protocol for the management of postoperative pain. Transversus abdominal plane (TAP) block has contributed to the implementation of this approach in several types of surgical procedures [2].

2. Materials and Methods

Twelve abdominal surgery patients who had the following characteristics were included in the study: emergency surgery, exploratory laparotomy surgery, awakening in the operating room, GCS on awakening >13. Patients who were unable to recover in the operating room were excluded. These patients were given general anesthesia with the administration of intravenous anaesthetics, Fentanyl at a dosage of 100 mcg to cover pain during orotracheal intubation and Rocuronium at a dosage of 1.2 mg/kg to perform IOT in rapid sequence. Six patients were selected in group A for whom a preoperative bilateral ultrasound-guided TAP - Block was performed with Ropivacaine 0.375% and adjuvants, at a volume of 20 ml per side, compared with 6 patients included in group B for whom a preoperative ultrasound-guided TAP - Block was performed with Ropivacaine 0.45% + Mepivacaine 0.5% and adjuvants. All patients received an analgesic starter with Paracetamol 1 g iv, with the exception of only one case which was not possible due to reported allergies. In this only case the analgesic starter was carried out through the administration of Clonidine 150 mcg intramuscularly.

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For each patient, the intensity of pain upon awakening and 24 hours after surgery was assessed using the NRS rating scale, the state of agitation upon awakening and 24 hours after

3. Objectives

In the literature there are not many reports on the use of TAP - Block in abdominal surgery in emergency - urgency setting. We therefore wanted to use this procedure in a different occasion than elective surgery, setting as a primary objective the saving of analgesic drugs (opiates and FANS) both during the maintenance of anesthesia and in the control of post-operative pain. The primary endpoints chosen were pain control during the maintenance of general anesthesia, evaluated through hemodynamic stability and the possible need for administration of opiate analgesic drugs, the sensation of pain upon awakening of the patient and the related state of agitation, evaluated through the NRS and RASS scales, pain control 24 hours after the end of the surgical procedure, evaluated through the NRS and RASS scales.

4. Results

In group A, in four out of six cases, the administration of opiates was necessary while maintaining general anesthesia (Fentanyl or Remifentanil) for optimal pain control, sedation and hemodynamics. In 4 out of six cases, the use of morphine was also necessary to control pain in the 24 hours following the operation. In 2 cases out of 6 the patients complained of pain upon awakening, while in only one case out of six was agitation noted. In group B, only one case required the use of opioids during maintenance, while the prescription of opioids/FANS was never necessary to control post-operative pain in the 24 hours following surgery. Furthermore, upon awakening in only one case out of six did the patient complain of mild pain (NRS 1).

Group A	**Awake NRS**	**Awake RASS**	**24h NRS**	**24h RASS**	**Opioids Mainten.**	**Opioids/FANS TAPO**
1	2	1	0	0	YES	YES
2	0	0	0	0	YES	NO
3	0	0	0	0	YES	YES
4	0	0	0	0	NO	YES
5	3	0	0	0	NO	NO
6	0	0	0	0	YES	YES
Group B	**Awake NRS**	**Awake RASS**	**24h NRS**	**24h RASS**	**Opioids Mainten.**	**Opioids/FANS TAPO**
1	0	0	0	0	NO	NO
2	0	0	0	0	NO	NO
3	0	0	0	0	NO	NO
4	0	0	0	0	NO	NO
5	1	0	0	0	YES	NO

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Group A	Awake NRS	Awake RASS	24h NRS	24h RASS	Opioids Mainten.	Opioids/FANS TAPO
6	0	0	0	0	NO	NO

5. Discussion

In the literature there are several reports on the use of this procedure both in colorectal surgery [2], in pelvic surgery [4], and in obstetric anesthesia, where it was concluded that the TAP-Block can be considered a safe and effective additional method for pain relief after cesarean delivery [3]. It has been demonstrated that pre-operative TAP - Block with a mixture of local anesthetic Ropivacaine 0.375% and adjuvants is useful in significantly reducing the use of opioid drugs and FANS both for intraoperative and post-operative pain control. However, in many cases, the use of Remifentanil during maintenance of general anesthesia and post-operative pain therapy with an elastomeric pump is often necessary [4]. In this work we studied the possibility of reducing, if not abolishing, the use of intra- and post-operative opioid drugs, with the exception of 100 mcg of Fentanyl necessary for the pain related to orotracheal intubation. It would be interesting to evaluate, on this type of patients, the benefits of opioid-sparing approach on the time of return of normal enteric activity and on hospitalization times, considering the negative effects of opioid drugs on intestinal functionality [5].

Abbreviations

The following abbreviations are used in this manuscript:

TAP	Transversus Abdominis Plane
NRS	Numeric Rating Scale
RASS	Richmond Agitation Sedation Scale
TAPO	Antalgic Post-Operative Therapy

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