Subarachnoid Analgesic Modalities Fentanyl-Bupivacaine and Bupivacaine in Surgical Interventions of Inferior Hemiabdomen

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Abstract

Objectives: To value the subarachnoid analgesic modalities fentanyl-bupivacaine and bupivacaine in surgical interventions of the inferior hemiabdomen.

Material and Methods: A prospective longitudinal analytical Study was carried out at the university Hospital “Manuel Ascunce Domenech” since January 2015 to December 2017. The universe was composed of 180 patients. A sample of 60 patients was selected using simple random probabilistic sampling distributed in two groups: A (Fentanyl-bupivacaine) and B (Bupivacaine) that met the inclusion criteria. The data were collected in the form on the basis of the investigation that allowed the preparation of a database in statistical package for social sciences. They were used in the analysis of univariate and multivariate techniques.

Results: The complications and adverse reactions and their probability of presentation in the group fentanyl-bupivacaine, which was higher, were drowsiness (3.5 times), arterial hypotension (2.8 times), pruritus (2.1 times), and Bradycardia (2.1 times), corroborated by the confidence interval. This group was 10 times more likely to have tolerable discomfort or no pain (OR = 10.2) than those treated with bupivacaine that presented moderate pain; 10 times more chance of analgesia greater than three hours (OR = 10.7) versus bupivacaine with analgesia of thirty minutes to three hours and 8 times more likely to receive good satisfaction (OR = 7.8).

Conclusions: The evaluation of the Postoperative pain and analgesia time were better in patients treated with fentanyl-bupivacaine which resulted in higher quality analgesia but predominated drowsiness, arterial hypotension, pruritus and bradycardia as adverse reactions.

Keywords: Postoperative Pain; Analgesia; Satisfaction; Adverse Reactions

Introduction

Postoperative pain, also considered a key vital sign, is a variant of acute pain; It is one of the worst treaties, being able to last hours or days, produces anxiety and anguish. It is produced by a hyperstimulation of the nociceptive pathways.

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Subarachnoid Analgesic Modalities Fentanyl-Bupivacaine and Bupivacaine in Surgical Interventions of Inferior Hemiabdomen

Postoperative pain control indicates the quality of health care provided to a patient. It is necessary to use strategies to assess their intensity and evaluate the quality of the treatment received [1,2] and the protocols for their treatment are advancing significantly today. However, it is reported that the prevalence of moderate to severe pain after surgical interventions is around 26.0% to 33.0% and severe pain between 8.0% and 13.0% [3].

Inadequate pain control leads to a persistent and disabling nociceptive phenomenon that causes suffering and dissatisfaction in patients and brings complications. The appropriate treatment is considered a relevant indicator of good clinical practice and a high quality of care. The current evidence shows that the correct control of acute postoperative pain facilitates recovery, which reduces hospital stay time, costs and also decreases the morbidity and mortality associated with care in a healthcare center [4,5]. The decrease in postoperative pain is the cornerstone of an appropriate evolution.

There is a wide variety of medications useful for the treatment and control of postoperative pain. The most practical recommendation is the Association of two analgesics with different mechanisms of action, which achieves a greater analgesia and also reduces the undesirable effects associated with the doses of some of the drugs [6,7].

The combination of fentanyl (potent narcotic analgesic of immediate action and short half-life) and bupivacaine, (local anesthetic with longer latency, 20 minutes, and longer duration between 3 and 9 hours) [8,9], takes advantage of the analgesic qualities of each one, ideal for transoperative the first and guarantee of postoperative analgesia the second, opioids are effective in the treatment of visceral pain and local anesthetics for the relief of somatic pain. The bupivacaine when combined with fentanyl at low doses, provides an analgesia of 90 minutes and in turn decreases the latency period of the bupivacaine with less frequent adverse reactions [10,11].

However, a large part of these patients are still treated inappropriately, so they experience unjustified suffering that increases the risk of postoperative complications [12-14] which motivates the realization of this study that aims to determine in two groups of patients postoperative complications, the evaluation of postoperative pain, the duration of analgesia and the satisfaction perceived by the patient with the modality of analgesia used as a contribution to analgesia During the postoperative, to achieve comfort and decreased complications in surgical patients.

Material and Methods

The research constituted a prospective, longitudinal, analytical study with the objective of evaluating the subarachnoid analgesic modalities fentanyl-bupivacaine and bupivacaine in surgical interventions of the inferior hemiabdomen in the Hospital University "Manuel Ascunce Domenech" from January 2015 to December 2017. The universe was composed of 180 patients. A sample of 60 patients distributed in two groups (A and B) with different therapeutic modalities and met the inclusion criteria were selected by simple random probabilistic sampling. Group membership was randomly determined. The sample size was calculated with a safety level of 95%, precision of 3%, proportion of 5% and expected proportion of losses of 15%.

The therapeutic modalities were

- Group A: bupivacaine 0.5% hyperbaric 12.5 mg more fentanyl 25 mcg.
- Group B: bupivacaine 0.5% hyperbaric 15 mg.

Statistical proportions contrast techniques were applied using $X^2$ with a reliability level of 95%. The determination of Odds ratio, confidence interval and statistical significance was employed.

Results

Table 1 exposes the complications and adverse reactions encountered by groups, and the probability of presentation of them and were given by drowsiness, arterial hypotension, pruritus, and bradycardia. In this way it was observed: it is 3.5 times more likely that the patient of the group A who was given fentanyl-bupivacaine have drowsiness in relation to the patients of group B who were administered
bupivacaine corroborated by the confidence interval 2,287 - 5,687. It is 2.8 times more likely that the patient of group A has arterial hypotension in relation to the patients of group B corroborated by the confidence interval 2,275 - 4,395. It is 2.1 times more likely that the patient of group A has pruritus in relation to the patients of group B corroborated by the confidence interval 2,745 - 5,245. It is 2.1 times more likely that the patient of group A has bradycardia in relation to the patients of group B corroborated by the confidence interval 2,895 - 7,271.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
<th>OR (A/B)</th>
<th>IC95%</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drowsiness</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>3,500</td>
<td>2,287 - 5,687</td>
<td>8,50E-10</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>0,357</td>
<td>0,124 - 1,324</td>
<td>2,36E-01</td>
</tr>
<tr>
<td>Hypotension</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>2,800</td>
<td>2,275 - 4,395</td>
<td>2,36E-10</td>
</tr>
<tr>
<td>Itching</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2,154</td>
<td>2,745 - 5,245</td>
<td>6,19E-11</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>2,154</td>
<td>2,895 - 7,271</td>
<td>6,19E-11</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0,483</td>
<td>0,247 - 1,112</td>
<td>8,44E-02</td>
</tr>
</tbody>
</table>

**Table 1:** Complications and adverse effects encountered by groups.

*Source: Medical history.*

Patients treated with fentanyl-bupivacaine were approximately 10 times more likely to have tolerable discomfort or no pain than those treated with bupivacaine (OR = 10.2) who referred to moderate pain as shown in table 2 on Pain assessment.

<table>
<thead>
<tr>
<th>Pain Assessment</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
<td>6*</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Tolerable annoyance</td>
<td>21*</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Moderate pain</td>
<td>2</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Intense pain</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60</td>
</tr>
</tbody>
</table>

OR = 10.286 IC95% = 5,924 - 19,745 sig = 1,03E-43

**Table 2:** Pain assessment.

*Source: Medical history.*

Table 3 referred to the time duration of analgesia showed patients treated with fentanyl-bupivacaine were 10 times more likely to have analgesia of more than three hours than those treated with bupivacaine (OR = 10.7) that had Analgesia 30 minutes to 3 hours.

<table>
<thead>
<tr>
<th>Duration time of analgesia</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30 minutes</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>30 minutes-3 hours</td>
<td>5</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>More than three hours</td>
<td>23*</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>26</td>
<td>56</td>
</tr>
</tbody>
</table>

OR = 10,796 IC95% = 3,792 - 22,274 sig = 4,96E-12

**Table 3:** Analgesia duration time.

*Source: Medical history.*

**Citation:** Carlos de la Paz Estrada, *et al.* "Subarachnoid Analgesic Modalities Fentanyl-Bupivacaine and Bupivacaine in Surgical Interventions of Inferior Hemiabdomen". *EC Anaesthesia* 5.6 (2019): 155-160.
The perceived satisfaction with postoperative analgesia appears in table 4 where patients treated with fentanyl-bupivacaine were approximately eight times more likely to have good perceived satisfaction than those treated with Bupivacaine (OR = 7.8).

<table>
<thead>
<tr>
<th>Perceived satisfaction</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nº</td>
<td>Nº</td>
<td>%</td>
<td>Nº</td>
</tr>
<tr>
<td>Good</td>
<td>27</td>
<td>45,0</td>
<td>16</td>
</tr>
<tr>
<td>Regular</td>
<td>2</td>
<td>3,3</td>
<td>12</td>
</tr>
<tr>
<td>Bad</td>
<td>1</td>
<td>1,7</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>50,0</td>
<td>30</td>
</tr>
</tbody>
</table>

\[ \text{OR} = 7,875 \text{ IC95\% = 2,854}-18,487 \text{ sig = 1,01E-43} \]

Table 4: Perceived satisfaction with postoperative analgesia.

Source: Medical history.

Discussion

The complications and adverse reactions in this research coincide with the report of Fernández Ramos., et al. [15] in his study on fentanyl intradural in elderly people, when he points out drowsiness and bradycardia was found in his study groups in 55 and 46 patients respectively, and in several of them, pruritus and hypotension were observed. These authors point out that in no patient were serious complications such as respiratory depression and urine retention, and the effects occurred as the dose of opiate increased. There was no pruritus in the group of patients in whom fentanyl was not employed, however almost all of the patients in whom high doses were applied showed this effect.

There was correspondence with other authors. Miyoshi., et al. [16] report the complications and adverse reactions in his series of patients treated with fentanyl were nausea (25.3%), drowsiness (41.7%) and constipation (8.3%).

Singa., et al. [17] they point out that in the treatment with fentanyl of pain above 4 in the EVA, drowsiness may appear from 30 - 50%. Kang., et al. [18] report that drowsiness can be prevented by lowering the dose of medication. Unlu [19] demonstrates in his research that opioid treatment does not affect the cognitive process despite the fact that it can or will sleep in some patients. Li., et al. [20] they report few adverse reactions in their series of patients treated with the combination of fentanyl and bupivacaine.

González Pérez., et al. [21] report a study compared between bupivacaine and bupivacaine-fentanyl in surgery for hip fracture in elderly and obtains greater hemodynamic stability in the group of fentanyl with a greater number of episodes Hypotensive in the Bupivacaine, without Coincide with our results in which the group fentanyl-bupivacaine presented greater probability of arterial hypotension and bradycardia since most opioids decrease the sympathetic tone and increase the vagal tone [22].

Part of the analgesic effect of opiates is done through the activation of serotonergic neurons. It has been observed that fentanyl causes a regulation to the high dose dependent on receptors 5-HT1A at the level of hippocampus and rat brain amygdala. It is pointed out in the literature that the stimulation of the receptors 5-HT1A presents analgesic effect at the central level [23-25]. These approaches coincide with our results in which patients with fentanyl-Bupivacaine Association presented lower postoperative pain and increased analgesia time.

The Association of Greater time and quality of postoperative analgesia results in a greater subjective satisfaction on the part of the patient, who is benefited by the application of increasingly effective therapeutic schemes, as was demonstrated in the study, Coincident with Hefni., et al. [26], Graudins., et al. [27] and Adamou., et al. [28] which indicate subjective satisfaction in patients treated with opioids for the control of pain.

Citation: Carlos de la Paz Estrada., et al. “Subarachnoid Analgesic Modalities Fentanyl-Bupivacaine and Bupivacaine in Surgical Interventions of Inferior Hemiabdomen”. EC.Anesthesia 5.6 (2019): 155-160.
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Conclusion

We conclude that the fentanyl-bupivacaine association resulted in higher quality analgesia than bupivacaine in lower hemiabdomen interventions with better results in relation to analgesia time and postoperative pain assessment. As well as in the presence of complications and adverse reactions was higher in the group fentanyl-bupivacaine with predominance of drowsiness, arterial hypotension, pruritus and bradycardia.

Bibliography


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