Methods of postoperative analgesia - administration of epidural bupivacaine in patients with colon cancer undergoing surgery

MAGDALENA DIACONU¹, C.C GEORGESCU², M ŢĂNŢU³

1. Craiova Emergency County Hospital,
2. University of Medicine and Pharmacy of Craiova,
3. Pitesti Emergency County Hospital

ABSTRACT: Colon cancer is a disease in Romania whose incidence is increasing in recent years. The purpose of this paper is to present a modern management in the treatment of postoperative pain in patients with colon cancer undergoing surgery without influencing postoperative morbidity and mortality. It is necessary to introduce new approaches for colon cancer in terms of surgical treatment, and preoperative and postoperative care of the patient. Postoperative pain management is very important because it influences, on the one hand the development and recovery of the patient, but on the other hand, chronic pain may occur as a side effect to surgery [1, 2]. Pain assessment was performed, postoperatively by using dimensional pain assessment method, that is visual analog scale (VAS) whereas sedation assessment performed postoperatively, after the patients have received benzodiazepines and opioids during general anesthesia was performed using the Ramsay score.

KEYWORDS: pain, analgesia, VAS scale, Ramsay score.

Introduction

The purpose of this paper is to present a modern treatment of postoperative pain management in patients with colon cancer undergoing surgery without influencing postoperative morbidity and mortality. Moreover, it is illustrated a new and effective interventional surgical approach, as well as all pre-and postoperative measures so as to ensure a quick recovery of the operated patient with decreasing hospitalization period and costs, bringing benefits to patients’ welfare by improving prognosis and reducing postoperative complications [3, 4, 5].

Colon cancer in Romania is a disease whose incidence has been increasing in recent years. The 6th and 7th decades of life is the culmination of colon cancer, although it was diagnosed a large number of patients aged over 80.

Whereas a few years ago, because of associated pathology (cardiac, pulmonary, renal, etc.) and because patients are elderly and mortality, with morbidity, two factors that should not be neglected, general anesthesia was in a fairly large percentage contraindicated, the invention of anesthesia with rapid onset and short duration of action or even of epidural anesthesia allows the execution of extensive surgery.

It is necessary to introduce new approaches for colon cancer in terms of surgical treatment, as well as preoperative and postoperative care of the patient.

The body's response to surgical stress should be prioritized in postoperative recovery, as there may be a prolonged period of wound healing and inadequate painkiller treatment can activate sympathetic-adrenergic system, leading to myocardial ischemia, and even to myocardial infarction [5, 6].

In addition to appropriate painkiller treatment we should corroborate many aspects, so that, together, to lead to a rapid recovery, a goal pursued after any surgery. These issues, in patients undergoing surgery for colon cancer are: to restore transit (very important), to swift resumption of liquid and solid intake, and also to suppress the probe of the upper gastrointestinal suction, not forgetting the patient’s mobilization. Besides rapid recovery, it also reduces the length of stay, thus decreasing the costs.

Applying this protocol requires close cooperation between surgeon, anesthetist, nurses and even patients, the latter having an important role in the efficiency of the program.

This protocol, which applies to patients with uncomplicated colon cancer includes these principles, the purpose being to shorten the period of hospitalization, a faster reintegration into society of these patients, with lower costs and without modification of postoperative morbidity and mortality.

Postoperative pain management is very important because it influences, on the one hand
the development and recovery of the patient, but on the other hand, chronic pain may occur as side effect to surgery [1, 2].

The pain is transmitted to the central and peripheral routes. Once released, it causes tissue damage; it changes in somatosensitive system and increases the response capacity of the two transmission routes: central and peripheral. Therefore, it is better to prevent these consequences, than to start treatment after initiating this cascade of events [7].

Preventive analgesia is based on the following concept: blocking the neural pathways before or during the implementation of injuries, and reducing or eliminating hyper excitability of these neural pathways [1, 8].

**Study objectives:**
- analysis of preoperative initiation of epidural administration of Bupivcaine;
- the possibility of reducing postoperative pain;
- the decreased of need for analgesics;
- early nasal-gastric tube removal;
- early suppression of the catheter;
- early oral nutrition;
- early mobilization.

**Materials and methods**

After obtaining the patient’s consent and Ethics Committee’s approval, we conducted a study on 64 patients, divided as follows:

- Group A: 32 patients who received only general anesthesia;
- Group B: 32 patients who received epidural anesthesia and general anesthesia.

All patients had uncomplicated colon cancer, they have signed the consent to participate in the study and were classified ASA II and III. For all patients it was monitored the degree of pain (VAS), the level of sedation (using Ramsay score), the rapid resumption of intestinal transit, the early nasal-gastric tube removal, the oral nutrition and early mobilization, the length of hospital stay.

Analgesia was performed with Paracetamol injection 15 mg / kg + 2.5 mg metamizol sodium (Algifen), injected at every eight hours, and as a reserve it was used Pethidine 25-50 mg when VAS> 60mm.

Sedation was performed with Midazolam 2-3 mg injection i.v.

**Statistical processing**

We used two kinds of variables: categorical and continuous and statistically speaking, a p-value <0.05 was termed as significant.

Categorical variables were represented as numbers using the Fisher test. Continuous variables were represented using Student’s t test, by comparing them, and were then interpreted and presented as an average + SD.

For comparison (quantitative and qualitative variables) we used the Student test and chi2.

**Results**

Determination of static and dynamic VAS score and of Ramsay score - both static and dynamic VAS score were measured over a period of 24 hours. The first measurement was done after 2 hours postoperatively. The Ramsay score was also measured, but over a period of 12 hours.

It was observed that static and dynamic VAS score had a higher rate in patients in group A compared to patients in group B, so patients who received epidural anesthesia had lower VAS scores than patients who received only general anesthesia (Table 1).

**Table 1. Comparison of static and dynamic VAS scores recorded in the two groups of patients.**

<table>
<thead>
<tr>
<th>The moment of measurement</th>
<th>Group A</th>
<th>Group B</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Static and dynamic VAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 hours</td>
<td>52%</td>
<td>48%</td>
<td>&gt;0,01</td>
</tr>
<tr>
<td>6 hours</td>
<td>62%</td>
<td>38%</td>
<td>&gt;0,04</td>
</tr>
<tr>
<td>10 hours</td>
<td>67%</td>
<td>33%</td>
<td>&gt;0,04</td>
</tr>
<tr>
<td>14 hours</td>
<td>65%</td>
<td>35%</td>
<td>&gt;0,04</td>
</tr>
<tr>
<td>18 hours</td>
<td>61%</td>
<td>39%</td>
<td>&gt;0,04</td>
</tr>
<tr>
<td>24 hours</td>
<td>51%</td>
<td>49%</td>
<td>&gt;0,01</td>
</tr>
</tbody>
</table>

![Fig.1Comparison of static and dynamic VAS scores recorded in the two groups of patients](image-url)
It is noted that the static and dynamic VAS score measured at 2 hours is close to the static and dynamic VAS score measured at 24 hours. There is an explanation and that is that after 2 hours postoperatively there are still residual effects and a degree of sedation, due to general anesthesia (measured by Ramsay score) and after 24 hours the pain assessment score decreased.

Ramsay sedation score was slightly higher in patients who received only general anesthesia than to patients who received epidural anesthesia, because epidural anesthesia decreases the need for intravenous anesthesia (opioids, cleaning) (Table 2).

<table>
<thead>
<tr>
<th>The moment of measurement by Ramsay score</th>
<th>Group A</th>
<th>Group B</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours</td>
<td>79%</td>
<td>21%</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>4 hours</td>
<td>73%</td>
<td>27%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>8 hours</td>
<td>56%</td>
<td>44%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>12 hours</td>
<td>51%</td>
<td>49%</td>
<td>NS</td>
</tr>
</tbody>
</table>

Discussion

Epidural anesthesia controls very well acute postoperative pain.

Surgical wound causes inflammation, which initiates the release of mediators and which maintain postoperatively central sensitivity, which is caused and increased during surgery by painful stimuli.

Nerve tissues and peripheral structures are damaged due to the incision, and it stimulates peripheral nociceptors, injures certain cells, releasing mediators and thus produces a local inflammatory reaction. Subsequently, there is a reduction of the threshold that activates the local nociceptors = primary hyperalgesia [9]. Almost at the same time, at the level of the operator scar, secondary hyperalgesia occurs, increasing excitability of central neurons, namely the neurons in the posterior horn of the spinal cord (9, 10). At the level of the posterior horn of the spinal cord, in addition to the phenomenon of neuroplasticity it may occur other two phenomena ie central sensitization and reduction of descending inhibition, very important being the existence of the second neuron of the nociceptive pathway at this level, which contains receptors and NMDA, and which, enabled, triggers central sensitization [10, 11].

It can be concluded that, at present, inadequate analgesia is a situation common in ICU. Given this, it is necessary to implement the modern principles of pain management in the intensive care units. Acute pain should be considered as the fifth vital sign observed in the postoperative period.

The monitoring of the acute pain is further standardized by each ITA service with respect to the following steps: identification of pain, assessment of pain intensity by means of scales, scoring in the observation chart, evaluating concomitant factors (distress, anxiety), establishing therapeutic remit and objectives; implementation of the treatment plan; pain reevaluation, continuation of the treatment algorithm until achieving the proposed objectives, establishing the time limit until the pain revaluation [12, 13].

Thus far, worldwide, postoperative pain is given special attention, analgesia and sedation becoming an essential component of critical patient management [12, 13].

Conclusions

1. Analgesia and sedation are very important components in the management of critically ill patient.
2. It was observed that static and dynamic VAS score had a higher rate in patients in group A compared to patients in group B, so patients who received epidural anesthesia had lower VAS scores than patients who received only general anesthesia.
3. Ramsay sedation score was slightly higher in patients who received only general anesthesia than to patients who received epidural anesthesia, because epidural anesthesia decreases the need of intravenous anesthetics (opioids, cleaning).

References


Correspondence Address: Magdalena Diaconu, Emergency County Hospital Craiova, str. Tabaci, nr. 1, 200642; e-mail: diaconumagda@yahoo.com