Combined general and epidural anaesthesia versus general anaesthesia for radical cystectomy

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SUMMARY: The basic objective of the study is to present the effects of two types of anesthesia, general and combined general and epidural, on intraoperative bleeding and to present the effect of epidural analgesia during the postoperative period in radical cystectomy. Subjects who received general and epidural anesthesia had on the average 28.5% less bleeding than those who only had general anesthesia. Patients who received postoperative epidural analgesia had statistically significantly better analgesia during the postoperative period than those who were administered Tramadol intramuscularly.

Key words: anaesthesia, epidural, general, bleeding, tramadol, analgesia

INTRODUCTION

Radical cystectomy is an extensive surgical procedure which is performed primarily in older patients. Surgery is accompanied by numerous perioperative complications, as well as by possible extensive intraoperative blood loss that the anesthesiologist must detect in time and compensate for.1 Proper postoperative analgesia is important for full patient recuperation and postoperative comfort.

Postoperative analgesia is most frequently achieved through intravenous and intramuscular administration of analgesics or through use of epidural analgesics. If during surgery epidural anesthesia using an epidural catheter is employed, then the same catheter can be used during the postoperative period for administering epidural analgesia. In administering epidural analgesia there is a list of combinations of drugs that can be used in achieving analgesia.2 These are most frequently combinations of opiates and local anesthetics in different proportions and concentrations. Their use can be intermittent or continuous, using a pump or patient controlled.3 Epidural anesthesia and analgesia are very widely used anesthetic techniques for older patients as it has been demonstrated in many studies that is reduces intraoperative blood loss, perioperative cardiac ischemic events, post-operative hypoxic episodes and arterial and venous thrombosis.4

OBJECTIVE OF STUDY

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MATERIALS AND METHODS

50 patients who had had radical cystectomy and ileal conduit were divided into two groups according to the type of anesthesia they received. Group 1 (25 patients) received general anesthesia, while Group 2 (25 patients) received combined general and epidural anesthesia. Anesthetic and surgical procedure was standardized for all patients. Introduction to anesthesia was performed with propofol 2mg/kg i.v. Pancuronium 0.08 mg/kg was used for intubation.

Anesthesia was maintained with 60% nitrogen oxide in oxygen, fentanyl 0.005 mg/kg and isoflurane 0.4%. All patients were ventilated to maintain carbon dioxide at around 35 mmHg. All patients were prostrate on the operating table and had a nasogastric probe introduced, with adequate compensation of blood and fluid loss. Beside general anesthesia patients in Group 2 also received epidural anesthesia through an epidural catheter. Protocol comprised the use of Fentanyl 0.1 mg plus 15 ml of Bupivacaine 0.25% in bolus, after which a syringe pump (50ml) was used to administer continuously 2 ml/h of a solution of 5 ml Fentanyl, 10 ml Bupivacain 0.5% and 35 ml of NaCl 0.9%.

In Group 2 the administration of this solution was continued at the same rate following surgery with the objective of maintaining epidural analgesia, while in Group 1
Tramadol was administered in a dose of 100 mg every 6 hours i.m., commencing with the moment that the patient left the operating room. After surgery reversal of the remaining neuromuscular block was performed with 1.5 mg of neostigmine and 0.75 mg atropine i.v. and once satisfactory breathing was established the endotracheal tube was removed.

During surgery and in the early postoperative period (in the first 6 hours) Ringer lactate i.v. was used. All patients were sent to intensive care following surgery. Arterial pressure, heart frequency and breathing frequency were recorded every 30 minutes. Pain intensity was measured using the 10 cm VAS (visual analogue scale; 0=no pain to 10=very pronounced pain) at 0, 2, 4, 6 and 12 h after surgery.

RESULTS

The average age, body weight and height by groups are presented in Table 1. There is no statistically significant difference between groups (p>0.05) in terms of age, body weight and height of participants. (Table 1)

Chart 1 presents the amount of bleeding according to the type of anesthesia used. It can be seen that there is statistically significantly (p<0.05) lower amount of blood loss in Group 2 compared to Group 1. In Group 1 average blood loss amounted to 1230±303 ml, while in Group 2 the loss of blood amounted to 880±192 ml. (Chart 1)

Chart 2 presents the values of the VAS scale in participants in Groups 1 and 2 according to time recorded (0h, 2h, 4h, 6h and 12h following surgery). It can be seen that there is far better control of analgesia in Group 2, as in the first 12 hours following surgery there is complete absence of pain, while in computing the VAS scale after 12 hours following surgery, pain appears in minimal intensities. In periods from 2 hours to 12 hours following surgery there is a statistically significant difference in the intensity of pain according to the VAS scale between these two groups of participants (p<0.05). In Group 2 the pain is more pronounced and ranges on the average around VAS 4. (Chart 2)

DISCUSSION:

Intraoperative bleeding and pain accompany significant surgical procedures such as radical cystectomy. Our research indicates that there is a positive effect of epidural anesthesia both in terms of blood loss during surgery and in postoperative sensation of pain.

Reduced intraoperative bleeding under conditions of epidural anesthesia is also noted by other authors who point to its advantages in operations that are accompanied by significant blood loss. This is associated with greater cardiovascular stability during surgery. In our research participants who received epidural anesthesia had on the average 28.5% less bleeding compared to participants who only received general anesthesia.

Beside the reduction in bleeding, epidural anesthesia and postoperative epidural analgesia proved far better in controlling postoperative pain compared to intramuscular administration of Tramadol. Immediately following surgery the difference in the intensity of pain between the two groups of participants is not very great as analgesia administered intravenously intraoperatively is probably still acting.

The difference becomes significant as of the second hour following surgery when the effect of intravenously administered fentanyl gradually subsides, while in Group

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>BASIC CHARACTERISTICS OF PARTICIPANTS PER GROUP</th>
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<tbody>
<tr>
<td></td>
<td>Group 1, n=25</td>
</tr>
<tr>
<td>Age years</td>
<td>58.82</td>
</tr>
<tr>
<td>Weight kg</td>
<td>74.69</td>
</tr>
</tbody>
</table>
2 epidural analgesia still continues. Tramadol cannot achieve effect at a sufficient rate. Continuous use of epidural analgesia through an epidural catheter is a technique of choice in all cases of extensive abdominal surgery.

**CONCLUSION:**

Participants who received general and epidural anesthesia had on the average 28.5% less blood loss than those who only received general anesthesia. Patients who received epidural analgesia after surgery had statistically significantly better postoperative analgesia than those who received it intravenously.

**SUMMARY**

*KOMBINOVANA OPŠTA I EPIDURALNA ANESTEZIJA NASUPROT OPŠTE ANESTEZIJE KOD RADIKALNE CISTEKTOMIJE*

Osnovni cilj studije je da prikaže uticaj dve vrste anestezije, opšte i kombinovane opšte i epiduralne, na intraoperativno krvarenje i da prikaže efekte epiduralne analgezije u postoperativnom periodu kod radikalne cistektomije. Ispitani koji su primili opštu i epiduralnu anesteziju su imali prosečno za 28.5% manje krvarenje od onih koji su primili samo opštu anesteziju. Bolesnici koji su primili epiduralnu analgeziju postoperativno imali su u postoperativnom periodu statistički značajno bolju analgeziju od onih koji su je primali Tramadol intramuskułarno.

Ključne reči: anestezija, epidural, generalna, krvarenje, tramadol, analgezija

**BIBLIOGRAPHY**


