

EFFICACY ASSESSMENT OF THE DIFFERENT METHODS OF POSTOPERATIVE PAIN MANAGEMENT IN PATIENTS OPERATED ON RECTAL CANCER

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Summary: The research deals with the study of respiratory function in adequate postoperative pain management of patients operated on rectal cancer. 120 patients (age range 45-69) were observed during the research. The patients were divided in II groups. I group (=30) was given multicomponent IV analgesia (propofol+fentanyl) with total muscle relaxation (atracurium besylate), assisted ventilation and postoperative opiate painkilling. II group (n=60) was given monosegmental spinal and epidural anesthesia followed by induction (propofol+atracurium besylate), assisted ventilation and postoperative epidural analgesia with ropivacaine. The results indicate the advantage of epidural analgesia with ropivacaine, which provides better psychological and emotional background, prevents negative pulmonary manifestations and facilitates fast and comfortable intestinal peristalsis resumption.

Key words: ropivacaine, postoperative pain, respiratory function, rectal cancer

Introduction

A small number of publications are dedicated to the problem of anesthetic supply in oncology in Ukraine. That is why the problem of anesthetic supply of surgical interventions on rectal cancer and provision of the adequate pain management in the early postoperative period is important (Osipova et al. 2008, Horlocker et al. 2003). In recent years anesthesiologists have demonstrated an increased interest in regional anesthesia (Green et al. 2010). This can be explained, first of all, by the fact that the fundamental examinations of the recent years have proved that general anesthesia neutralizing the perception of pain does not always block the flow of nociceptive impulses at the segmental level (Lisnyi 2013).

Estimation of the indices of the functions of external respiration is usually done to estimate the objective condition of the apparatus of external respiration, patient's respiratory reserves, the quality of the airway conductance at different levels, efficiency of the medicament remedies, etc. At the same time spirometry may objectively assess the adequacy of postoperative pain management while performing standard respiratory maneuvers (Lee, Kim 2000). This examination studies the main indices of the function of the external respiration – functionally vital capacity of lungs (FVC) and forced expiratory volume 1-second (FEV1) aiming at the additional instrumental objective assessment of the adequacy of the postoperative analgesia of the patients operated under the conditions of different pain management and different types of postoperative pain management.

Aim of research

The aim is to study the indices of the external respiration in the patients operated on for cancer of the rectum under the conditions of the combined spinal and epidural anesthesia in the early and late postoperative periods, to assess the quality and efficiency of postoperative pain management.

Materials and Methods

120 patients with cancer of the rectum were under our observation. Among them 72 (60%) were men and 48 (40%) – women. Patients' age was from 45 to 69 years. Patients were randomly divided into 2 groups. The patients of group I (n=30) were injected intravenous polycomponent pain relief (propofol+fentanyl) under the conditions of the total muscle relaxation (atracurium besylate) and assisted lung ventilation (ALV), but postoperative opiate painkilling. Patients of group II (n=60) were injected monosegmental spinal and epidural anesthesia with the induction of anesthesia (propofol+ atracurium besylate) being performed and supported under the conditions of assisted lung ventilation, and epidural analgesia with ropivacaine solution in the postoperative period.

For the purpose of postoperative pain relief the patients of group I were prescribed intramuscular injection of omnopon ZN - 1 ml every 8 hours and intramuscular injection of dexketoprofen in the dose of 50 mg every 8 hours starting from the 4th day. Postoperative pain management of the patients of group II was ensured by the epidural

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automated continuous injection of 0,2 % ropivacaine solution at the rate of 8ml/h, and during the period of 4-5 days – fractional injection of ropivacaine in the dose of 14 ml every 8 hours. Observations and algometry control was conducted during the first 5 days of the postoperative period. Examinations were conducted by means of the digital computerized spiograph of “SpiroLab” (Italy) expert-class in the preoperative period to identify the initial data and at the end of 1,2,3 and 5th day – after surgical interference. All measurements were taken in the patients’ standard position. To compare obtained indices with the standard ones 30 persons with the same age, gender and anthropometric data as the patients under observation were additionally examined.

Results and Discussion

Medians of the FVC initial values in the patients of three compared groups did not differ between each other in 95% confidential interval according to the Kruskal-Wallis test (test statistics 2,68, $P>0,05$, see table 1). That is, groups of the patients were correlated with each other by the forced vital capacity of lungs in the initial phase of the examination. Comparing dynamics of FVC values obtained in the initial (preoperative) test and in a one day after surgical interference a significant statistically probable decrease ($p<0,05$), (sign test: $ST=6,65$; $P=3,01E-11$) with the decreasing median equaled to 0,6 (0,5; 0,75) l. was detected in the patients of group I. During the same correlation insignificant but statistically probable decrease of FVC (sign test: $ST=6,93$; $P=4,25E-12$) which median equaled to 0,3 (0,2; 0,45) l was detected in the patients of group II. Comparing FVC medians in the groups under observation it was identified that that on the first day the index ($P=0,000011$) appeared to be significantly higher in the patients of group II that is explained by better quality of epidural pain management and the absence of sedative effect of opiate analgesics. At the end of the second and third days of observation the previous tendency remained the same: the indices of the forced vital capacity of lungs in the patients of group II were significantly, statistically and probably higher. This fact proves the availability of the effective pain management remedy allowing the patients operated on extensive hollow highly traumatic surgery to perform active respiratory maneuvers (Rigg et al. 2002). At the end of the 5th day of the early postoperative period we recorded significantly higher FVC values in the patients of group II whose postoperative pain management was ensured by epidural ropivacaine injection. Herein, the obtained indices on the 5th day did not statistically and probably differ from the initial ones in the patients of both groups.

Thus, considering the obtained results we can affirm that the prolonged epidural anesthesia in postoperative period ensures the possibility to perform active breath tests as it totally eliminates postoperative pain, which is crucial for patients (Nogueira, Sakata 2012). However, support of pain management by combination of opiate analgesics and NSAID (dexketoprofen) demonstrates lower analgesic potential since all obtained values of the forced vital capacity of lungs during the first 5 days after surgical interference appear to be statistically and probably lower.

Conclusions

Combined spinal and epidural anesthesia with intraoperative sedation and assisted lung ventilation ensures an adequate intraoperative painkilling in surgical treatment of rectal cancer.

Prolonged epidural analgesia in postoperative period ensures the performance of active breath tests as it completely eliminates the postoperative pain.

Pain management combination of opiate analgesics and NSAID (dexketoprofen) shows lower analgesic potential considering the values of forced vital capacity of lungs during the first 5 days.

Prolonged epidural analgesia in the postoperative period provides better psychological and emotional background, prevents negative pulmonary manifestations and facilitates fast and comfortable intestinal peristalsis resumption.

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