

## **Regional Postoperative Anesthesia, Which Is Common In Operating Blocks**

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### **Abstract**

Limiting the surgical stress response is considered one of the main goals of anesthesia and postoperative intensive care. The purpose of the study was to assess the severity of neuroendocrine, metabolic and inflammatory changes after abdominal surgery, depending on the type of anesthesia. In 260 patients, divided into groups depending on the type of anesthesia (total intravenous anesthesia alone, in combination with epidural or spinal anesthesia), the concentrations of cortisol, glucose, lactate, cytokines, as well as urinary nitrogen excretion and the intensity of postoperative pain syndrome were studied.

**Keywords:** anesthesia options, abdominal surgeries, method, postoperative pain relief.

### **Introduction**

*In recent decades, ideas have emerged about the surgical stress response to surgery as a pathological process, which is the leading cause of many postoperative complications [1]. The structure of the stress response consists mainly of changes of a neuroendocrine (activation of the hypothalamus-pituitary-adrenal system), metabolic (catabolism, insulin resistance) and immunological (immune activation, systemic inflammatory response) nature [2].*

### **MATERIALS AND METHODS**

*The severity of these changes is determined primarily by the traumatic nature and duration of the operation; The “standard” of trauma is open interventions on the abdominal organs. Considering the direct connection between the surgical stress response and postoperative complications (infectious, cardiovascular, surgical), its limitation today is considered as the most important task of anesthesia and postoperative intensive care [3, 4].*

### **RESULTS AND DISCUSSION**

Modern techniques of general anesthesia and systemic analgesia based on narcotic analgesics do not have any noticeable effect on the surgical stress response. Regional anesthesia and analgesia, primarily neuraxial blockade with local anesthetics, are more effective in this regard [1, 3]. However, the mechanisms of the influence of regional anesthesia and analgesia on the surgical stress response, as well as the significance of intra- and postoperative anesthesia in this influence, still remain the subject of debate.

The purpose of the study was to assess the severity of the surgical stress response during abdominal interventions depending on the area of surgery, the type of anesthesia and postoperative pain relief.

The study included 260 patients aged from 20 to 70 years who underwent elective surgery on the abdominal organs. 140 patients underwent operations on the organs of the upper floor of the abdominal cavity (pancreaticoduodenectomy, gastrectomy, gastrectomy) and 120 on the organs of the lower floor (hemicolonectomy, extirpation or resection of the rectum). The exclusion criterion was the presence of diagnosed diabetes mellitus. Patients in whom the operation was palliative (anastomosis) or exploratory in nature were also excluded. Patients were divided into groups depending on the area of surgery and the type of anesthesia used. During operations on the organs of the upper abdominal cavity in the BO1 group (n = 70), total intravenous anesthesia was performed based on propofol and fentanyl with muscle relaxants and artificial pulmonary ventilation (ALV) "in its pure form"; in the VE group (n = 70) it was combined from the chest (puncture level ThVII-IX)

epidural anesthesia with 0.5% bupivacaine solution or 0.75% ropivacaine solution. During operations on the organs of the lower abdominal cavity, 3 variants of anesthesia were used: in the NO group (n = 40) - total intravenous anesthesia with mechanical ventilation, in the NE group (n = 40) - in combination with epidural anesthesia at the ThIX-XI level, and in group NS (n = 40) - in combination with spinal anesthesia with 0.5% hyperbaric solution of bupivacaine (puncture level LIII-IV, upper level of sensory block according to the pinprick test - ThV). Postoperative pain relief in the groups that used epidural anesthesia (VE and NE) was carried out by epidural infusion of a 0.2% solution of ropivacaine with fentanyl 2 µg/ml at a rate of 6-10 ml/h and intramuscular injection of ketorolac 30 mg every 8 hours.

In the postoperative period, an increase in the level of the studied cytokines was noted in all groups.

This increase was more noticeable after surgery on the upper abdominal organs. Understanding that the study of only the concentrations of three cytokines does not allow us to objectively assess the state of the complex immune system, we nevertheless allow ourselves to suggest that a simultaneous increase in the level of both pro-inflammatory and anti-inflammatory mediators may indicate the preservation of a certain balance in the majority of patients. Both epidural and spinal anesthesia significantly (and to approximately the same extent) limited the increase in cytokine concentrations after surgery.

Our results indicate that there is no clear connection between the intensity of postoperative pain and indicators of surgical stress response, as well as a comparable stress-limiting effect of spinal anesthesia (which excludes the systemic effect of the anesthetic and acts only intraoperatively) and epidural anesthesia/analgesia (which creates a certain level of anesthetic in the plasma and acting both during and after surgery).

### **CONCLUSION**

The use of neuraxial anesthesia methods (spinal and epidural) significantly reduces the severity of these changes, which creates the prerequisites for reducing the incidence of postoperative complications.

Epidural analgesia can also significantly increase the adequacy of postoperative pain relief compared to the systemic administration of narcotic analgesics.

Intraoperative regional anesthesia is more important in limiting the surgical stress response compared to postoperative analgesia.

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