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ANESTHESIOLOGICAL ASPECTS OF ACCELERATED POSTOPERATIVE RECOVERY IN NEUROSURGERY

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ABSTRACT. Any surgical treatment is obviously stressful for the patient. It inevitably provokes pain, nausea, hypercoagulation, increased catabolic processes, stress on the mechanisms of maintaining water-electrolyte balance, increased load on the cardiovascular system and lungs, often causes sleep disturbance, increased fatigue, leads to cognitive dysfunction (Gologorsky V.A., 1988; Kehlet H, 2002).

The fight against the listed problems and prevention of their aggravation is the essence of the work of the anesthesiologist, who in the modern paradigm of medical care has transformed from a specialist providing safe conditions for the patient and comfortable conditions for the surgeon to a doctor monitoring the optimal management of the entire perioperative process (White P.F., 2007). Unfortunately, despite significant progress in surgery and anesthesiology in recent decades, the frequency of postoperative complications remains significant, treatment results vary significantly from clinic to clinic, and the patient's complete recovery after surgery takes quite a long time even after outpatient interventions (Lassen K., 2005; Cohen M.E., 2009). At the same time, total health care costs are increasing, despite the lack of significant improvement in the indicators of the system's efficiency as a whole (Porter M.E., 2010).

These facts stimulate worldwide searches for a balance between limiting the costs of surgical treatment, determined to a large extent by the patient's stay in the hospital and, especially, in intensive care units, and patient safety. One of the most successful approaches to optimizing existing clinical practice has become the concept of accelerated postoperative recovery (in the English-language literature - Enhanced Recovery After Surgery (ERAS). The essence of this approach is a thorough analysis of the effectiveness and safety of various factors and methods based on the principles of evidence-based medicine, aimed at accelerating the patient's passage through the surgical treatment procedure (Francis N., 2012; ZatevakhinI.I., 2015; Feldman L., 2015).

The intensive implementation in general surgery of a protocol based on the results of such an analysis, aimed at selectively combating the above-mentioned components of perioperative stress, leads, according to the supporters of this ideology, to a decrease in the time of the patient's stay in the hospital, without increasing the frequency of rehospitalizations, a decrease in the frequency of postoperative complications, which is reflected in a reduction in both the costs of the treatment itself and the overall social expenses, due to earlier return of patients to a full life (Nicholson A., 2014)

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Meanwhile, in our opinion, many components of the accelerated postoperative recovery concept can improve the quality of treatment of patients not only in abdominal but also in neurosurgery. New approaches to control of postoperative pain, nausea and vomiting, management and control of neuromuscular block, reducing the load on the functional systems of the body, as well as modern anesthesia schemes aimed at rapid awakening, are probably even more important in neurosurgery, since they allow to improve the quality of control over severe postoperative complications, primarily the formation of acute intracranial hematoma, and increase the speed of their correction, which often determines the results of the entire treatment. Another aspect stimulating the implementation of this concept in neuroanesthesiology is the management of somatically burdened patients, the speed of activation and rehabilitation of which often directly affects the outcome.

Of course, neurosurgery is a very specific part of medicine. Patients with this type of pathology are characterized by a number of features, and special requirements are imposed on their safe management.

That is why blind adherence in neurosurgery to anesthesiological approaches developed within the framework of the ERAS concept in general surgery cannot be considered justified (Hagan K.B., 2015). However, it seems that one should also critically treat the still quite widespread opinion that after neurosurgical intervention on the brain, it is necessary to have a slow awakening, many hours of sedation and prolonged mechanical ventilation in the intensive care unit. Of course, the thesis about the high safety and effectiveness of monitoring a patient in the intensive care unit should be recognized as fair, but there is also an undeniable increase in the risk of nosocomial infections, as well as other iatrogenic complications, not to mention the psychological trauma and increased material costs of treating a patient for whom staying in the intensive care unit may be unjustified. In other words, it seems relevant to search for and substantiate the effectiveness of anesthesiological approaches that ensure safe and rapid postoperative recovery after anesthesia, which create conditions for early activation and rehabilitation of the patient after neurosurgical intervention.

CONCLUSIONS

Based on the combination of pharmacological properties (speed of awakening at 16±7 minutes, lower ICP, antiemetic and antiepileptic effects) and economic indicators, the intravenous anesthetic propofol remains the optimal drug for providing the sedative component of general anesthesia in neurosurgical practice.

2. The fastest awakening of patients after craniotomy (5±3 minutes) is provided by inhalation anesthesia with xenon, however, it is significantly inferior to other methods in terms of the cost of anesthesia (40 times, compared to anesthesia with propofol).

3. The most effective and safe method for providing intraoperative analgesia during craniotomy is regional anesthesia of the scalp, performed before the incision, reducing the need for opioids to a level of 1.6±0.7 mcg / kg / h of fentanyl. In addition, regional scalp anesthesia, regardless of the time of its implementation, provides a high degree of protection against postoperative pain after craniotomy in the first day after the operation (the

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distribution of pain scores according to VAS one day after the intervention was 0 [0;2], while 78% of patients did not experience even moderate pain during the day).

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