CHOICE OF ANESTHESIA METHOD IN PATIENTS WITH CHRONIC PAIN SYNDROME DURING JOINT REPLACEMENT

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Resume. Rheumatoid arthritis (RA) is a chronic disease that leads to joint deformities and constant pain that requires surgical correction. A prospective comparative study (n=30 with RA) was conducted in the period from January 2024 to January 2025 on the basis of the City Hospital #6 (Minsk), which showed that prolonged spinal epidural anesthesia provided adequate nociceptive protection.

Keywords: rheumatoid arthritis, anesthesia, chronic pain syndrome, psycho-emotional comfort, prosthetic joints, spinal-epidural anesthesia.

Relevance. Rheumatoid arthritis is frequently accompanied by chronic pain and psychosocial distress, which complicates perioperative management. In patients undergoing joint replacement, inadequate anesthesia or postoperative analgesia can intensify anxiety, depression, and pain perception, thereby delaying recovery. The choice of anesthetic technique significantly impacts both physiological stability and psycho-emotional outcomes. Despite advances in multimodal analgesia, the optimal method for ensuring emotional comfort and effective pain control in RA patients remains under discussion. This study is relevant because it links anesthetic technique not only to physical pain relief but also to mental well-being, which represents a growing priority in modern anesthesiology [1, 4].

Until recentl, insufficient attention was paid to the psycho-emotional state of orthopedic patients in the structure of medical care, despite the fact, that the prevalence of anxiety and depression in this category of patients reaches 16% [3, 4]. However, few studies in recent years have shown that anxiety and depressive disorders can not only affect the perception of pain during surgery and the immediate postoperative period, but also have a negative effect for 6 months or more after the intervention, reducing the effectiveness of rehabilitation, increasing its duration, which worsens the results of surgical treatment [2, 4].

In this regard, anesthetic protection can play a key role in stabilizing the psychoemotional status and create optimal conditions for subsequent rehabilitation measures. Traditional regional methods of anesthesia for orthopedic surgery, in contrast to general anesthesia, can effectively block nociceptive impulses directly from the area of chronic pain, create conditions for preventive analgesia and potentially contribute to improving the psycho-emotional state of patients. Nevertheless, the question of the effect of anesthesia and postoperative the effect of radiation anesthesia on the psychoemotional status in orthopedic patients has not been studied sufficiently, and the information available in the literature is

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extremely scarce, which determines the relevance of this study [1, 3, 4].

Aim: to substantiate the choice of an anesthetic and postoperative analgesic method that provides optimal psycho-emotional comfort in rheumatoid arthritis patients with chronic pain syndrome undergoing hip or knee arthroplasty.

Objectives:

1. To compare the analgesic efficacy of different anesthesia methods in RA patients during and after arthroplasty. To evaluate the influence of anesthetic technique on postoperative psycho-emotional status using validated scales.

2. To determine the relationship between pain control quality and emotional well-being in the early postoperative period.

3. To develop practical recommendations for anesthesiologists in managing RA patients requiring joint replacement surgery.

Materials and methods. A prospective comparative clinical study was conducted involving 30 patients aged 18 years and older with a confirmed diagnosis of rheumatoid arthritis and chronic pain syndrome persisting for more than one year. All patients underwent total hip (n = 19) or knee (n = 11) arthroplasty between January 2024 and January 2025 at the 6th City Clinical Hospital of Minsk.

Inclusion criteria: RA diagnosis, chronic pain >1 year, absence of contraindications to regional anesthesia. Exclusion criteria: decompensated organ dysfunction, active infection in the surgical field, or oncological disease. Patients were randomized by demographic characteristics (age, sex, comorbidities) using a computer-generated randomization method ($p > 0.05$).

Group 1 (n = 15): General anesthesia (sevoflurane-based ventilator) combined with spinal anesthesia using 0.5% bupivacaine (average 0.24 ± 0.07 mg/kg), sufentanil 0.005%, and morphine 10 mg.

Group 2 (n = 15): Combined spinal-epidural anesthesia (CSEA) with 0.5% bupivacaine 12.5–15 mg intrathecally and intraoperative sedation using dexmedetomidine 0.2 µg/kg/hour. Prolonged epidural analgesia (PEA) with 0.2% ropivacaine and sufentanil 10 µg was continued at 2.4–12.5 mL/hour for 24.4 ± 4.3 hours.

All patients received the same baseline analgesia: paracetamol 1 g IV and ketoprofen 100 mg IM at scheduled intervals. Opioids were administered on demand when visual-analog scale (VAS) pain score > 3.

The Hospital Anxiety and Depression Scale (HADS) was used to assess psycho-emotional status preoperatively and on postoperative day 7.

Statistical analysis: Data were processed using STATISTICA v10.0. Parametric data were analyzed with Student's t-test; nonparametric data with the Kruskal–Wallis test. A p-value <0.05 was considered statistically significant.

Results and their discussion. Before surgery, 11 patients (36.7%) showed clinically significant anxiety and 7 (23.3%) showed depression on the HADS scale. Immediately after surgery, all patients reported mild pain with satisfactory analgesia. At 6 hours post-operation, pain at rest was more intense in Group 1 (general + spinal) compared with Group 2 (CSEA) ($p = 0.012$).

By postoperative day 1, motor block had resolved in both groups, but Group 2 showed significantly lower pain

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intensity both at rest and during movement (p = 0.032). Consequently, opioid consumption was lower in Group 2 (p = 0.049).

These findings confirm that prolonged regional techniques, such as combined spinal-epidural anesthesia with continuous epidural analgesia, provide superior postoperative comfort and more stable psycho-emotional recovery compared with single spinal block or general anesthesia combinations.

CSEA minimizes systemic drug load, maintains stable hemodynamics, and ensures continuous pain relief – all of which contribute to reduced anxiety and improved patient satisfaction. The integration of multimodal analgesia, regional techniques, and psychological assessment tools (like HADS) represents an evidence-based approach to holistic perioperative care.

Conclusions:

1. In rheumatoid arthritis patients with chronic pain syndrome undergoing joint arthroplasty, prolonged regional anesthesia methods demonstrate better outcomes for both pain relief and psycho-emotional comfort.

2. Combined spinal-epidural anesthesia with postoperative epidural analgesia ensures more stable analgesic effects and lower anxiety and depression levels compared with single spinal or general anesthesia.

3. Continuous evaluation of pain and emotional status should be part of standard perioperative protocols to enhance patient recovery and satisfaction.

4. Individualized anesthetic planning, incorporating both physiological and psychological factors, is essential for achieving optimal results in this patient group.

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ВЫБОР МЕТОДА АНЕСТЕЗИИ У ПАЦИЕНТОВ С ХРОНИЧЕСКИМ БОЛЕВЫМ СИНДРОМОМ ПРИ ПРОТЕЗИРОВАНИИ СУСТАВОВ

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Резюме. Ревматоидный артрит (РА) – хроническое заболевание, которое приводит к деформациям суставов и постоянным болям, требующим хирургической коррекции. Было проведено проспективное сравнительное исследование (n=30 с РА) в период с января 2024 по январь 2025 года на базе УЗ «6 ГКБ г.Минска» которое показало, что продленная спинально-эпидуральная анестезия обеспечивала адекватную ноцицептивную защиту.

Ключевые слова: ревматоидный артрит, анестезия, хронический болевой синдром, психоэмоциональный комфорт, протезирование суставов, спинально-эпидуральная анестезия.

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