FEATURES OF CHANGES IN LABORATORY PARAMETERS OF PATIENTS AGAINST THE USE OF DEXMEDETOMIDINE IN SEPTOPLASTY

Abstract. Features of changes in laboratory parameters of patients against the use of dexmedetomidine in septoplasty. Ayvardgi A.A. Currently, a lot of attention of scientists all over the world is paid to the perioperative management strategy, taking into account the volume of surgical intervention, the presence of comorbidities and their possible complications. This makes it possible to reduce mortality, decrease the number of adverse events in the intra- and postoperative period, effectively cope with pain, advance recovery and rehabilitation, and also increase patients’ satisfaction with the quality of medical care. We studied indices of 58 adult patients who underwent septoplasty. Patients were divided into 2 groups. In group “D”, dexmedetomidine was infused, which began 10 minutes before the induction of anesthesia at a dose of 0.7 μg/kg/h and ended 10 minutes before the end of the surgical intervention. The clinical blood test (hemoglobin level, erythrocytes, leukocytes, stab count) and body temperature of patients, coagulogram (INR, fibrinogen level, Duke bleeding time) were studied. When comparing the indicators of clinical analysis in the postoperative period in the control group (p<0.001), the minimum decrease in hemoglobin was determined in contrast to the “D” group in the postoperative period, the minimum decrease in hemoglobin was determined in contrast to the control group (p<0.001). The use of dexmedetomidine infusion leads to a decrease in the manifestations of a systemic inflammatory response during surgical interventions for the curvature of the nasal septum. The introduction of dexmedetomidine provides better blood coagulation during septoplasty. Infusion of dexmedetomidine causes a decrease in blood loss and consequently the maintenance of hemoglobin concentration at the proper level.

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Key words: septoplasty, perioperative period, anemia, systemic inflammatory response, hemostasis, blood loss, dexmedetomidine

Ключові слова: септопластика, периоперационий період, система запальна відповідь, анемія, гемостаз, кровотрата, дексмедетомідин

Ключевые слова: септопластика, периоперационный период, системный воспалительный ответ, анемия, гемостаз, кровопотеря, дексмедетомидин

Анотация. Особенности изменения лабораторных показателей пациентов на фоне применения дексмедетомидина при септопластике. Айварджи А.А. В настоящее время большое внимание ученых во всем мире уделяется периоперационной стратегии ведения пациентов с учетом объема операционного вмешательства, наличия сопутствующих патологий и их возможных осложнений. Это позволяет снизить летальность, уменьшить количество нежелательных явлений в интра- и послеоперационном периоде,
Recently, considerable attention of scientists around the world is given to the perioperative management of surgical patients, taking into account the volume of surgical intervention, the presence of concomitant pathologies and their possible complications [1].

During various surgical interventions, there is a risk of inflammatory complications that include infection, systemic inflammatory response syndrome (SIRS) or sepsis [5].

A promising direction in improving perioperative management of patients is the use of dexmedetomidine in the form of anesthetic support for intravenous infusion. This substance is an agonist of the central and peripheral α-2 adrenergic receptors. In various studies, it has been shown that it reduces the level of proinflammatory cytokines in experimental sepsis, improves cellular immune function, reduces systemic inflammatory response, the frequency of infectious complications in patients in critical condition and in patients in the postoperative period [3, 4, 9, 11].

It was shown that infusion of dexmedetomidine resulted in a decrease in systemic inflammatory response in cardiac surgical interventions with extracorporeal circulation [6].

In addition, in using dexmedetomidine in various surgical interventions, there was a decrease in intraoperative blood loss and improved visual field performance [7, 12].

Thus, according to the literature data, the use of dexmedetomidine in various fields of surgery makes it possible to reduce the systemic inflammatory response and reduce intraoperative blood loss, which requires a more detailed study of surgical interventions for deflected nasal septum.

The purpose of the study was to investigate the features of the hemostatic system, general blood clotting and body temperature in dynamics in patients with septoplasty with the use of dexmedetomidine infusion.

MATERIALS AND METHODS OF RESEARCH

In this research we studied findings of 58 adult patients with deflected nasal septum which were operated in 2017-2018 on the basis of CE "Dnipropetrovsk City Clinical Hospital No. 8" DRC and divided into 2 groups (Table 1).

Patients underwent septoplasty under combined anesthesia: total intravenous anesthesia with artificial ventilation of the lungs + local anesthesia.

### Table 1

| Characteristic of patients in the research groups |
|--------------------|-------|-------|
| Number of patients | 28    | 30    |
| Gender (m/f)       | 14/14 | 13/17 |
| Age                | 37    | 33    |
| Class by ASA       | 1-II  | 1-II  |
In group "D" an intravenous infusion of dexamethasone was performed, which began in 10 minutes before induction of anesthesia in a dose of 0.7 μg / kg / h and ended in 10 minutes until the completion of surgery. The hemodynamic parameters were determined on the basis of the registration of the plethysmogram with the help of the monitor "Uta-UM - 300", followed by the calculation of mathematical formulas [2].

The obtained data were processed with parametric and nonparametric statistics using STATISTICA program 10.

To perform the study the permission of the Ethics Commission of the CE "DCCH N 8" DRC and SE "DMA of Health Ministry of Ukraine" was obtained and the voluntary consent of all patients complying with the principles of the Helsinki Declaration.

RESULTS AND DISCUSSION

When comparing the indices of general-clinical blood test between the follow-up groups in the postoperative period, in the control group leukocytosis and a left shift of stab cells (p<0.001) was noted (Table 2). For patients treated with dexamethasone infusion, leukocytes and stab cells were found to be within normal limits.

Subfebrile fever (p<0.001) was determined in both groups of postoperative follow-up. In the control group 12 hours after surgery, body temperature increased to febrile values (Fig. 1).

On day 2 after surgery in the group "K" hyperfibrinogenemia was observed (p<0.001). INR in group "D" at the stage of surgical intervention was slightly lower than in the control group. In the group "K" in 2 days after the surgery, the APTT values were lower than in the group "D" (p<0.001). Bleeding time by Duke in group "D" was significantly less than in the control group during and after completion of surgery (p<0.001).

Thus, during the surgical intervention, the group "D" was characterized by better indices of blood clotting. In the group "K" on day 2 of the postoperative period there was a slight increase in coagulation, which may be due to manifestations of systemic inflammatory reaction after surgery.

The level of intraoperative blood loss in the group "D" was significantly lower than in the control (p<0.001) (Fig. 2).

In group “D” in the postoperative period there was noted minimal decrease in hemoglobin level, compared to the control group (p<0.001).
Analyzing the results, it was noticed that the use of dexmedetomidine made it possible to out the decrease in hemoglobin. In addition, the infusion of the mentioned adjuvant reduced the manifestations of systemic inflammatory response (fever, leukocytosis, left shift of stab cells) in the postoperative period. All this provided a more comfortable condition for patients.

In order to expand these studies in the future, it is planned to compare the results obtained with the results of nefopam, gabapentinides, ketamine using, and the like. It is also interesting to trace the correlation between the intraoperative level of ANI and BIS with laboratory findings and body temperature of patients in the postoperative period.

### Table 2

<table>
<thead>
<tr>
<th>Stage</th>
<th>Day 1 before surgery</th>
<th>During surgery</th>
<th>After completion of surgery</th>
<th>Day 2 after surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K</td>
<td>D</td>
<td>K</td>
<td>D</td>
</tr>
<tr>
<td>Leukocytes</td>
<td>6,5±0,02</td>
<td>6,2±0,04*</td>
<td>6,3±0,03</td>
<td>6,3±0,04</td>
</tr>
<tr>
<td>Stabs</td>
<td>4,3±0,01</td>
<td>5,1±0,05*</td>
<td>4,7±0,01</td>
<td>4,7±0,04</td>
</tr>
<tr>
<td>Fibrinogen</td>
<td>3,1±0,02</td>
<td>3±0,03</td>
<td>3,3±0,02</td>
<td>3,2±0,03*</td>
</tr>
<tr>
<td>INR</td>
<td>1,1±0,01</td>
<td>0,9±0,01*</td>
<td>1,1±0,01</td>
<td>1±0,01*</td>
</tr>
<tr>
<td>APTT</td>
<td>30±0,28</td>
<td>32±0,25*</td>
<td>29±0,36</td>
<td>29±0,2</td>
</tr>
<tr>
<td>Bleeding by Duke</td>
<td>188±0,4</td>
<td>193±0,54*</td>
<td>182±0,4</td>
<td>122±0,45*</td>
</tr>
<tr>
<td>Hb</td>
<td>135±0,35</td>
<td>134±0,34</td>
<td>134±0,43</td>
<td>135±0,35</td>
</tr>
</tbody>
</table>

_Note_. *– p<0,001 when comparing findings of group «D» with the control.
CONCLUSION

The use of dexmedetomidine infusion results in a decrease in the manifestations of systemic inflammatory response in surgical interventions for deflated nasal septum. The administration of dexmedetomedine provides better blood coagulation during septroplasty. Infusion of dexmedetomine leads to a reduction in blood loss, hence the preservation of hemoglobin concentration at the proper level.

Conflict of interest. The author states that there is no conflict of interest.

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