

The prevalence of perioperative complications in patients with and without obstructive sleep apnoea: a prospective cohort study

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Abstract

Background and aims: Patients with obstructive sleep apnoea (OSA) have a high risk of postoperative complications. The purpose of the study was to record the spectrum and frequency of postoperative complications in patients with OSA *versus* (vs.) without OSA depending on the type of surgery and type of anaesthesia in a large cohort of patients.

Methods: We conducted a prospective, descriptive study (n = 400). Ethics Committee approval was obtained and written informed consent was signed. The Berlin screening questionnaire was used for OSA screening (77.2% – OSA [+]). Adverse events and complications were recorded postoperatively (AOS [+] vs. AOS [-]). Statistics: Chi square test.

Results: The highest rate of complications was found in patients who had undergone surgery in the abdominal cavity under general anaesthesia, AOS [+] vs. AOS [-]: cardiovascular [56.4%] vs. [7.5%], respiratory [17.6%] vs. [3.5%], stroke [0.7%] vs. [0.0%], prolonged awakening from anaesthesia [2.5%] vs. [0.0%], postoperative fever [1.4%] vs. [0.3%], difficult orotracheal intubation [3.5%] vs. [0.3%], unscheduled transfer to the intensive care unit [5.7%] vs. [0.0%].

Conclusions: OSA [+] patients who underwent abdominal surgery under general anaesthesia had a higher rate of complications compared to OSA [-] patients, and also compared to patients who had undergone peripheral limb surgery. Surgery on the musculoskeletal system is much better tolerated by patients with OSA, suffering a lower number and range of events and postoperative complications. Loco-regional anaesthesia should be considered a priority in patients with OSA.

Keywords: obstructive sleep apnoea, postoperative complications

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Introduction

Obstructive sleep apnoea (OSA) is the most frequent sleep disorder in the adult population and its prevalence has increased throughout the world because of obesity and the increasing age of the general popu-

lation [1-5]. Current estimates suggest that moderately severe OSA is present in approximately 11.4% of men and 4.7% of women [1, 2]. OSA is defined as the occurrence of at least five episodes of apnoea / hypopnoea per hour. Symptoms typically associated with OSA include snoring, excessive daytime somnolence, and restless sleep [6]. Male gender, smoking and alcohol consumption, obesity and aging are known factors associated with a higher incidence of OSA [7, 8]. The incidence of moderate OSA in European countries has increased by approximately 8% in the last 5 years [9].

The prevalence of OSA is higher in patients presenting for surgery than in the general population [10]. A significant proportion of OSA patients presenting for surgery remain undiagnosed. Patients with OSA

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have a higher propensity for perioperative complications following surgery under general anaesthesia [11, 12].

The hypothesis of the study was that the spectrum of risk factors and postoperative complications may be significantly different in patients with OSA, who undergo surgery, than in those without OSA. We suppose that both anaesthetic technique and type of surgery influence significantly the spectrum and prevalence of postoperative complications in patients with OSA.

The purpose of this study was to determine the prevalence of perianaesthetic complications in patients with obstructive sleep apnoea *versus* patients with no obstructive sleep apnoea, depending on the type of surgery (on musculoskeletal or abdominal cavity) and the anaesthetic technique (general, loco-regional or neuraxial).

Methods

A prospective cohort study was performed on a group of 400 patients enrolled for elective surgery on the musculoskeletal system or abdominal cavity, with total intravenous anaesthesia or loco-regional anaesthesia. The study was conducted at the “Valeriu Ghereg” Department of Anaesthesiology and Reanimathology (Clinical base of the Institute of Emergency Medicine) between March 2014 and June 2015. All patients signed written informed consent for study enrolment. Ethical approval for the study was obtained from the Research Ethics Committee of the “Nicolae Testemițanu” State University of Medicine and Pharmacy.

The inclusion criteria were:

- adult patients (≥ 18 years) with signed informed consent;
- able to read and comply with the proposed screening questionnaire;
- patients scheduled for surgery on the abdomen or extremities;

The exclusion criteria were:

- patient's voluntary withdrawal from the study;
- surgery on more than one segment simultaneously or existing septic field;
- need for another operation.

The Berlin screening questionnaire was used for the preoperative screening of patients, which identifies patients at a high risk for OSA. It consists of 11 items, grouped into three categories of symptoms and has been validated for application in primary care [13]. The first category of symptoms includes five questions related to the presence of snoring; the second category includes three questions about daytime sleepiness, and the third category reveals the presence or absence of

hypertension. The first and second categories are considered positive if the patients give two or more positive answers. Category three is positive if the patient has a history of high blood pressure or body mass index (BMI) > 30 kg/m². Two or more positive categories show a high risk of OSA [13, 14].

Postoperatively (until hospital discharge), all complications or adverse events that occurred, of any origin, were recorded. Additionally, we recorded all demographic parameters, the type of surgery and anaesthetic technique used. The type of anaesthesia was chosen depending on the patient's physiological state and surgery.

Depending on the score obtained in each questionnaire, the cohort of 400 patients was divided into “high-risk patients of OSA” (OSA [+]) and “patients without risk of OSA” (OSA [-]). For each group of patients, OSA [+] or OSA [-], postoperative complications were recorded: cardiovascular (hypertension, hypotension, cardiovascular instability, cardiac dysrhythmia, myocardial infarction); respiratory (respiratory failure, need for postoperative artificially ventilation of the lungs over 60 minutes, pneumonia, laryngospasm); other adverse events and complications (unplanned transfer to ICU, difficult intubation, stroke, postoperative fever [higher than 38.5°C]. Hypertension was defined as an increase in systolic blood pressure $\geq 25\%$ from baseline for a period of minimum 5 minutes. Hypotension was defined as a decrease in systolic blood pressure ≤ 90 mm Hg for a period of minimum 5 minutes. All adverse events and complications were recorded until hospital discharge.

The primary outcome of the study was a composite of all-cause complications in patients with OSA compared to those without OSA, while the secondary outcomes were cardio-vascular or respiratory complications, as well as the prevalence of unplanned transfer to the intensive care unit (ICU), difficult intubation, stroke, and postoperative fever. The required number of patients to test the hypothesis of the study was calculated using an online application [15, 16]. In order to have 80% power, the prevalence of OSA to be 10% in the population and $p < 0.05$, identifying a minimum difference of 20% between the questionnaires' performance, the study required 400 patients.

Statistics

We used the Chi square test (for comparing the spectrum of postoperative complications and adverse events between groups depending on the type of surgery and anaesthetic technique) and Fisher test (for comparing the general characteristics of patients). Results are presented as absolute and relative value (binary data) or as mean and confidence interval of 95% (continuous data). The variables presented as absolute

values were height, gender, number of postoperative complications and adverse events, Mallampati stage and presence/absence of comorbidities, while mean values were used for age, weight and body mass index.

Primary results of the questionnaires were recorded in the Microsoft Excel table. The statistical analysis was performed with GraphPad Prism 4 software (Version 4.00) for statistical analysis (GraphPad Software, San Diego, California, USA).

Results

Patient characteristics and factors of increased risk for obstructive sleep apnoea in the OSA [+] and OSA [-] groups are presented in Table 1.

Using the Berlin screening questionnaire for OSA, we determined that from 400 patients, 309 patients were in the category of high risk for obstructive sleep apnoea (OSA [+]), and only 91 patients were in the low risk category (OSA [-]). The total number of recorded complications was 401. Patients with OSA

[+] manifested a total number of 351 complications (87.3%), while OSA [-] patients showed a total of 51 (12.6%) complications, suggesting that OSA [+] patients are at a higher risk to present postoperative complications and adverse events than OSA [-] patients (Table 2).

Comorbidities detected in patients enrolled in the research were hypertension, heart failure, myocardial infarction, ischemic heart disease, atrial fibrillation, dysrhythmia, diabetes, asthma, stroke, hypothyroidism and others.

We made a comparative analysis between the groups to determine postoperative complications and adverse events depending on the type of surgery and anaesthesia (Tables 3 and 4). The highest number of complications was recorded in the OSA [+] undergoing abdominal surgery. The prevalence of complications was higher in OSA [+] patients who underwent abdominal surgery under general anaesthesia compared to OSA [-] who underwent abdominal surgery under general anaesthesia (164 *versus* 38, $p = 0.0001$) (Table

Table 1. The general characteristics of patients according to the increased or decreased risk of OSA

Parameters	OSA (n = 309)	OSA (n = 91)	p
Age, years	57.0 (56.1-58.3)	52.0 (50.5-54.0)	0.0001
Men, n (%)	91 (29.4%)	41 (45.0%)	0.007
Height, cm	166 (165-167)	168 (166-170)	0.06
Body mass, kg	88.0 (86.7-90.7)	75.0 (73.8-79.3)	0.0001
BMI, kg/m ²	31.0 (31.3-32.7)	27.0 (26.1-27.6)	0.0001
Mallampati stage I-II	160 (40%)	69 (17.2%)	0.0001
III-IV	149 (37.2%)	22 (5.5%)	
Presence/Absence of comorbidities	261 (65.2%)/ 48 (12%)	32 (8%)/ 59 (14.7%)	0.0001

Note: for continuous data, results are presented as the mean and confidence interval 95%; for binary data, results are presented as absolute and relative terms
BMI – body mass index

Table 2. Distribution of postoperative complications and adverse events after Berlin questionnaire

Complications and adverse events	Number of complications OSA group	Number of complications OSA group	Total number of complications	p
Cardiovascular	246 (61.5%)	32 (8%)	278	0.0001
Respiratory	54 (13.5%)	13 (3.2%)	67	0.0001
UT ICU *	17 (4.2%)	0 (0%)	17	0.0001
Difficult OTI **	10 (2.5%)	1 (0.2%)	11	0.01
Prolonged awakening from anaesthesia	10 (2.5%)	0 (0%)	10	0.001
Stroke	2 (0.4%)	0 (0%)	2	0.4
Postoperative fever	11 (2.7%)	5 (1.2%)	16	0.2
Total number of complications	350	51	401	

* unplanned transfer in Intensive Care Unit; ** difficult oro-tracheal intubation

3). Similarly, the prevalence of complications was higher in OSA [+] undergoing peripheral limb surgery compared to OSA [-] patients (133 *versus* 42, $p = 0.0001$) (Table 4).

OSA [+] patients who underwent abdominal surgery under general anaesthesia had a higher rate of cardiovascular and respiratory complications compared to OSA [-] patients and also higher cardiovascular complications compared to patients who had undergone peripheral limb surgery under regional anaesthesia (Tables 3 and 4).

Discussion

The results of the present study showed that patients with OSA syndrome are at a higher risk to present complications after abdominal surgery under general anaesthesia compared to patients who do not present

this syndrome. OSA [+] patients tolerated better the musculoskeletal surgery under regional anaesthesia.

OSA is associated with a number of medical comorbidities including hypertension, heart failure, myocardial infarction, diabetes mellitus, gastroesophageal reflux disease, and stroke [17, 18]. Postoperative complications contribute significantly to the risks of surgery and anaesthesia, with impact on discharge and financial repercussions on the health system [19]. The risk of perioperative complications depends on ASA (American Society of Anesthesiologists) class [20], age [21], emergency surgery, cardiac comorbidities [22], smoking [23], duration of surgery [24], type of anaesthesia [25], as well as on the presence of comorbidities such as chronic obstructive pulmonary disease, coronary artery disease, and renal failure [26]. In our study, the most frequent encountered complications were respiratory and cardiovascular, and these were present in all

Table 3. Postoperative complications and adverse events in patients with surgery on abdominal cavity

	OSA [+]	OSA [-]	Total	p
Surgery on abdominal cavity	176	49	225	0.0001
General anaesthesia	164	38	202	0.0001
Total cardiovascular complications	157 (56.4%)	21 (7.5%)	178	0.0001
Hypertension	112 (62.9%)	16 (8.9%)	128	
Hypotension	16 (8.9%)	0 (0%)	16	
Hemodynamic instability	4 (2.2%)	0 (0%)	4	
Cardiac dysrhythmia	24 (13.4%)	5 (2.8%)	29	
Myocardial infarction	1 (0.5%)	0 (0%)	1	
Total respiratory complications	49 (17.6%)	10 (3.5%)	59	0.0001
Respiratory depression	32 (54.2%)	6 (10.1%)	38	
Need for postoperative ventilation	12 (20.3%)	3 (5%)	15	
Pneumonia	3 (5%)	1 (1.6%)	4	
Laryngospasm	2 (3.3%)	0 (0%)	2	
Unplanned transfer ICU	16 (5.7%)	0 (0%)	16	0.0001
Difficult intubation	10 (3.5%)	1 (0.3%)	11	0.01
Prolonged awakening from anaesthesia	7 (2.5%)	0 (0%)	7	0.01
Stroke	2 (0.7%)	0 (0%)	2	0.4
Postoperative fever	4 (1.4%)	1 (0.3%)	5	0.3
Neuraxial anaesthesia	12	11	23	1.0
Total cardiovascular complications	8 (66.6%)	4 (33.3%)	12	0.3
Hypertension	5 (41.6%)	1 (8.3%)	6	
Hypotension	1 (8.3%)	1 (8.3%)	2	
Hemodynamic instability	1 (8.3%)	1 (8.3%)	2	
Cardiac arrhythmia	1 (8.3%)	1 (8.3%)	2	
Myocardial infarction	0 (0%)	0 (0%)	0	
Total respiratory complications	0 (0%)	0 (0%)	0	-
Respiratory depression	0 (0%)	0 (0%)	0	
Need for postoperative ventilation	0 (0%)	0 (0%)	0	
Pneumonia	0 (0%)	0 (0%)	0	
Laryngospasm	0 (0%)	0 (0%)	0	
Unplanned transfer ICU	0 (0%)	0 (0%)	0	-
Difficult intubation	0 (0%)	0 (0%)	0	-
Prolonged awakening from anaesthesia	0 (0%)	0 (0%)	0	-
Stroke	0 (0%)	0 (0%)	0	-
Postoperative fever	0 (0%)	0 (0%)	0	-

Table 4. Postoperative complications and adverse events in patients with surgery on musculoskeletal system

	AOS+	AOS-	Total	p
Surgery on musculoskeletal system	133	42	175	0.0001
General anaesthesia	10	7	17	0.6
Total cardiovascular complications	10 (43.4%)	2 (8.6%)	12	0.03
Hypertension	5 (41.6%)	1 (8.3%)	6	
Hypotension	3 (25%)	1 (8.3%)	4	
Hemodynamic instability	0 (0%)	0 (0%)	0	
Cardiac arrhythmia	2 (16.6%)	0 (0%)	2	
Myocardial infarction	0 (0%)	0 (0%)	0	
Total respiratory complications	4 (17.3%)	1 (4.3%)	5	0.3
Respiratory depression	2 (40%)	1 (20%)	3	
Need for postoperative ventilation	1 (20%)	0 (0%)	1	
Pneumonia	1 (20%)	0 (0%)	1	
Laryngospasm	0 (0%)	0 (0%)	0	
Unplanned transfer ICU	1 (4.3%)	0 (0%)	1	1.0
Difficult intubation	0 (0%)	0 (0%)	0	-
Prolonged awakening from anaesthesia	3 (13%)	0 (0%)	3	0.2
Stroke	0 (0%)	0 (0%)	0	-
Postoperative fever	1 (4.3%)	1 (4.3%)	2	1.0
Neuraxial anaesthesia	105	33	138	0.0001
Total cardiovascular complications	61 (84.7%)	4 (5.5%)	65	0.0001
Hypertension	11 (16.9%)	0 (0%)	11	
Hypotension	26 (40%)	3 (4.6%)	29	
Hemodynamic instability	12 (18.4%)	1 (1.5%)	13	
Cardiac arrhythmia	11 (16.9%)	1 (1.5%)	12	
Myocardial infarction	1 (1.5%)	0 (0%)	1	
Total respiratory complications	1 (1.3%)	0 (0%)	1	1.0
Respiratory depression	0 (0%)	0 (0%)	0	
Need for postoperative ventilation	0 (0%)	0 (0%)	0	
Pneumonia	1 (100%)	0 (0%)	1	
Laryngospasm	0 (0%)	0 (0%)	0	
Unplanned transfer ICU	0 (0%)	0 (0%)	0	-
Difficult intubation	0 (0%)	0 (0%)	0	-
Prolonged awakening from anaesthesia	0 (0%)	0 (0%)	0	-
Stroke	0 (0%)	0 (0%)	0	-
Postoperative fever	5 (6.9%)	1 (1.3%)	6	0.2
Peripheral nerve blocks	18	2	20	0.0003
Total cardiovascular complications	10 (76.9%)	0 (0%)	10	0.0001
Hypertension	7 (70%)	0 (0%)	7	
Hypotension	0 (0%)	0 (0%)	0	
Hemodynamic instability	0 (0%)	0 (0%)	0	
Cardiac arrhythmia	3 (30%)	0 (0%)	3	
Myocardial infarction	0 (0%)	0 (0%)	0	
Total respiratory complications	0 (0%)	2 (15.3)	2	0.4
Respiratory depression	0 (0%)	0 (0%)	0	
Need for postoperative ventilation	0 (0%)	1 (50%)	1	
Pneumonia	0 (0%)	1 (50%)	1	
Laryngospasm	0 (0%)	0 (0%)	0	
Unplanned transfer ICU	0 (0%)	0 (0%)	0	-
Difficult intubation	0 (0%)	0 (0%)	0	-
Prolonged awakening from anaesthesia	0 (0%)	0 (0%)	0	-
Stroke	0 (0%)	0 (0%)	0	-
Postoperative fever	0 (0%)	1 (7.6%)	1	1.0

categories of patients (OSA [+]) and OSA [-], general anaesthesia, loco-regional anaesthesia, abdominal surgery and peripheral limb surgery. In our study, OSA

[+] patients presented higher incidences of postoperative complications compared to OSA [-] patients, similarly to previously published data. In a case-control

study, Liao et al. found that patients with OSA had a higher rate of postoperative complications (44% versus 28%) [27]. Kaw et al. also demonstrated that patients with OSA had a higher incidence of encephalopathy, postoperative infections (mediastinitis), and increased length of stay [28].

Any patient diagnosed as having obstructive sleep apnoea should be treated as having a difficult airway. Alterations in craniofacial morphology contributing to obstructive sleep apnoea such as macroglossia, retrognathia, a narrow hypopharynx because of fat deposition in the lateral walls of the pharynx, or an anteriorly displaced larynx—have an impact on anaesthetic management [29]. Stierer et al. used a prediction model in a population group undergoing ambulatory surgery, to assess the probability of obstructive sleep apnoea, and demonstrated that patients with $\geq 70\%$ predisposition for OSA have a higher rate of difficult intubation and a higher need for oxygen [30]. In our patients, the highest risk for difficult intubations was found in OSA [+] patients (3.5% versus 0.3% in patients without OSA). This risk could be avoided by the choice of neuraxial blocks or peripheral limb blocks.

The risk of postoperative complications depends on both the type of surgery and the type of anaesthesia. In our study, patients undergoing abdominal surgery presented a higher number of complications compared to those undergoing peripheral limb surgery, and patients having general anaesthesia presented a higher prevalence of complications compared to those with locoregional anaesthesia. Thus, the type of surgery as well as the type of anaesthesia are independent risk factors for the occurrence of postoperative complications.

We observed that OSA [+] patients undergoing abdominal surgery under general anaesthesia present the highest rates of postoperative complications, similarly to published studies that included patients undergoing abdominal surgery [31]. It has been previously suggested that the type of anaesthesia is not significant for the occurrence of these changes [32], but that surgery changes things considerably instead [33]. The exact mechanism by which sleep disturbance occurs in surgery is not completely understood, but it is possible that pain plays a major role. Other factors that may be independent to the surgery and therefore is a part of the change, are neuroendocrine, metabolic and psychological changes, opioid analgesics, as well as environmental factors such as noise, light and nurses work [33].

However, anaesthetic factors bring a major contribution to the development of postoperative complications in patients with OSA. Gupta and colleagues found that patients with OSA undergoing hip or knee replacement under general anaesthesia were at an increased risk of developing perioperative compli-

cations (24% versus 9%, respectively) [11]. A recent retrospective cohort study on 18,000 adult patients, who suffered a fracture of the femoral neck, showed that those anesthetized with neuro-axial block, compared with those with general anaesthesia, have a decreased rate of pulmonary and cardiovascular postoperative complications and decreased mortality by 25-29% [12].

Anaesthetic drugs impair the arousal response, a protective defense mechanism against sleep apnoea that helps in overcoming the airway obstruction. Anaesthetics, opioids, hypnotics, and benzodiazepines may also cause respiratory depression and thereby decrease minute ventilation. Studies have shown that halothane reduces the ventilatory response to hypoxemia and hypercapnia [34]. This depression is most likely secondary to a selective effect of halothane on the peripheral chemoreflex loop. Similarly, a subanaesthetic dose of isoflurane has been shown to reduce the hypoxic ventilatory response via peripheral chemoreceptors [35].

Patients undergoing surgery frequently receive opioids for pain control. Opioids have been shown to impair ventilatory function by affecting both peripheral and central carbon dioxide chemoreflex loops [36]. Studies have shown that small doses of opioids administered epidurally may also depress respiratory function, even in healthy adults [37]. Morphine has been shown to reduce hypoxic and hypercapnia ventilatory response in women, but not in men [38]. The combination of opiates and benzodiazepines has been shown to cause more significant episodes of hypoxemia and apnoea [39].

The limit of our study consists of the fact that the Berlin questionnaire is a screening tool aimed to identify the patients at risk for OSA [15, 16]. This does not mean that the patients actually had OSA, as the diagnosis requires confirmation by polysomnography, which is the gold standard test to establish definitive diagnosis. However, the Berlin screening questionnaire is an instrument easy to use, which was validated for the preoperative assessment of patients [16]. The Berlin questionnaire is used for the preoperative evaluation at patients scheduled for surgery, but may overestimate the real number of patients with OSA. Another limit of our study is the fact that only complications recorded during hospitalisation could be interpreted, as we did not follow up the patients after hospital discharge to investigate prospectively the long-term adverse events and the impact on mortality. The strengths of our study are the inclusion of a large cohort of patients that were prospectively enrolled, together with the avoidance of very strict exclusion criteria, a fact that permits the resemblance of our cohort to the general population undergoing surgery, and thus, real-life anaesthesia practice.

In patients with OSA, perioperative risk assessment must be considered, due to the adverse effects of hypnotics, sedatives, opioids and neuromuscular blocking agents on the nervous control of the upper airway. Decreased ventilator response to hypoxemia and hypercapnia, which worsen OSA, is not negligible. While during physiological sleep OSA patients wake up due to asphyxia, under the influence of sedatives or hypnotics this becomes impossible, hence the mortality risk. There is relative consensus on the evaluation of the perioperative risk, the two most important incriminated factors being severity of OSA and invasiveness of the surgical procedure. During perioperative risk assessment, the need to provide postoperative analgesia must not be forgotten.

Conclusions

1. Obstructive sleep apnoea syndrome is a common type of sleep disordered breathing, with a high prevalence in the surgical population. In our study, the prevalence of OSA was higher than 70%, as assessed by using the Berlin screening questionnaire.
2. The majority of patients with sleep apnoea are undiagnosed and are therefore unaware of their OSA syndrome at the time of surgery. These patients are at an increased risk of perioperative complications. OSA [+] patients presented higher incidences of postoperative complications compared to OSA [-] patients. Surgery and anaesthesia have been shown to cause worsening of sleep apnoea in the perioperative period that may lead to an increase in the rate of perioperative complications. The type of surgery as well as the type of anaesthesia are independent risk factors for the occurrence of postoperative complications.
3. Loco-regional anaesthesia represents a priority for patients at a high risk for obstructive sleep apnoea.

Conflict of interest

Nothing to declare

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Prevalența complicațiilor perioperatorii la pacienții cu și fără apnee în somn de tip obstructiv: un studiu prospectiv de tip cohortă

Rezumat

Obiective. Pacienții cu sindrom de apnee în somn de tip obstructiv (OSA) prezintă un risc crescut de complicații postoperatorii. Scopul acestui studiu a fost să înregistreze spectrul și frecvența complicațiilor postoperatorii la pacienții cu OSA vs cei fără OSA în acord cu tipul de intervenție chirurgicală și de anestezie, într-o largă cohortă de pacienți.

Metodă. Am derulat un studiu prospectiv și descriptiv (n = 400). Au fost obținute aprobarea Comitetului de Etică și consimțământul scris, informat al pacienților. S-a utilizat chestionarul Berlin pentru depistarea OSA (77,2% – OSA [+]). Evenimentele adverse și complicațiile au fost înregistrate postoperator (OSA [+] vs OSA [-]). Pentru evaluarea statistică s-a utilizat testul Chi pătrat.

Rezultate. Rata maximă de complicații a fost înregistrată la pacienții care au suferit intervenții abdominale în anestezie generală, complicații OSA [+] vs OSA [-]: cardiovasculare [56,4%] vs [7,5%], respiratorii [17,6%] vs [3,5%], accidente vasculare cerebrale [0,7%] vs [0,0%], trezire întârziată din anestezie [2,5%] vs [0,0%], febră postoperatorie [1,4%] vs [0,3%], intubație orotraheală dificilă [3,5%] vs [0,3%], internare neprogramată la terapie intensivă [5,7%] vs [0,0%].

Concluzii. Pacienții cu OSA care au suferit intervenții chirurgicale abdominale în anestezie generală au avut o rată mai crescută a complicațiilor în comparație cu pacienții OSA [-] și cu pacienții care au suferit intervenții chirurgicale la nivelul membrelor. Chirurgia sistemului musculoscheletal este mult mai bine tolerată de către pacienții cu OSA, aceștia înregistrând un număr mai redus de evenimente și complicații postoperatorii. Datorită acestui fapt considerăm că anestezia loco-regională reprezintă o opțiune prioritară în cazul pacienților cu OSA.

Cuvinte cheie: apnee în somn de tip obstructiv, complicații postoperatorii