ANESTHESIOLOGICAL ALLOWANCE FOR OPERATIONS FOR DIFFUSE GOITER

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Abstract. The article presents the results of preoperative preparation, anesthesia and surgical treatment of patients operated on for non-toxic nodular goiter. A new approach to preoperative preparation for thyroid surgery is described. The effectiveness in the preoperative period of using the modified method of preoperative preparation using sibazon and droperidol and anesthesia with the use of ketamine and the advantages of this method compared with other methods of general anesthesia are shown.

Key words: modified preoperative preparation, anesthesia, thyroid gland, nontoxic nodular goiter

Currently, there is a steady increase in the number of thyroid diseases worldwide. A significant number of population living in the territory of Uzbekistan have obvious or hidden functional disorders of the thyroid gland [6]. Diffuse non - toxic goiter is the most common pathology, which takes up to 60% of all cases of thyroid disease. In this pathology, the functions of the central nervous system and endocrine system, blood circulation and respiration, liver and kidneys, immunity and metabolism are impaired [5]. Often, this type of thyroid disease is the leading one in the group of endocrine diseases, the main method of treatment for which is surgery. It should be considered that during operations on the thyroid gland, it is important to use the optimal method of anesthesia, which would prevent the manifestations of pathological reactions associated with the nature of the main and concomitant diseases. The high risk of intra - and postoperative complications associated with the anatomical features of the surgical intervention area justifies the relevance of the problem of optimizing the anesthetic allowance for thyroid surgery [2].

Analyzing of currently used methods of general anesthesia for thyroid diseases, we can assume that not all of them do fully prevent the negative effects and reactions that occur in the body to surgical stress and have many other serious drawbacks. These include: the use of narcotic analgesics and anesthetics, postoperative respiratory depression and rapid cessation of analgesia in the early postoperative period, a number of adverse hemodynamic changes at traumatic stages of surgery [1].

When choosing an anesthetic to maintain anesthesia for thyroid disease, the characteristics of the psychological and somatic status of patients, the nature of the influence of the disease on the circulatory system and the functional state of parenchymal organs, and the presence of concomitant diseases are guided [3].

Surgical treatment of thyroid pathology, including goiter under General anesthesia using neuroleptanalgesia (NLA) in the most traumatic moments of the

operation is often accompanied by dangerous circulatory disorders in the form of tachycardia, arterial hypertension, and heart rhythm disorders [3]. If the patient also has concomitant diseases (CVS diseases and diabetes mellitus), then the complication during anesthesia becomes critical. In modern practical anesthesiology, much attention is paid to the blockage of pathological impulsion, which occurs under the influence of surgical trauma of the afferent and central nervous system during the medical preparation of the patient in the preoperative period.

Anesthesiology does not yet know ideal and universal solutions to the problem of protecting the patient from surgical aggression. The most reasonable approach is a multi-modal approach that implies a multi-level, multi-purpose antinociception, in which the maximum effect (due to synergy or summation of action) is combined with a minimum of side effects [6].

The appearance of modern drugs for anesthesia and improvement of surgical treatment results at the current stage of development of endocrine surgery is seen in the further improvement of preoperative preparation and intraoperative anesthesia.

Objective: To choose the effective method of preoperative preparation and types of anesthesia on thyroid gland surgery.

Material and methods. The research was conducted at Samarkand State Medical Institute clinic №1. 72 patients operated on non-toxic goiter were under observation. In accordance with the purpose and objectives of this study, patients were divided into two groups depending on the type of preoperative preparation and anesthesia. Among the examined patients there were 8 men (11.1%) and 64 women (88.9%) aged from 32 to 68 years. By age, the patients were distributed as follows: from 32-45 years – 13 people (18.05 %), 46-60 years – 49 people (74.7 %), over 60 years – 10 people (7.2%). The length of anamnesis for goiter was on average 3.3 ± 2 years. Objective status according to the classification of the American society of anesthesiologists (ASA) II - 39 (54, 1%), III - 28 (38.9%), IV - 5 (6.9%). Patients with nodular (multi-nodular) euthyroid colloid goiter were operated on.

The following operations were performed: strumectomy (14 cases), hemistrumectomy (24 cases), hemistrumectomy with isthmus removal (7 cases), extremely subtotal-subfacial strumectomy (11 cases). The average duration of the operation is 50 ± 13 minutes. The first group (control group - n=34) – patients who underwent traditional preoperative therapy and standard anesthesia. Group II (study group - n=38) - patients whose preoperative preparation was performed using a modified method with the use of sibazone and droperidol. In group 1, premedication was performed on the operating table: fentanyl 0.002 mg/kg, sibazone 5 mg, atropine 0.005-0.008 mg/kg. Initial narcosis — thiopental Na 4 -7 mg/kg. Intubation was performed on the background of mioplegii ditilinom (100mg). To maintain anesthesia, propofol 2 — 4 mg/kg/h, fentanyl 5 — 8 mcg kg/h, and droperidol 0.05 — 0.1 mg/kg were used. Patients in group 2 were given

sibazone 0.2-0.5 mg/kg at 20:00 I/M for 3 days before surgery. In addition to the standard premedication, sibazone at a dose of 0.3-0.5 mg/kg and droperidol 0.05-0.1 mg/kg were administered 30 to 40 minutes before surgery. Introductory anesthesia — thiopental Na 4 — 7 mg/kg. Intubation on the background of myoplegia with ditillin(100 mg). To maintain anesthesia, propofol 2 — 4 mg/ kg/h, fentanyl 3 — 5 mcg/ kg/h, droperidol 0.05 — 0.1 mg/kg, ketamine 0.5 mg/kg were used. To objectively evaluate the effectiveness of preoperative preparation and the adequacy of anesthesia, hemodynamic parameters were studied: systolic blood pressure (SBP, mmHg), diastolic blood pressure (DBP, mmHg), heart rate (HR, beats/min) were determined in dynamics by the" ARGUS TM-7 "monitor of the company "SCHILLER". Average dynamic blood pressure (ABP, mmHg) SBP = DBP + 1/3 (SBP-DBP) (B. Folkov, E. Neil, 1976). The concentration of glucose, lactate, Sp02, and hormonal parameters (cortisol, free T3, and TSH) were studied using the STAR-FAX immunoassay analyzer (USA). The level of sedation was determined on the Ramsay scale (M. A. Ramsay, 1974) 40 minutes after premedication. The study of hemodynamic parameters was performed five times: at admission, 2 days to operation, 1 day to operation, in the intraoperative period, on the 1st day after surgery.

Research result. Our studies showed that the initial parameters of central hemodynamics in patients in both groups did not significantly differ from each other (tables 1., 2.). conducting a step-by-step monitoring of changes in central hemodynamics, we found that patients in the control group already at the preoperative stage, before induction into anesthesia, there was a significant increase in blood pressure, SBP, DBP, ABP and heart rate ($p<0.05$) compared to the initial parameters. So, after premedication, patients in the control group showed a significant increase in blood pressure by 4.8% ($p<0.001$), SBP by 6.9% ($p<0.001$), ABP by 5.5% ($p<0.01$), heart rate by 4.4% ($p<0.05$) relative to the initial values (table 1.). the number of heart contractions, average blood pressure during the three days before surgery was steadily increased and despite the traditional antihypertensive therapy, there was no downward trend. It is also noteworthy that despite the traditional premedication, the number of heartbeats was increased compared to the previous days.

Table 1.

SBP, DBP, ABP, heart rate in patients of the control group at the main stages of the perioperative period (M=m, p), (n=34)

Stages of research	Control group			
	SBP, mm. Hg	DBP, mm. Hg	ABP, mm. Hg	Heart rate beats/min
In admission	138,3 ± 1,66	88,6 ± 1,03	95,6 ± 1,02	89,8 ± 1,03
2 days before operation	132,2 ± 1,61 p > 0,5	86,3 ± 0,94 p > 0,5	95,3 ± 0,99 p > 0,5	88,8 ± 0,94 p > 0,1
1 day before operation	131,8 ± 1,60 p > 0,1 p1 > 0,2	85,9 ± 0,76 p > 0,05 p1 > 0,1	97,2 ± 0,99 p > 0,1 p1 > 0,1	86,4 ± 0,87 p < 0,05 p1 > 0,4
In intraoperative period	137,9 ± 1,34	87,1 ± 0,94	99,1 ± 1,03	86,5 ± 0,81

	p > 0,05 p1 > 0,05	p < 0,05 p1 > 0,05	p < 0,05 p1 > 0,1	p < 0,05 p1 > 0,5
1 day after operation	135,5 ± 1,35 p < 0,001 p1 < 0,05	86,1 ± 0,86 p < 0,001 p1 > 0,2	100,9 ± 0,98 p < 0,01 p1 > 0,1	88,3 ± 0,76 p < 0,05 p1 > 0,3

Note: p - compared to the first stage
P1 - compared to the previous stage

The above data indicate that patients in the control group have significant changes in blood pressure and heart rate, which are a consequence of the impact on the patient's body of stress and other adverse factors acting on the patient's body in the perioperative period. These disorders are not completely blocked by premedication, anesthesia, or infusion therapy and are amplified under the influence of surgery. Analysis of central hemodynamic parameters in patients of the study group showed that in the preoperative period, at the first five stages of the study (3 days, 2 days, 1 day before surgery, premedication), against the background of the use of sibazone and droperidol, there was a systematic decrease in blood pressure, SBP, DBP, heart rate compared to the initial indicators, but within the physiological norm. 2 days before the operation, there was a significant decrease in SBP by 4.2% ($p<0.005$), DBP by 4.3% ($p<0.01$), ABP by 4.2% ($p<0.01$), and heart rate by 3.9% ($p<0.05$) compared to the first stage. After premedication, the SBP is lower than the initial figures by 3.4% ($p<0.01$), DBP by 5.3% ($p<0.001$), ABP by 4.5% ($p<0.001$), heart rate by 4.6% ($p<0.05$). These changes in central hemodynamic parameters are positive and are due to the stabilization of the neurovegetative system against the background of the use of sibazone and droperidol, since admission to the hospital itself is already a stressful situation for most patients (table 2).

Table 2.

SBP, DBP, ABP, heart rate in patients of the study group at the main stages of the perioperative period (M=m, p), (n=38)

Stages of research	Control group			
	SBP, mm. Hg	DBP, mm. Hg	ABP, mm. Hg	Heart rate beats/min
In admission	140,4 ± 1,26 p2 > 0,1	88,7 ± 0,82 p2 > 0,5	95,9 ± 0,93 p2 > 0,5	89,4 ± 1,06 p2 > 0,5
2 days before operation	137,3 ± 1,18 p > 0,05 p2 > 0,5	87,2 ± 0,61 p > 0,05 p2 > 0,1	93,9 ± 0,74 p > 0,05 p2 > 0,4	86,0 ± 0,82 p > 0,05 p2 < 0,01
1 day before operation	127,1 ± 0,99 p < 0,005 p1 > 0,1 p2 < 0,05	81,4 ± 0,63 p < 0,01 p1 > 0,05 p2 < 0,001	92,0 ± 0,68 p < 0,01 p1 > 0,05 p2 < 0,001	78,4 ± 0,69 p < 0,05 p1 > 0,1 p2 < 0,001
In intraoperative period	121,2 ± 0,84 p < 0,005 p1 > 0,5 p2 < 0,01	71,4 ± 0,57 p < 0,001 p1 > 0,2 p2 < 0,001	91,4 ± 0,58 p < 0,001 p1 > 0,5 p2 < 0,001	72,2 ± 0,62 p < 0,01 p1 > 0,1 p2 < 0,001

1 day after operation	122,0 ± 0,75 p < 0,01 p1 > 0,5 p2 < 0,001	72,7 ± 0,52 p < 0,001 p1 > 0,5 p2 < 0,001	91,8 ± 0,51 p < 0,001 p1 > 0,5 p2 < 0,001	74,9 ± 0,58 p < 0,05 p1 > 0,2 p2 < 0,001

Note: p - compared to the first stage
p1 - compared to the previous stage
p2 - compared to the same stage of the control group

By analyzing the level of preoperative sedation, it was found that in 80% of patients in the control group, the effect of premedication was unsatisfactory, it was expressed in emotional tension, anxiety, and fear of surgery. In the study group, the level of preoperative sedation was adequate in 100 % of cases.

At the traumatic stage of the operation, there was a significant increase in the average blood pressure values in group 1 by 19.2 % ($p < 0.05$), in group 2-by 12 % ($p < 0.05$). Heart rate in the most traumatic stages of surgery increased by 15.6 % ($p < 0.05$) in group 1 and by 16 % ($p<0.05$) in group 2. These changes indicated a hyperdynamic reaction of the cardiovascular system, activation of the neuro-vegetative system. There were no significant differences between the two groups at this stage of the study ($p>0.05$). SBP returned to normal in group 2 after the operation, and in group 1 only by the first day after the operation. In the postoperative period, the heart rate remained stable.

In group 1, the glucose level increased during the traumatic stage of the operation, reaching a maximum by the end of the operation (6.98 mmol/l; $p < 0.05$), and returned to normal only on the first day. In group 2, the blood glucose concentration was normalized by the first day after surgery.

The level of TSH and T3 in both groups remained within the reference values at all stages of the study, no significant differences in these indicators were found in the comparison groups ($p > 0.05$). In all groups, SpO remained at the normal level of 97-99% during anesthesia and in the early postoperative period.

Conclusions:

1. Patients operated on for thyroid diseases, in the intraoperative period, undesirable hemodynamic, vegetative and neuroendocrine reactions of the body occur, which negatively affect the course of the perioperative period and the anesthetic allowance.

2. The use of a modified method of preoperative preparation with the use of sibazone and droperidol in patients operated on for thyroid diseases helps to reduce emotional stress, providing an adequate level of preoperative sedation, allows you to optimize the anesthetic effects, minimize the negative effects and doses of anesthetics.

3. The use of general anesthesia with fentanyl and droperidol does not fully block nociceptive impulses, which indicates insufficient protection of the patient from surgical aggression, characterized by instability of hemodynamics, preservation of endocrine and metabolic changes. The addition of ketamine to General anesthesia and the use of a modified method of preoperative preparation

can reduce the dose of opioids, stabilize hemodynamics and ensure safety of the perioperative period.

Literature

1. Акалаев Рустам Нурмухамедович, Матлубов Мансур Муратович, Лодягин Алексей Николаевич, Стопницкий Амир Александрович, Хожиев Хусниддин Шодмонович Психостимулятор воситалари билан ўткир заҳарланиш // Вестник экстренной медицины. 2020. №3.
2. Акрамов, Б. Р. Оптимизация анестезиологического пособия при пластических операциях у детей / Б. Р. Акрамов, И. Л. Шарипов // Детская хирургия. – 2020. – Т. 24. – № S1. – С. 12.
3. Бабажанов А. С., Жониев С. Ш. Предоперационная подготовка при патологии щитовидной железы //Анестезиология и реаниматология. – 2015. – №. 4. – С. 46-47.
4. Бабажанов А. С., Жониев С. Ш., Рахимов А. У. Анализ эффективности вариантов предоперационной подготовки и анестезии в лечении заболеваний щитовидной железы //Проблемы биологии и медицины. – 2017. – №. 1. – С. 93.
5. Жониев С. Ш., Рахимов А. У., Бабажанов А. С. Значение биохимических показателей при предоперационной подготовки больных узловым зобом //Science and world. – 2013. – Т. 136.
6. Жониев С. Ш. и др. Улучшение методов предоперационной подготовки и анестезии в периоперационном периоде заболеваний щитовидной железы //European research. – 2018. – С. 135-138.
7. Жониев С. Ш., Рахимов А. У. Стресспротекторная терапия как метод пролонгированной премедикации при хирургических вмешательствах //Анестезиология и реаниматология. – 2015. – Т. 60. – №. 4S. – С. 44-44.
8. Жониев С. Ш. Значение и сравнительная характеристика некоторых кардиальных симптомов у больных с патологией цитовидной железы в предоперационном периоде //Анестезиология и реаниматология. – 2015. – Т. 60. – №. 4S. – С. 47-47.
9. Жониев С. Ш. Улучшение результатов предоперационной подготовки с применением глюкокортикостероидных препаратов у больных узловым зобом //Анестезиология и реаниматология. – 2015. – Т. 60. – №. 4S. – С. 46-46.
10. Жониев С. Ш., Пардаев Ш. К., Муминов А. А. Использование модифицированного метода предоперационной подготовки и анестезии в хирургии щитовидной железы //International scientific review of the problems of natura ciences and medicine Boston. – 2019. – С. 177-189.
11. Жониев С. Ш. Гемодинамические аспекты при многокомпонентной общей анестезии в эндокринной хирургии //Medicus. – 2020. – №. 5. – С. 8-12.
12. Матлубов М.М., Семенихин А.А., Хамдамова Э.Г. Выбор оптимальной анестезиологической тактики при кесаревом сечении у пациенток с ожирением // Вестник анестезиологии и реаниматологии. 2017. №5.
13. Матлубов М. М., Рахимов А. У., Семенихин А. А. Комбинированная спинально-эпидуральная анестезия при абдоминальном родоразрешении //Анестезиология и реаниматология. – 2010. – №. 6. – С. 71-73.
14. Матлубов Мансур Муратович, Семенихин А.А., Абидов А.К., Рахимов А.У., Хамдамова Э.Г. Эпидурально-сакральная анестезия как альтернатива варианта спинально-эпидуральных блокад при абдоминальном родоразрешении // Регионарная анестезия и лечение острой боли. 2015. №4.
15. Матлубов М.М., Семенихин А.А., Рузибаев С.А., Закирова Н.И., Ким О.В. Состояние гемодинамики у беременных с ожирением // Вестник Северо-Западного государственного медицинского университета им. И. И. Мечникова. 2015. №2.

16. Матлубов М. М., Нематуллоев Т. К. Гемодинамический статус у пациентов с избыточным весом при колопроктологических операциях //Кардиология в Беларуси. – 2022. – Т. 14. – №. 2. – С. 199-205.
17. Матлубов М. М., Нематуллоев Т. К., Хамдамова Э. Г. Сравнительная оценка гемодинамических эффектов спинальной анестезии в зависимости от положения больного после введения гипербарического раствора бупивакаина больным с гипертонической болезнью //Высшая школа: научные исследования. – 2020. – С. 100-107.
18. Муминов, А., Матлубов, М., & Юсупбаев, Р. (2021). Состояние гемодинамики у женщин с митральным стенозом к моменту родоразрешения.
19. Муминов А. А. и др. Estimation of the effectiveness of associated anesthesia based on epidural blockade in cesarian section in patients with «evident» mitral stenosis //Вестник экстренной медицины. – 2021. – Т. 14. – №. 3. – С. 28.
20. Насриев Сухроб Ашурович, Хамдамова Элеонора Гаффаровна, Маллаев Сурат Саъдуллаевич, Акрамов Баходир Рахмонович, Пардаев Шукур Куйлиевич Гемодинамический эффект селективной спинальной анестезии при проктологических операциях // Достижения науки и образования. 2018. №7 (29)
21. Рахимов А. У., Жониев С. Ш. Оценка эффективности премедикации у больных с патологией щитовидной железы в предоперационном периоде //Анестезиология и реаниматология. – 2015. – №. 4. – С. 45-46.
22. Рахимов А. У., Жониев С. Ш. Особенности предоперационной подготовки больных с диффузным токсическим зобом при сопутствующей артериальной гипертонии //Анестезиология и реаниматология. – 2015. – Т. 60. – №. 4S. – С. 106-106.
23. Семенихин А. А., Матлубов М. М., Юсупбаев Р. Б. Двухсегментарная спинально-эпидуральная анестезия при абдоминальном родоразрешении с риском на расширение объема оперативного вмешательства // Регионарная анестезия и лечение острой боли. 2010. №2.
24. Семенихин А. А., Матлубов М. М., Ким О. В. Оценка эффективности центральных (нейроаксиальных) блокад у пациенток с ожирением и сниженными коронарными резервами при абдоминальном родоразрешении //Регионарная анестезия и лечение острой боли. – 2016. – Т. 10. – №. 3.
25. Шарипов, И. Л. Оценка сочетанного применения методов экстракорпоральной детоксикации у детей с почечной недостаточностью / И. Л. Шарипов // Врач-аспирант. – 2012. – Т. 54. – № 5.2. – С. 332-341.
26. Шарипов Исроил Латипович Снижение интоксикации сочетанными методами экстракорпоральной детоксикации при почечной недостаточности у детей // Детская хирургия. 2014. №1.
27. IL Sharipov, JT Yusupov, BK Xolbekov Personalization and preventative premedication: used drugs value and efficiency //Web of Scientist: International Scientific Research Journal 3 (02), 740-748
28. Muratovich, Matlubov Mansur, et al. "Hemodynamic indicators in pregnant women with obesity of various degrees of expression." *European Journal of Molecular and Clinical Medicine*, vol. 8, no. 2, 15 Jan. 2021
29. Matlubov Mansur Muratovich, Yusupov Jasur Tolibovich, Mallayev Surat Sadullayevich, Khamrayev Khamza Hamidullayevich Optimization of anesthesiological assistance in women with arterial hypertension in hysterectomy // Достижения науки и образования. 2020. №5 (59).
30. Sharipov, I. Hemodynamic gradations with combined use of extracorporal detoxification methods in children with renal failure / I. Sharipov, B. K. Xolbekov, B. R. Akramov //

European Journal of Molecular and Clinical Medicine. – 2020. – Vol. 7. – No 3. – P. 2555-2563.
31. Bosiers, M., & Schneider, P. A. (Eds.). (2009). Critical limb ischemia. Informa Healthcare.
32. Svetukhin, A. M., Karlov, V. A., IuA, A., Matasov, V. M., & Blatun, L. A. (1990). General principles of the treatment of suppurative wounds and suppurative surgical diseases. Khirurgiia, (12), 79-84.
33. Сафоев, Б. Б., & Рахимов, А. Я. (2019). Критическая ищемия нижних конечностей и диабетическая стопа.
34. Сафоев, Б. Б., Рахимов, А. Я., & Шаропова, М. С. (2018). Микробиологическая оценка ткани мышц голени при ампутации у больных критической ишемии нижней конечности. Тиббиётда янги кун.(NDM), 2(22), 46-50.
35. Minakov, O. E. E., Andreev, A. A., & Ostroushko, A. P. (2017). The diabetic foot syndrome. Journal of Experimental and Clinical Surgery, 10(2), 165-172.
36. Safoev, B. B., Sh, T., & Boltaev, A. Y. (2017). Rakhimov, AK Khasanov is a combined physical and chemical method for the treatment of purulent wounds of soft tissues. scientific and abstract, educational and spiritual journal" new day in medicine"-Bukhara.
37. Лысова, Д. П., & Лысова, М. П. (2015). Малые ампутации нижних конечностей при синдроме диабетической стопы. In Бюллетень медицинских интернет-конференций (Vol. 5, No. 5, p. 853). Общество с ограниченной ответственностью «Наука и инновации».
38. Safoyev, B. B., Rakhimov, A. Y., & Sharopova, M. S. (2018). Microbiological assessment of tissue of muscles of flashin at amputation at patients of critical ischemia of the lower extremity. Tibbiyotda of a yanga of kuna.(NDM) of, (2), 22.
39. Остроушко, А. П., Глухов, А. А., Андреев, А. А., Маркин, Д. А., & Лаптиѐва, А. Ю. Физико-химические основы инновационных методов и технологий в лечении ран мягких тканей. ДАГЕСТАНСКОЙ ГОСУДАРСТВЕННОЙ МЕДИЦИНСКОЙ АКАДЕМИИ, № 4 (41), 2021, 64.
40. Rakhimov, A. Y., Kurbanov, O. M., & Mirsoliev, S. G. (2022). THE INFLUENCE OF DIABETES MELLITUS ON THE COURSE OF PURULENT THORACIC SURGICAL PATHOLOGIES. World Bulletin of Public Health, 15, 87-93.
41. Yakhyoyevich, R. A. (2022). Studying The Activity Of In Vitro Antiseptics Decasan, Furacillin and Chlorhexidine Bigluconate Against Hospital Strains of S. Aureus, E. Coli, Klebsiella Spp., P. Melaninogenica Separated from the Bed of the Soleus Muscle. Texas Journal of Medical Science, 10, 62-67.
42. Курбанов, О. М., Рахимов, А. Я., & Шаропова, М. С. (2022). ТЕЧЕНИЕ ГНОЙНЫХ РАН МЯГКИХ ТКАНЕЙ ПРИ ПАТОЛОГИИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ НА ФОНЕ САХАРНОГО ДИАБЕТА. European Journal of Interdisciplinary Research and Development, 5, 1-11.
43. Maxsudovich, K. O. CLINICAL COURSE OF PURULENT SOFT TISSUE DISEASES ON THE BACKGROUND OF DIABETES MELL ITUS AND DIFFUSIVE TOXIC GOITER.
44. Курбанов, О. М., & Рахимов, А. Я. (2021). ОСОБЕННОСТИ ТЕЧЕНИЯ ГНОЙНЫХ РАН У БОЛЬНЫХ С ТИРЕОТОКСИКОЗОМ НА ФОНЕ САХАРНОГО ДИАБЕТА. Печатается по решению редакционно-издательского совета ФГБОУ ВО КГМУ Минздрава России, 40.
45. Safoev, B. B., Khasanov, A. K., & Rakhimov, A. Y. (2020). The Effectiveness Of The Use Of Transtrachial Sanitation In The Treatment Of Patients With Lung Abscess Complicated By Bronchial Fistula. The American Journal of Medical Sciences and Pharmaceutical Research, 2(10), 137-144.
46. Рахимов, А. Я. (2020). THE MODIFIED MYOPLASTIC METHODS OF AMPUTATION OF THE CRUS AT CRITICAL ISHEMIYA OF THE LOWER

EXTREMITY AT PATIENTS WITH THE DIABETES MELLITUS (DM). Новый день в медицине, (1), 337-341.

47. Safoyev, B. B., Rakhimov, A. Y., & Isroilov, R. I. (2019). Morphological changes of muscles of the crus and prevention of postoperative complications at patients with the diabetes mellitus at critical ischemia of the lower extremity. Proceedings of The ICECRS, 3
48. Kh, G. N., Kurbonov, N., Kh, K. E., & Matlubov, M. M. (2022). Optimization of Anesthesiological Approach for Recurrent Ventral Hernia in Obesity Patients. Texas Journal of Medical Science, 8, 10-14.
49. Kurbonov, N. Z., Raxmatov, F. I., & Giyosov, N. (2021). Optimization Of Anesthesia During Simultaneous Operations. Texas Journal of Medical Science, 3, 52-54.
50. Курбонов, Н. З., Пардаев, Ш. К., & Матлубов, М. М. (2022). ОПТИМИЗАЦИЯ АНЕСТЕЗИОЛОГИЧЕСКОГО ПОСОБИЯ ПРИ СИМУЛЬТАННЫХ ОПЕРАЦИЯХ НА ОРГАНАХ БРЮШНОЙ ПОЛОСТИ. Uzbek Scholar Journal, 10, 52-56.
51. Qurbonov, N. Z., & Pardayev, S. Q. Y. (2022). QORIN BO'SHLIG'I SIMULTAN OPERATSIYALARDA ANESTEZIOLOGIK YONDOSHUV SAMARADORLIGINI TAKOMILLASHTIRISH. Journal of Integrated Education and Research, 1(5), 116-121.
52. Jumanov, A. M., & Ravshanovna, X. K. (2022). THE USE OF DIDACTIC GAMES TO INCREASE THE EFFICIENCY OF TEACHING CHEMISTRY. Web of Scientist: International Scientific Research Journal, 3(8), 350-356.
53. Jumanov, A. M., & Tolibjonovna, H. S. (2022). Forming ecological thinking in students on the basis of interdisciplinary relationships. Web of Scientist: International Scientific Research Journal, 3(8), 241-244.
54. Jumanov, A. M., & Mamajonovna, R. G. (2022). Forms and Methods of Conducting Lessons and Extracurricular Activities in the Career Guidance of Students in Chemistry. International Journal of Formal Education, 1(8), 34-38.
55. Mirzaevich, J. A., & Marufovna, S. M. (2022). FORMATION OF PRACTICAL LEARNING SKILLS AND SKILLS OF CHEMISTRY STUDENTS. British Journal of Global Ecology and Sustainable Development, 4, 78-81.
56. Jumanov, A. M., kizi Toychieva, M. H., & kizi Isroilova, F. I. (2022). Development of Knowledge in Chemistry in Students and Questions of Vocational Guidance. International Journal of Social Science Research and Review, 5(4), 1-6.
57. Mirzayevich, J. A., & Ogli, Y. M. N. (2022). Characteristics of teaching chemical and biological sciences in school on the basis of interaction.
58. Jumanov, A. M., & Khaydarov, R. (2021). USING INTERDISCIPLINARY CONNECTIONS IN TEACHING ELEMENTARY CHEMISTRY. CURRENT RESEARCH JOURNAL OF PEDAGOGICS, 2(07), 11-15.