

CRF AND CKD: MODERN APPROACHES TO TERMINOLOGY, CLASSIFICATION, DIAGNOSIS AND TREATMENT

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Abstract: The content of the concept of the term "chronic kidney disease" is disclosed, the classification and rationale for the transition to a new classification adopted by the VI Congress of the All-Russian Scientific Society of Nephrologists in 2006 and recommended for use in medical practice on the territory of the Russian Federation instead of the concept of "chronic renal failure" are given, diagnostic methods.

Key words: chronic kidney disease, concept, classification, diagnosis.

ХПН И ХБП: СОВРЕМЕННЫЕ ПОДХОДЫ К ТЕРМИНОЛОГИИ, КЛАССИФИКАЦИИ, ДИАГНОСТИКЕ И ЛЕЧЕНИЮ

Аннотация: Раскрывается содержание понятия термина «хроническая болезнь почек», классификация и обоснование перехода на новую классификацию, принятую VI съездом Всероссийского научного общества нефрологов в 2006 г. и рекомендованную для использования в медицинской практике на территории Российской Федерации вместо понятия «хроническая почечная недостаточность» даются методы диагностики.

Ключевые слова: хроническая болезнь почек, понятие, классификация, диагностика.

INTRODUCTION

Chronic renal failure (CRF) is a symptom complex that develops in chronic bilateral kidney diseases due to the gradual irreversible death of nephrons and is characterized by a violation of the homeostatic function of the kidneys. End-stage renal disease (ESRD) - the outcome of kidney disease with a chronic progressive course - corresponds to the concept of "renal death".

MATERIALS AND METHODS

The morphological basis of ESRD is nephrosclerosis, and the functional basis is the loss of renal functions, leading to disruption of homeostasis and death of the patient. The disease becomes irreversible long before ESRD, almost from the moment of establishment of CKD. There is a steady increase in the level of CRF in the world. So, in Russia in the 70s. of the last century, CRF was recorded with a frequency of 19-109.2 per 1 million population, in the last decade - 100-600 people, more often detected in adults [1]. In the United States, the prevalence of CRF in the period from 1974 to 1981 was 133.1-162.4 per 1 million population, in 1996 it was already 268 per 1 million population, in recent years it has been up to 600-700 per 1 million population. The annual incidence is 50–100 cases per 1 million population [2, 6]. In the Republic of Tatarstan in 1996-1998. the number of adult patients with ESRD was 269-355 per 1 million inhabitants [4], in the last decade it has exceeded 600 per 1 million population. Since prevalence data are based on either referral data or data from dialysis centers, the true prevalence and incidence of CKD may

be underestimated [9, 19, 12]. Unfavorable indicators of the epidemiology of CRF are associated with an increase not only in the number of patients with kidney pathology, but also with diabetes mellitus, obesity, aging of the population, an increase in the number of patients with kidney damage of a vascular nature, in particular, renal ischemia [3]. An important role in the formation of kidney damage belongs to arterial hypertension [13], hyperglycemia. Risk factors for the development of kidney pathology include smoking [16], hyperlipidemia and obesity [5, 15], and metabolic syndrome factors [17]. With the association of factors, the severity of kidney damage is manifested to a greater extent. Pathology of the kidneys and urinary tract ranks 12th among the causes of death and 17th as disability [9, 12, 18]. The number of patients with ESRD in the world receiving renal replacement therapy has increased by more than 4–5 times over the past 20 years [7, 8, 11]. However, the availability of renal replacement therapy in Russia lags behind the need. In our country, there is also no generally accepted classification of CRF; in clinical practice, the classification of CRF by N.A. is widespread. Lopatkina and I.N. Kuchinskaya (1973) with the allocation of 4 stages: I - latent; II - compensated, III - intermittent; IV - terminal. Classification with the allocation of 3 stages, formed from a number of classifications, is convenient for determining the tactics of managing patients (conservative tactics or preparation for dialysis and its implementation): I. Initial (latent) stage - glomerular filtration rate (GFR) 80-40 ml / min; clinically: polyuria, hypertension (in 50% of patients); laboratory: mild anemia. II. Conservative stage — GFR 40-10 ml/min; clinically: polyuria, nocturia, hypertension; laboratory: moderate anemia, creatinine 145-700 $\mu\text{mol/l}$. III. End-stage - GFR less than 10 ml/min; clinically: oliguria; laboratory: severe anemia, hyperkalemia, hypernatremia, hypermagnesemia, hyperphosphatemia, metabolic acidosis, creatinine more than 700-800 $\mu\text{mol/l}$. CRF, by definition, is caused by the death of nephrons, i.e. is irreversible, and in a narrow sense, the stage of chronic renal failure is considered to be irreversible at a glomerular filtration rate of less than 60 ml / min / 1.73 m². However, all classifications of CKD also include early, reversible stages with GFR over 60 ml/min. Moreover, to assess the stage of CRF, various criteria were used: the level of creatinine and blood urea, GFR. In addition, with a single gradation of CRF stages (I-III or I-IV stages), fluctuations in serum creatinine and urea for the same stages sometimes differ very significantly. In addition, the term "CKD" in doctors is associated with a wrinkled kidney, and in patients with a terminal condition, an "artificial kidney" and, to a certain extent, with a hopelessness of the condition, which often leads to depression. Although the early stages of chronic renal failure are reversible, and at later stages, except for the terminal one, it is possible to slow down or even stabilize kidney function using nephroprotection methods. Various criteria for CRF make it difficult to study its epidemiology and plan the need for conservative and extracorporeal treatments. In order to unify approaches to assessing the stage of chronic kidney disease in Europe and the USA, the associations of nephrologists, transplantologists and doctors of dialysis departments (NRF / KDOQI (National Kidney Foundation / Kidney Disease Outcomes Quality Initiative) in 2002 adopted a classification of chronic kidney disease (CKD) [16] The US National Kidney Foundation (NKF, 2003) has proposed a solution to these problems. For this purpose, a group of experts was created, including experts in the fields of nephrology, epidemiology, clinical laboratory diagnostics, nutrition, social activities, gerontology, and family medicine. As a result of the analysis of many publications on diagnostics and treatment, assessment of the significance of a number of indicators in determining the rate of progression of kidney diseases, terminological concepts and agreements with representatives of the administration, the concept of chronic kidney disease (CKD, CKD - chronic kidney disease) was proposed. Introducing the concept of CKD, the

experts of the NKF working group pursued a number of goals in creating the concept of CKD: • defining the concept of CKD and its stages, regardless of the cause (etiology) of kidney failure (disease); • selection of laboratory indicators (research methods) that adequately characterize the course of CKD; • determination (study) of the relationship between the degree of impaired renal function and CKD complications; • stratification of risk factors for progression of CKD and occurrence of cardiovascular diseases. In 2005, the most authoritative organization - KDIGO (Kidney Diseases: Improving Global Outcomes) - confirmed the 2003 K/DOQI initiative for the widespread use of the term CKD. ICD-10 does not classify CKD. At the same time, in the international classification ICD-9-CM, since October 1, 2005, all five stages of CKD have already been assigned their own codes. Since 2003, the concept of CKD has also been used in pediatric nephrology. This term is borrowed from therapeutic nephrology and was first introduced in Pediatrics by RJ Hogg et al. in 2003. The criteria for defining CKD in adults and children are identical. CKD can be both an independent diagnosis and a general term. For example, if proteinuria or erythrocyturia is incidentally detected for the first time and this urinary syndrome has been observed for more than three months, then CKD can be considered as the primary diagnosis. In another case, in the presence of a progressive course of glomerulonephritis or a primary decrease in tubular function, the diagnosis is formulated as CKD - chronic glomerulonephritis (with its interpretation) or CKD - tubulopathy (with a possible interpretation). Thus, the diagnosis of CKD is made regardless of the causative disease, implying the likelihood of further progression of the process even in the absence of a decrease in the level of GFR at the time of newly diagnosed kidney disease. The concept of CKD, which is not associated with a nosological diagnosis, not only does not cancel the nosological approach to the diagnosis of a particular disease, but in some cases emphasizes its significance. The presence of CKD carries the likelihood of developing adverse outcomes, which is assessed by risks. The main risks in CKD are the progression of the renal process with the development of chronic renal failure (CRF). Early detection of CKD can slow the progression of nephropathy, and in some cases even prevent loss of kidney function. Moreover, the decline in glomerular function can be restored or slowed down with long-term use of organoprotective therapy. The possibility of loss of kidney function is the most important point in understanding the term "chronic kidney disease". However, there are two groups of criteria in the definition of CKD. According to the first group, the presence of urinary syndrome, morphological or anatomical changes are the basis for the diagnosis of CKD. And if the results of a nephrobiopsy or a reduced size of the kidneys are obvious criteria for CKD, then the presence of a urinary syndrome carries a different prognostic value. The most unfavorable is the presence of proteinuria, which is considered in modern nephrology as a nephrotoxic factor. That is why, unlike erythrocyturia, proteinuria of any degree, starting with microalbuminuria, is subject to medical treatment. The presence of GFR less than 60 ml/min without clinical and laboratory signs of renal disease indicates a high probability of disease progression to the end stage of CKD. This value of the glomerular filtration rate was chosen due to the approximate correspondence of this level of GFR to the death of more than 50% of nephrons. In this case, blood creatinine may be within the upper limit of normal. In this regard, to identify CKD, GFR should be calculated using the formula. GFR is an integral indicator of kidney function. In addition to determining the level of GFR, it is necessary to calculate the individual rate of progression of CKD, which is calculated using various methods, including the method of Mitch et al. in terms of the reciprocal level of plasma creatinine ($1/\text{Scr}$). The term and classification of CKD is accepted not only in the United States, but also in many other countries. Sometimes the term CKD is equated

with the term "chronic kidney disease (CKD)". Indeed, two Russian cognate words "disease" and "disease" are sometimes perceived in the same way. However, there is also another point of view regarding the correctness of the formulation of the diagnosis: CKD or CKD. From the point of view of the Russian language, a "disease" is a disease in a particular individual. Speaking of CKD, This refers to kidney diseases that are different in etiology and pathogenesis (for example, glomerulonephritis and diabetic nephropathy), which combine at least two factors: firstly, common non-immune mechanisms for the progression of the process and, secondly, the same type of approaches to renoprotection. Therefore, "illness" would be more correct than "illness". In this context, the experience of the countries of the Asia-Pacific region is of greatest interest. A number of these countries have urine screening programs in place for children to prevent chronic kidney disease. Such programs began in Japan in 1973. Later, such surveys of children began on a national scale in Taiwan and South Korea, and on a more limited scale in Malaysia and Singapore. Recent summaries of the most significant Japanese experience in the implementation of these programs have shown that that in primary school students (6-11 years old) changes in urine tests are observed in 0.52%, and their prevalence increases to 0.75% in children of older age groups. The main cause of such disorders are glomerular diseases. How do the terms and stages of CKD and CKD relate? In fact, CKD is the same CKD, but with more precise terminology, common criteria for diagnosis and nephroprotection. The use of the term CKD implies the exclusion of the term CKD, however, the Russian Scientific Society of Nephrology proposes to retain the term CKD for the end-stage (dialysis) stage of CKD. In addition, during the transition period to the new CKD classification, both classifications can be used. Chronic kidney disease (CKD) is established when signs of kidney damage (structural or functional disorders) are detected with or without a decrease in GFR, lasting 3 months or more. The difference between the classification of CKD and CKD is that to assess the stage of CKD, the only indicator of renal function is used - the glomerular filtration rate (GFR), which more accurately reflects kidney function than creatinine, since its calculation takes into account the influence of gender, age, body weight. And besides, the term CKD does not contradict the inclusion of kidney diseases with normal and initial reduced kidney function (I-II stages). which more accurately reflects kidney function than creatinine, since its calculation takes into account the influence of gender, age, body weight. And besides, the term CKD does not contradict the inclusion of kidney diseases with normal and initial reduced kidney function (I-II stages). which more accurately reflects kidney function than creatinine, since its calculation takes into account the influence of gender, age, body weight. And besides, the term CKD does not contradict the inclusion of kidney diseases with normal and initial reduced kidney function (I-II stages).

NRF/KDOQI stages of chronic kidney disease (National Kidney Foundation/Kidney Disease Outcomes Quality Initiative, 2002)

Стадии	Описание	КФ
I	Признаки нефропатии, нормальная КФ	$>90/\text{мл}/\text{мин}/1,73 \text{ м}^2$
II	Признаки нефропатии, легкое снижение КФ	60—89
III	Умеренное снижение КФ (консервативная стадия)	30—59
IV	Тяжелое снижение КФ (преддиализная стадия)	15—29
V	Крайне тяжелое снижение (диализная стадия)	<15

RESULTS

As can be seen from the above classification, the diagnosis of CKD begins with intact kidney function - stage I CKD, a slight decrease in kidney function (GFR 60-89 ml / min) corresponds to stage II CKD, which allows creating a register of all patients with potential progression of CKD and the likely achievement of extremely severe decrease in GFR - "dialysis" stage. The classification was supported by the VI Congress of the All-Russian Scientific Society of Nephrologists (2005), and on November 17-18, 2007 in Moscow - by the Plenum of the Board of the Scientific Society of Nephrologists of Russia (NSNR). A working group has been created to develop a draft order for the Ministry of Health of the Republic of Tajikistan to improve the nephrological service and switch to a new classification. This classification is proposed for familiarization and dissemination in the Russian Federation. Currently, work is underway to prepare an order of the Ministry of Health of the Russian Federation on the official transition to a new classification of all interested services (health and social services). The new classification will contribute to the study of the epidemiology of CKD, the development of methods of prevention and conservative therapy that allow to control the course of the disease, to delay the start of renal replacement therapy [10]. Due to the need for time to switch to a new classification, the introduction of a mandatory determination of the level of creatinine (to calculate GFR using the Cockcroft-Gault formula) in the standard for examining patients with chronic kidney disease and suspected CKD in the transition period, it is recommended to use both classifications, simultaneously indicating the stage of CRF, and stage of CKD. The new classification will contribute to the study of the epidemiology of CKD, the development of methods of prevention and conservative therapy that allow to control the course of the disease, to delay the start of renal replacement therapy [10]. Due to the need for time to switch to a new classification, the introduction of a mandatory determination of the level of creatinine (to calculate GFR using the Cockcroft-Gault formula) in the standard for examining patients with chronic kidney disease and suspected CKD in the transition period, it is recommended to use both classifications, simultaneously indicating the stage of CRF, and stage of CKD. The new classification will contribute to the study of the epidemiology of CKD, the development of methods of prevention and conservative therapy that allow to control the course of the disease, to delay the start of renal replacement therapy [10]. Due to the need for time to switch to a new classification, the introduction of a mandatory determination of the level of creatinine (to calculate GFR using the Cockcroft-Gault formula) in the standard for examining patients with chronic kidney disease and

suspected CKD in the transition period, it is recommended to use both classifications, simultaneously indicating the stage of CRF, and stage of CKD.

Основной диагноз	ХБП (ста- дия)	ХПН (ста- дия)	Основные синдромы ХБП	Недоста- точность системы (органов)	Ослож- нения
Хронический гломеруло- нефрит	III ста- дия	II ста- дия	Артериальная гипертония III степени	НК II	ОНМК

An example of formulating a diagnosis using both classifications

DISCUSSION

CKD is a syndrome, not a nosological form of the disease. Therefore, it is necessary to identify the disease that is its cause. 90% of patients with CKD have a history of chronic kidney disease (10% of patients have no history of kidney disease): hypertensive nephropathy, malignant hypertension, renal artery stenosis, glomerulonephritis, tubulointerstitial nephritis, chronic pyelonephritis, kidney damage in systemic connective tissue diseases (systemic red lupus, scleroderma, periarteritis nodosa, Wegener's granulomatosis, hemorrhagic vasculitis), diabetic nephropathy, renal amyloidosis, gouty nephropathy; congenital kidney diseases, including polycystic kidney disease, renal hypoplasia, Allport syndrome, Fanconi syndrome, multiple myeloma, long-term urinary tract obstruction, urolithiasis, hydronephrosis. Clinical examination in early stages (I-II and even III) often does not reveal any clinical signs of CKD. Therefore, it is necessary to study blood creatinine in patients with suspected CKD. At later irreversible stages, changes characteristic of chronic renal failure are detected. The skin is dry, pale, with a yellow tinge (delay of urochromes). Observe hemorrhagic rashes (petechiae, ecchymosis), scratching with itching. In the terminal stage of chronic renal failure, "powdering" of the skin occurs (due to secretions through the pores of uric acid). Polyuria and nocturia - before the development of the terminal stage of chronic renal failure, in the terminal stage - oliguria followed by anuria. neurological symptoms. Uremic encephalopathy: memory loss, impaired ability to concentrate, drowsiness or insomnia. In the terminal stage, fluttering tremor, convulsions, chorea, stupor and coma. Coma develops gradually or suddenly. Uremic polyneuropathy: restless legs syndrome, paresthesia, burning in the lower extremities, paresis, paralysis (in the later stages). Endocrine disorders: uremic pseudodiabetes and secondary hyperparathyroidism, often noted amenorrhea in women, impotence and oligospermia in men. Adolescents often have disorders in the processes of growth and puberty. Water and electrolyte disorders: polyuria with nocturia in the initial and conservative stages; oliguria, edema in the terminal stage; hypokalemia in the initial and conservative stages (overdose of diuretics, diarrhea): muscle weakness, shortness of breath, hyperventilation; hyponatremia in the initial and conservative stages: thirst, weakness, decreased skin turgor, orthostatic arterial hypotension, increase in hematocrit and concentration of total protein in the blood serum; hypernatremia in the terminal stage: hyperhydration, arterial hypertension, congestive heart failure; hyperkalemia in stage V (especially with an increased content of potassium in food, hypercatabolism, oliguria, metabolic acidosis, as well as taking spironolactone, ACE inhibitors, beta-blockers; hypoaldosteronism); muscle paralysis, acute respiratory failure, bradycardia, AV block. Changes in the skeletal system (secondary hyperparathyroidism): renal rickets (changes are similar to those in normal rickets), cystic fibrous osteitis, osteosclerosis, bone fractures. Violations of phosphorus-calcium metabolism:

hyperphosphatemia (with a decrease in GFR less than 25% of the norm) in combination with hypocalcemia (hyperparathyroidism) or hypophosphatemia (malabsorption syndrome, taking antacids, hyperventilation, vitamin D deficiency); itching (possible due to hyperparathyroidism); osteoporosis; decrease in myocardial contractility. Violations of the acid-base state (ACHS): compensated hyperchloremic acidosis, metabolic acidosis (GFR less than 50 ml / min). Nitrogen imbalance: clinical signs of nitrogen imbalance are uremic enterocolitis, secondary gout, ammonia breath odor. Changes in the cardiovascular system: arterial hypertension, congestive heart failure, acute left ventricular failure, pericarditis, cardiomyopathy - muffled heart sounds, "gallop rhythm", systolic murmur, expansion of the boundaries of the heart; rhythm disturbances - atrioventricular blockade up to cardiac arrest (with a potassium content of more than 7 mmol / l); coronary artery disease; rapid progression of atherosclerosis of the coronary and cerebral arteries. Hematopoietic and immune disorders: anemia, lymphopenia, hemorrhagic diathesis, increased susceptibility to infections, splenomegaly and hypersplenism, leukopenia, hypocomplementemia. Lung damage: uremic edema, pneumonia, pleurisy (polyserositis with uremia). Disorders of the gastrointestinal tract: anorexia, nausea, vomiting, erosions and ulcers of the gastrointestinal tract, bad taste in the mouth and ammonia breath, mumps and stomatitis (secondary infection). Laboratory studies allow us to clarify the details of CKD, the causes and factors of progression. Complete blood count: normochromic normocytic anemia, lymphopenia, thrombocytopenia, decrease in hematocrit. Urinalysis: proteinuria, erythrocyturia, leukocyturia; hypostenuria, isosthenuria; cylindric is possible. Biochemical tests: azotemia (increased levels of creatinine, urea, ammonia, uric acid with GFR less than 40 ml/min). Hyperlipidemia - an increase in cholesterol, low-density lipoproteins, triglycerides, a decrease in high-density lipoproteins (hypercholesterolemia type III-IV according to Fredrickson); a decrease in the blood concentration of the active form of vitamin D, testosterone; increased concentration of parathyroid hormone, glucose; decreased tissue sensitivity to insulin. Electrolytes: hyperphosphatemia, hypokalemia or hyperkalemia, hyponatremia or hypernatremia, hypochloremia, hypermagnesemia (in the terminal stage), increased sulfate content, hypocalcemia. Blood clotting is reduced. Acid-base balance: acidosis (pH less than 7.37), a decrease in the concentration of blood bicarbonates. GFR is calculated using the Cockcroft-Gault formula: $GFR = (140 - \text{age in years}) \times \text{body weight in kg} / (72 \times \text{blood creatinine concentration in mg\%}) \times 0.85$ (in women) or $GFR = (140 - \text{age in years}) \times \text{body weight in kg} / \text{blood creatinine concentration in } \mu\text{mol/l} \times 1.23$ (in men). Special studies are carried out to clarify the cause, nature of kidney damage and exclude alternative diseases: ultrasound - reduced size of the kidneys (wrinkling), rarely the size of the kidneys is not changed (polycystic, amyloidosis, tumor); increased echogenicity of the kidney parenchyma; it is possible to detect stones, obstruction of the ureter with the expansion of the pelvis and calyces. CT - determine the benign or malignant genesis of cystic formations. Retrograde pyelography - with suspicion of occlusion of the urinary tract or an anomaly of their structure. Arteriography (if renal artery stenosis is suspected). Cavagraphy (with suspicion of ascending thrombosis of the inferior vena cava). Kidney biopsy. Radioisotope renography: flattening of the renographic curve and delay in release of the isotope; in violation of the patency of the renal arteries, the first rise of the curve (vascular phase) becomes less pronounced, with urinary stasis, there is no decrease in the curve in the excretion phase.

CONCLUSIONS

Differential diagnosis of CKD. In CKD, the decrease in GFR usually occurs gradually, over years, often unnoticed by both patients and physicians. But the cause of CKD can be not only chronic kidney disease, but also acute diseases with an outcome in nephrosclerosis, including acute

renal failure and rapidly progressive glomerulonephritis. Therefore, when a decrease in renal function of CKD is detected for the first time, it is necessary to exclude acute renal failure, which is characterized by a relationship with an etiological factor, as well as oligoanuria (85%), the absence of left ventricular hypertrophy, and severe anemia. The kidneys are enlarged or not changed, the echogenicity of the kidney parenchyma is reduced or normal. In addition, it is necessary to exclude rapidly progressive glomerulonephritis, in which a progressive decline in kidney function up to the terminal stage occurs within 6-12, less often 24 months, nephrotic-hypertensive-hematuric syndrome, or nephrotic-nephritic syndrome, a history of systemic connective tissue disease is possible (SLE). In both cases, a time criterion should be used for differential diagnosis, namely, the duration of the disease is more or less than 3 months.

References:

1. Temirovich A. M. et al. Features of diagnostics and surgical tactics for Hiatal hernias //International Journal of Health Sciences. – №. II. – С. 6029-6034.
2. АЧИЛОВ М. Т. и др. МЕТОДЫ ЛЕЧЕНИЯ ТРАВМАТИЧЕСКИХ ПОВРЕЖДЕНИЙ ПЕЧЕНИ //Т [a_XW [i [S US S_S^[űe YfcS^ – Т. 34. – С. 174.
3. Bobrov O. E. et al. Analysis of mortality in benign diseases of the organs of the hepato-pancreato-biliary region and the ways of its reduction //Klinicheskaja Khirurgiia. – 1992. – №. 1. – С. 41-43.
4. Ачилов М. Т. и др. лечение повышенного внутрибрюшного давления у больных с перитонитом/Доктор ахборотномаси, 1 (98), 2021 //DOI. – Т. 10. – С. 16-20.
5. BOBROV O. E., OGORODNIK P. V., ACHILOV M. T. INSTRUMENTAL DIAGNOSIS OF DISEASES OF THE HEPATOPANCREATODUODENAL ZONE ORGANS IN PATIENTS WITH POSTCHOLECYSTECTOMY SYNDROME //VRACHEBNOE DELO. – 1992. – №. 3. – С. 54-58.
6. Bobrov O. E., Ogorodnik P. V., Achilov M. T. The characteristics of the instrumental diagnosis of organic diseases of the hepatopancreatoduodenal area in patients with the postcholecystectomy syndrome (a review of the literature) //Likars' ka Sprava. – 1992. – №. 3. – С. 54-58.
7. Ачилов М. Т., Бобров О. Е., Головяшкин В. А. Анализ летальности при доброкачественных заболеваниях органов гепатопанкреатобилиарной зоны и пути ее снижения //Клиническая хирургия. – 2002. – №. 1. – С. 38-42.
8. Ачилов М. и др. Оценка эффективности органосохранных операций при лечении остеогенной саркомы дистального отдела бедренной кости //Журнал проблемы биологии и медицины. – 2013. – №. 1 (72). – С. 20-21.
9. Бабажанов А. С. и др. Совершенствование методов герниоабдоминопластики при симультанных хирургических заболеваниях //SCIENCE AND WORLD. – 2013. – С. 65.
10. Babajanov A. S. et al. Improvement of methods of hernioabdominoplasty with simultaneous surgical diseases //SCIENCE AND WORLD. – 2013. – С. 67.
11. Миннуллин И., Ачилов М., Валиев Х. Гигантская липома задней поверхности шеи //Журнал вестник врача. – 2013. – Т. 1. – №. 04. – С. 110-110.
12. Акрамов А. и др. Лечебный патоморфоз злокачественных опухолей //Журнал Проблемы биологии и медицины. – 2014. – №. 1 (77). – С. 110-115.

13. Ачилов М. и др. Оценка лечебного патоморфоза после неoadъювантной полихимиотерапии при раке молочной железы //Журнал проблемы биологии и медицины. – 2015. – №. 2 (83). – С. 14-17.
14. Акрамов А., Ачилов М., Ёров Л. Степень злокачественности опухолевого процесса и оценка терапевтического патоморфоза при раке молочной железы //Журнал вестник врача. – 2016. – Т. 1. – №. 3. – С. 16-24.
15. Ачилов М. и др. Оценка лечебного патоморфоза после неoadъювантной полихимиотерапии при раке молочной железы //Журнал проблемы биологии и медицины. – 2015. – №. 2 (83). – С. 14-17.
16. Акрамов А. и др. Алгоритмы диагностики и оптимизация лечения нефробластомы у детей //Журнал вестник врача. – 2015. – Т. 1. – №. 04. – С. 4-8.
17. Бойкобилов Б. А., Ахмедов М. М. АЛГОРИТМЫ ДИАГНОСТИКИ И ОПТИМИЗАЦИЯ ЛЕЧЕНИЯ НЕФРОБЛАСТОМЫ У ДЕТЕЙ //ВЕСТНИК ВРАЧА. – 2015. – С. 3.
18. Ачилов М. и др. Анализ динамики заболеваемости и клиническое течение рака желудка пожилого и старческого возраста //Журнал вестник врача. – 2016. – Т. 1. – №. 4. – С. 11-15.
19. Акрамов А., Ачилов М., Ёров Л. Степень злокачественности опухолевого процесса и оценка терапевтического патоморфоза при раке молочной железы //Журнал вестник врача. – 2016. – Т. 1. – №. 3. – С. 16-24.
20. Акрамов А., Ачилов М., Ёров Л. Степень злокачественности опухолевого процесса и оценка терапевтического патоморфоза при раке молочной железы //Журнал вестник врача. – 2016. – Т. 1. – №. 3. – С. 16-24.
21. Ачилов М. и др. Анализ динамики заболеваемости и клиническое течение рака желудка пожилого и старческого возраста //Журнал вестник врача. – 2016. – Т. 1. – №. 4. – С. 11-15.
22. Ачилов М. Т. и др. Панкреатодуоденальная резекция-методика физиологической реконструкции //Достижения науки и образования. – 2020. – №. 6 (60). – С. 38-42.
23. Ачилов М. Т. и др. Ручной колоанальный или аппаратный колоректальный анастомоз //Достижения науки и образования. – 2020. – №. 6 (60). – С. 43-44.
24. Поникарова Н. Ю. и др. ЭНДАРТЕРЭКТОМИЯ VS ШУНТИРОВАНИЕ //Мечниковские чтения-2020. – 2020. – С. 320-320.
25. Gulamov O. M. et al. Modern methods of diagnosis and treatment of barrett esophagus //Doctor's herald. – 2020. – Т. 2. – С. 94.
26. Ачилов М. Т., Ахмедов Г. К., Алимов Ж. И. Гастрэктомия при желудочных кровотечениях //SCIENCE AND WORLD. – 2013. – С. 62.
27. Temirovich A. M. et al. Prevention and treatment of intraabdominal hypertension in patients with peritonitis //Вестник науки и образования. – 2021. – №. 3-2 (106). – С. 75-79.
28. Temirovich A. M. et al. Prevention and treatment of intraabdominal hypertension in patients with peritonitis //Вестник науки и образования. – 2021. – №. 3-2 (106). – С. 75-79.
29. Ачилов М. Т. и др. ДИАГНОСТИЧЕСКИЕ ОСОБЕННОСТИ И МЕТОДЫ ХИРУРГИЧЕСКОЙ ТАКТИКИ БИЛИАРНОГО ИЛЕУСА //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2021. – Т. 6. – №. 1.

30. Temirovich A. M. et al. Prevention and treatment of intraabdominal hypertension in patients with peritonitis //Вестник науки и образования. – 2021. – №. 3-2 (106). – С. 75-79.
31. Эшонходжаев О. Д. и др. ПРИМЕНЕНИЕ АНТИСПАЕЧНОГО ПОКРЫТИЯ НА ЭКСПЕРИМЕНТАЛЬНЫХ МОДЕЛЯХ РАНЫ ЛЕГКОГО //Вестник науки и образования. – 2021. – №. 3-2 (106). – С. 67-74.
32. Ачилов М. и др. Профилактика и лечение повышенного внутрибрюшного давления у больных с перитонитом //Журнал вестник врача. – 2021. – Т. 1. – №. 1 (98). – С. 17-21.
33. Ачилов М. и др. Профилактика и лечение повышенного внутрибрюшного давления у больных с перитонитом //Журнал вестник врача. – 2021. – Т. 1. – №. 1 (98). – С. 17-21.
34. Ачилов М. и др. МАЛИГНИЗАЦИЯ ЛАШГАН ГАСТРОДУОДЕНАЛ ЯРАЛАРДАН ҚОН КЕТИШДА ХИРУРГИК ТАКТИКА //Журнал вестник врача. – 2021. – Т. 1. – №. 4 (101). – С. 19-23.
35. Shonazarov I. S., Akhmedov S. K. Features of early enteral nutrition in patients with intraabdominal hypertension syndrome in severe acute pancreatitis //ACADEMICIA: An International Multidisciplinary Research Journal. – 2022. – Т. 12. – №. 7. – С. 170-174.
36. Abdurakhmanovich A. A., Furkatovich A. R. Methods of early surgical treatment of Burns //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 6. – С. 528-532.
37. Erkinovich K. Y. METHODS OF EARLY SURGICAL TREATMENT OF BURNS //Central Asian Research Journal for Interdisciplinary Studies (CARJIS). – 2022. – Т. 2. – №. Special Issue 4. – С. 184-188.
38. АБАЗОВ А. А. и др. KUYISHLARDA ERTA XIRURGIK DAVOLASH USULLARI //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 4.
39. Авазов А. А., Хурсанов Ё. Э. У., Шакиров Б. М. ҚЎЛНИНГ ЧУҚУР КУЙИШИНИ ДАВОЛАШ ТАКТИКАСИ //Research Focus. – 2022. – №. Special issue 1. – С. 35-42.
40. Саттаров Ш. Х., Рузibaев С. А., Хурсанов Ё. Э. ОПТИМИЗАЦИЯ ПУТИ КОРРЕКЦИИ ЭНДОТОКСИКОЗА ПРИ ОСТРОМ ПЕРИТОНИТЕ (ОБЗОР ЛИТЕРАТУРЫ) //Research Focus. – 2022. – Т. 1. – №. 2. – С. 144-150.
41. Эльмурадов А., Хурсанов Ё. Э. У. ПОСТКОЛОНИАЛЬНАЯ/ДЕКОЛОНИАЛЬНАЯ КРИТИКА И ТЕОРИЯ МЕЖДУНАРОДНЫХ ОТНОШЕНИЙ //Research Focus. – 2022. – Т. 1. – №. 2. – С. 198-208.
42. Рузibaев С. А., Авазов А. А., Хурсанов Е. Э. СРАВНИТЕЛЬНЫЕ РЕЗУЛЬТАТЫ ЛЕЧЕНИЯ ПОСЛЕОПЕРАЦИОННЫХ И РЕЦИДИВНЫХ ГРЫЖ ПЕРЕДНЕЙ БРЮШНОЙ СТЕНКИ //Research Focus. – 2022. – Т. 1. – №. 2. – С. 184-191.
43. Авазов А. А., Хурсанов Ё. Э. У., Мухаммадиев М. Х. ВОЗМОЖНОСТЬ ПРИМЕНЕНИЯ ИНТЕГРАЛЬНОЙ ШКАЛЫ BISAP ДЛЯ ПРОГНОЗИРОВАНИЯ РАЗВИТИЯ ТЯЖЕЛОГО ОСТРОГО ПАНКРЕАТИТА //Research Focus. – 2022. – Т. 1. – №. 2. – С. 158-164.
44. Саттаров Ш. Х., Рузibaев С. А., Хурсанов Ё. Э. РЕЗУЛЬТАТЫ ЛЕЧЕНИЯ ОСТРОГО РАЗЛИТОГО ГНОЙНОГО ПЕРИТОНИТА С ПРИМЕНЕНИЕМ ЛАПАРОСТОМИИ //Research Focus. – 2022. – Т. 1. – №. 2. – С. 238-242.

45. Авазов А. А., Хурсанов Ё. Э. У., Шакиров Б. М. ҚЎЛНИНГ ЧУҚУР КУЙИШИНИ ДАВОЛАШ ТАКТИКАСИ //Research Focus. – 2022. – №. Special issue 1. – С. 35-42.
46. ХУРСАНОВ Я. Э. и др. ТАКТИКА ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ БОЛЬНЫХ С ГЛУБОКИМИ ОЖОГАМИ //ЖУРНАЛ БИМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 5.
47. Джаббаров Ш. Р., Хурсанов Ё. Э. У. STANDARDIZATION OF THE THERAPEUTIC DIAGNOSTIC APPROACH FOR COMBINED CLOSED INTESTINAL INJURY //Research Focus. – 2022. – Т. 1. – №. 3. – С. 120-132.
48. Джаббаров Ш. Р., Хурсанов Ё. Э. У. ПОСЛЕОПЕРАЦИОННОЙ ЛЕТАЛЬНОСТИ ПРИ ОСТРОМ ХОЛЕЦИСТИТЕ //Research Focus. – 2022. – Т. 1. – №. 3. – С. 152-161.
49. Хамроев Г. А., Хурсанов Ё. Э. ОРГАНОСОХРАНЯЮЩАЯ ОПЕРАЦИЯ ПРИ МАССИВНОМ РАЗМОЗЖЕНИИ ЯИЧКА //Research Focus. – 2022. – Т. 1. – №. 3. – С. 185-194.
50. Даминов Ф. А., Хурсанов Ё. Э., Карабаев Х. К. НАШ ОПЫТ ПРОФИЛАКТИКИ И ЛЕЧЕНИЯ ПОЛИОРГАННОЙ НЕДОСТАТОЧНОСТИ У ТЯЖЕЛООБОЖЖЕННЫХ //Research Focus. – 2022. – Т. 1. – №. 3. – С. 143-151.
51. Элмурадов Г. К., Шукуров Б. И. ВИДЕОЭНДОХИРУРГИЯ В ДИАГНОСТИКЕ И ЛЕЧЕНИИ РАЗРЫВОВ ДИАФРАГМЫ //THEORY AND ANALYTICAL ASPECTS OF RECENT RESEARCH. – 2022. – Т. 1. – №. 7. – С. 40-58.
52. Курбонов Н. А., Ахмедов Р. Ф. MODERN APPROACHES TO THE TREATMENT OF DEEP BURNING PATIENTS //УЗБЕКСКИЙ МЕДИЦИНСКИЙ ЖУРНАЛ. – 2022. – Т. 3. – №. 2.
53. Даминов Ф. А., Карабаев Х. К., Хурсанов Ё. Э. ПРИНЦИПЫ МЕСТНОГО ЛЕЧЕНИЯ ОЖОГОВЫХ РАН У ТЯЖЕЛООБОЖЖЕННЫХ (Обзор литературы) //Research Focus. – 2022. – Т. 1. – №. 3. – С. 133-142.
54. Шакиров Б., Авазов А., Хурсанов Ё. COMPREHENSIVE TREATMENT OF PATIENTS WITH EXTENSIVE DEEP BURNS LOWER LIMBS //EurasianUnionScientists. – 2022. – С. 24-26.
55. Мустафакулов И. Б., Карабаев Х. К., Джураева З. А. AMNIOTIC MEMBRANE-AS AN EFFECTIVE BIOLOGICAL WOUND COVERING //УЗБЕКСКИЙ МЕДИЦИНСКИЙ ЖУРНАЛ. – 2021. – №. SPECIAL 1.
56. Ахмедов Р. Ф. и др. Диагностическая значимость уровня прокальцитонина при ожоговой болезни //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 11-12.
57. Ахмедов Р. Ф. и др. Наш опыт лечения ожогового сепсиса //Журнал Неотложная хирургия им. ИИ Джанелидзе. – 2021. – №. S1. – С. 10-11.
58. Мустафакулов И. Б., Умедов Х. А. SURGICAL TACTICS IN CASE OF ISOLATED INJURIES OF SMALL AND LARGE INTESTINE //УЗБЕКСКИЙ МЕДИЦИНСКИЙ ЖУРНАЛ. – 2022. – Т. 3. – №. 2.
59. Абдуллаев С. А. и др. ПРОГНОЗИРОВАНИЕ ТЯЖЕСТИ ТРАВМЫ И ИСХОДА ЛЕЧЕНИЯ ПОСТРАДАВШИХ С СОЧЕТАННОЙ ТРАВМОЙ ГРУДИ И ЖИВОТА //Скорая медицинская помощь. – 2003. – Т. 4. – №. 4. – С. 19-20.
60. Абдуллаев С. А. и др. КЛАССИФИКАЦИЯ СОЧЕТАННОЙ ТРАВМЫ

ГРУДИ И ЖИВОТА //Скорая медицинская помощь. – 2003. – Т. 4. – №. 4. – С. 18-18.

61. Юлдашев Ш. С. и др. Болада ёт жисм таъсирида қизилунгач перфорациям //Вестник экстренной медицины. – 2016. – №. 4. – С. 69-71.

62. Шоназаров И. и др. Наш опыт диагностики и лечения повреждений двенадцатиперстной кишки при сочетанной абдоминальной травме //Журнал проблемы биологии и медицины. – 2017. – №. 3 (96). – С. 122-125.

63. Рузиев П. Н. и др. Результаты лечения тромбоза мезентериальных сосудов //Роль больниц скорой помощи и научно исследовательских институтов в снижении предотвратимой смертности среди населения. – 2018. – С. 190-191.

64. Ачилов М. Т. и др. Панкреатодуоденальная резекция-методика физиологической реконструкции //Достижения науки и образования. – 2020. – №. 6 (60). – С. 38-42.

65. Ачилов М. Т. и др. Ручной колоанальный или аппаратный колоректальный анастомоз //Достижения науки и образования. – 2020. – №. 6 (60). – С. 43-44.

66. Ачилов М. Т. и др. Диагностика и хирургическая коррекция синдрома Мириззи //Re-health journal. – 2020. – №. 2-2 (6). – С. 111-113.

67. Shonazarov I. et al. Analysis of the results of surgical tactics and treatment in patients with acute necrotic pancreatitis //European Journal of Molecular & Clinical Medicine. – 2020. – Т. 7. – №. 3. – С. 3130-3135.

68. Shonazarov I. et al. Diagnosis and treatment of adhesive small bowel obstruction with using laparoscopic method //European Journal of Molecular & Clinical Medicine. – 2020. – Т. 7. – №. 3. – С. 3192-3198.

69. Abdullaev S. et al. Problems of Diagnostics, Prevention and Surgical Tactics of Treatment of Adhesive-Intestinal Obstruction //Annals of the Romanian Society for Cell Biology. – 2021. – С. 2289-2294.

70. Temirovich A. M. et al. Prevention and treatment of intraabdominal hypertension in patients with peritonitis //Вестник науки и образования. – 2021. – №. 3-2 (106). – С. 75-79.

71. Тухтаев Б. Х. и др. Тактика лечения пищеводно-желудочных кровотечений у больных с синдромом портальной гипертензии //Достижения науки и образования. – 2020. – №. 1 (55). – С. 79-82.

72. Akhmedov S. K. et al. Значение раннего энтерального питания у больных с синдромом интраабдоминальной гипертензии при тяжелом остром панкреатите //Инновационное развитие: потенциал науки и современного образования. – 2020. – С. 274-276.

73. Камолидинов С. А. и др. Лапароскопическая диагностика и лечение спаечной кишечной непроходимости //World science: problems and innovations. – 2020. – С. 270-275.

74. Облакулов З. Т. и др. Видеолапароскопическое лечение острой спаечной кишечной непроходимости //Достижения науки и образования. – 2020. – №. 1 (55). – С. 70-73.

75. Шоназаров И. Ш. Пути оптимизации диагностики, лечения и прогноза острой спаечной тонкокишечной непроходимости: дис. – Ташкент, 2008