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e-mail: aigul.nur10792@mail.ru
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RESULTS OF A COMPARATIVE ANALYSIS OF SEPSIS MARKERS IN NEWBORNS

Nurakhova A.D.¹, Batyrbaeva D.Zh.², Abdilova G.B.³,
Maimakova A.M.¹, Alibaeva Zh.S.², Ibraeva N.K.³, Abdraimova A.A.³

¹Kazakh Medical University of Continuing Education, Almaty, Kazakhstan

²Kazakh National Medical University under the name of S.D.Asfendiyarov, Almaty, Kazakhstan

³National Scientific Surgery Center under the name of A.N.Syzganov, Almaty, Kazakhstan

Abstract

The paper analyzes the results of a comparative study of sepsis markers: presepsin (PSP), procalcitonin (PCT), C-reactive protein (CRP) in sepsis in newborns. The clinical application of these indicators was assessed, their diagnostic effectiveness and prognostic significance in the perinatal center of Almaty (Republic of Kazakhstan). We have shown that when monitoring the dynamics of the development of sepsis, presepsin, unlike other markers, reliably reflects the real dynamics of its severity, and quickly and adequately changes depending on the effectiveness of therapy.

Жаңа туылған нәрестелердегі сепсис маркерлерін салыстырмалы талдау нәтижелері

Нұрахова А.Д.¹, Батырбаева Д.Ж.², Абдилова Г.Б.³,
Маймақова А.М.¹, Әлібаева Ж.С.², Ибраева Н.К.³, Абдраимова А.А.³

¹Қазақтың медициналық үздіксіз білім беру университеті, Алматы қаласы, Қазақстан

²Атындағы Қазақ Ұлттық медициналық университеті Асфендиярова С.Д., Алматы қаласы, Қазақстан

³Атындағы Ұлттық ғылыми хирургия орталығы Сызғанова А.Н., Алматы қаласы, Қазақстан

Аңдатпа

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ABOUT THE AUTHORS

Nurakhova Alma Dandybaevna - Associate Professor, Department of Clinical Laboratory Diagnostics, Kazakh Medical University of Continuing Education (KazMUNO), candidate of medical sciences nad7788@mail.ru

Batyrbaeva Dinara Zharmukhanovna - Head of the Scientific Clinical and Diagnostic Laboratory of the Kazakh National Medical University named after S.D. Asfendiyarov. candidate of medical sciences

Abdilova Gulnur Bekmurzaevna - head of the clinical diagnostic laboratory of the National Scientific Center of Surgery named after A.N.Syzganova

Maimakova Akmaral Meirbekovna - Head of the Department of Clinical Laboratory Diagnostics, Kazakh Medical University of Continuing Education (KazMUNO), candidate of medical sciences

Alibaeva Zhazira Sergazievna - Senior Researcher, Scientific Clinical and Diagnostic Laboratory, Kazakh National Medical University named after S.D. Asfendiyarov

Ibraeva Nazgul Kushikbaevna - specialist in the clinical diagnostic laboratory of the National Scientific Center of Surgery named after A.N.Syzganova

Abdraimova Aliya Asemovna - specialist in the clinical diagnostic laboratory of the National Scientific Center of Surgery named after A.N.Syzganova

Keywords

sepsis, newborns, presepsin, procalcitonin, C-reactive protein.

АВТОРЛАР ТУРАЛЫ

Нұрахова Алма Дандыбайқызы – Қазақ медициналық үздіксіз білім беру университетінің клиникалық зертханалық диагностика кафедрасының доценті (ҚазМУБҰ), м.ғ.к. nad7788@mail.ru,

Батырбаева Динара Жармұқанқызы – С.Д. Асфендияров атындағы Қазақ Ұлттық медициналық университетінің ғылыми клиникалық-диагностикалық зертханасының меңгерушісі, м.ғ.к.

Абдилова Гүлнұр Бекмурзақызы – А.Н.Сызғанов атындағы Ұлттық ғылыми хирургия орталығының клиникалық-диагностикалық зертханасының меңгерушісі

Маймақова Ақмарал Мейірбекқызы – Қазақ медициналық үздіксіз білім беру университетінің клиникалық зертханалық диагностика кафедрасының меңгерушісі (ҚазМУБҰ), м.ғ.к.

Ибраева Назгүл Күшікбайқызы – А.Н.Сызғанов атындағы Ұлттық ғылыми хирургия орталығының клиникалық-диагностикалық зертханасының маманы

Абдраимова Әлия Әсемқызы – А.Н.Сызғанов атындағы Ұлттық ғылыми хирургия орталығының клиникалық-диагностикалық зертханасының маманы

Түйін сөздер

сепсис, жаңа туылған нәрестелер, пресепсин, прокальцитонин, С-реактивті ақуыз.

Результаты сравнительного анализа маркеров сепсиса у новорожденных

ОБ АВТОРАХ

Нурахова Алма Дандыбаевна – доцент кафедры клинической лабораторной диагностики Казахского медицинского университета непрерывного образования (КазМУНО), к.м.н., pad7788@mail.ru,

Батырбаева Динара Жармухановна – заведующая научной клиничко-диагностической лабораторией Казахского Национального медицинского университета им. С.Д.Асфендиярова, к.м.н.

Абдилова Гулнур Бекмурзаевна – заведующая клиничко-диагностической лабораторией Национального научного центра хирургии им. А.Н.Сызганова,

Маймакова Акмарал Мейрбековна – заведующая кафедрой клинической лабораторной диагностики Казахского медицинского университета непрерывного образования (КазМУНО), к.м.н.

Ибраева Назгуль Кушикбаевна – специалист клиничко-диагностической лабораторией Национального научного центра хирургии им. А.Н.Сызганова

Абдраимова Алия Асемовна – специалист клиничко-диагностической лабораторией Национального научного центра хирургии им. А.Н.Сызганова

Нурахова А.Д.¹, Батырбаева Д.Ж.², Абдилова Г.Б.³, Маймакова А.М.¹, Алибаева Ж.С.², Ибраева Н.К.³, Абдраимова А.А.³

¹Казахский медицинский университет непрерывного образования, г. Алматы, Казахстан

²Казахский Национальный медицинский университет им. С.Д.Асфендиярова, г. Алматы, Казахстан

³Национальный научный центр хирургии им. А.Н.Сызганова, г. Алматы, Казахстан

Аннотация

В работе выполнен анализ результатов сравнительного изучения маркеров сепсиса: пресепсина (ПСР), прокальцитонина (ПКТ), С-реактивного белка (СРБ) при сепсисе у новорожденных детей. Проведена оценка клинического применения указанных показателей, их диагностическая эффективность и прогностическая значимость в перинатальном центре г. Алматы (Республика Казахстан). Нами показано, что при наблюдении за динамикой развития сепсиса пресепсин, в отличие от других маркеров, надежно отражает реальную динамику его тяжести, быстро и адекватно изменяется в зависимости от эффективности терапии.

Ключевые слова

сепсис, новорожденные, пресепсин, прокальцитонин, С-реактивный белок.

Introduction

Sepsis is a severe inflammatory condition of the whole organism in response to infection by bacteria, fungi or other microorganisms. Severe sepsis is accompanied by dysfunction of one or more organs, which often leads to death.

Mortality among patients with sepsis is high, most patients die in the first month after the onset of the disease. In patients with severe sepsis, mortality reaches 50% and higher.

World statistics annually record more than 18 million cases of severe sepsis, while the incidence is growing by 1.5% per year [1, 2].

In 20-40% of septic patients, sepsis develops even before hospitalization. By the time of diagnosis, the time to start therapy with a wide range of antimicrobials, fluids, medications to stabilize blood circulation, and other steps may already be missed, so the main task is to quickly diagnose and early targeted treatment of sepsis [3, 4, 5].

In the arsenal of modern medicine there are more than 100 biological markers. Currently, the most valuable and frequently used in clinical practice are procalcitonin (PCT), lipopolysaccha-

ride-binding protein, interleukin-6 and C-reactive protein (CRP). For an objective assessment of the severity of septic patients, the well-known SOFA, SAPS-II scales are used, as well as indicators of general clinical routine analyzes, in particular, the qualitative and quantitative composition of leukocytes, the level of proteins of the acute phase of inflammation (fibrinogen). The disadvantages of the above parameters and methods include low specificity (leukocytes, CRP) and the likelihood of receiving a false negative result in patients with severe sepsis (PCT). Bacteriological confirmation of infection is not sensitive and requires a long time. With antibiotic therapy, the result of blood culture is often false negative. In addition, this method is not suitable for recognizing the reaction of the host to systemic inflammation and the onset of organ failure.

The speed and timeliness of diagnosis, as well as the ability to predict favorable and unfavorable outcomes, are a powerful barrier to the development of septic reactions. The first use of a specific and highly sensitive marker of sepsis - presepsin (PSP) for diagnosing diseases, evaluating its prog-

nostic significance, as well as studying changes in presepsin levels depending on the effectiveness of the chosen treatment tactics, is an urgent area of the modern laboratory [6, 7].

Purpose of the study

Assessment of the clinical use of sepsis markers - presepsin, procalcitonin, CRP: diagnostic efficiency and prognostic significance in the perinatal center of Almaty (Republic of Kazakhstan).

Materials and methods

On the basis of the scientific clinical diagnostic laboratory of KazNMU under the name of S.D.Asfendiyarov conducted laboratory tests for markers of sepsis. The study involved 76 newborns. The experimental group included 51 newborns, the control group - 25 newborns, in this group the level of presepsin was less than 200 pg/ml. Laboratory studies to determine sepsis were performed in neonates with suspected sepsis. During the first 72 hours, biomarker levels were measured - presepsin, procalcitonin and CRP.

Presepsin concentration in newborns was measured using a PATHFAST analyzer manufactured by LCI Medience Corporation, Japan, which is a fully automated system for immunochemiluminescent analysis. Normal presepsin levels should not exceed 200 pg/ml.

Ready-to-use reagents in special cartridges, automatic reading from the bar code of the reagent name, expiration date, prevent the error associated with the human factor. The only consumables are tips, the surface of which is pollinated with special magnetic particles. The whole reaction takes place in these tips, after analysis, the tips are disposed of. This feature of the analyzer eliminates the contamination of samples and allows the use of the PATHFAST analyzer in clinical diagnostic laboratories or express laboratories for resuscitation that does not require strict special requirements and conditions for microbiological laboratories.

High productivity of results, minimum sample volume (100 µl), compact design and low weight, obtaining accurate results in 15 minutes facilitates

the adoption of quick clinical decisions and the timely provision of adequate emergency care.

Determination of procalcitonin in blood serum was performed using the "Procalcitonin" test of the "Vector-Best" company by enzyme-linked immunosorbent assay on a semi-automatic analyzer of the company Tecan, Austria. Normal values of procalcitonin are 0.02-1.00 ng/ml.

CRP was determined on a Cobas Integra 400 plus automatic biochemical analyzer, which is a closed system, since reagents of only a certain type and a specific manufacturer (Roche company) are used in the work. Normal values of this indicator are 0-5.0 mg/L.

Research results

The research results are shown in table 1. According to table 1, in the control group (25 newborns), the presepsin content was less than 200 pg/ml, while in two newborns the level of procalcitonin was higher than 1.00 ng/ml, and CRP exceeded 5.0 mg/l in three examined. In the experimental group (51 people) in 41 (80%) newborns, the concentration of the presepsin sepsis marker is from 200 to 499 pg/ml, which indicates the likelihood or moderate risk of developing systemic infection (severe sepsis). In 7 (13%) newborns, the concentration of presepsin in the blood was more than 500 pg/ml, that is, in this group of newborns there was an increased risk of an adverse outcome. Moreover, in 3 (7%) newborns, the concentration of presepsin is more than 1000 pg/ml, which indicates a high risk of developing a systemic infection (severe sepsis / septic shock), as well as a high risk of 30-day mortality, comparable to risk on the APACNE \geq 25 scale. Laboratory studies on procalcitonin in 8 (15%) newborns showed that in the experimental group procalcitonin was within normal limits, in 43 (85%) newborns the concentration procalcitonin was more than 1.00 ng/ml. Also, the results of laboratory studies on CRP in newborns suspected of sepsis revealed that in 39 (76%) - within the standard values, and in 12 (24%) newborns - above physiological limits, i.e. more than 5.0 mg/l.

No.	Group	Sepsis markers				
		Presepsin	Procalcitonin		C-reactive protein	
			$\leq 1,00$ ng/ml	$\geq 1,00$ ng/ml	$\leq 5,0$ mg/l	$\geq 5,0$ mg/l
1	Control group	less than 200 pg/ml 25 (100%)	23 (92%)	2 (8%)	23 (88%)	3 (12%)
2	Experienced group	200-499 pg/ml 41 (80%)	8 (15%)	43 (85%)	39 (76%)	12 (24%)
		500-999 pg/ml 7 (13%)				
		more than 1000 pg/ml 3 (7%)				

Table 1
Markers of sepsis in newborns

Fig. 1
Concentrations of presepsin in the dynamics of patient F.

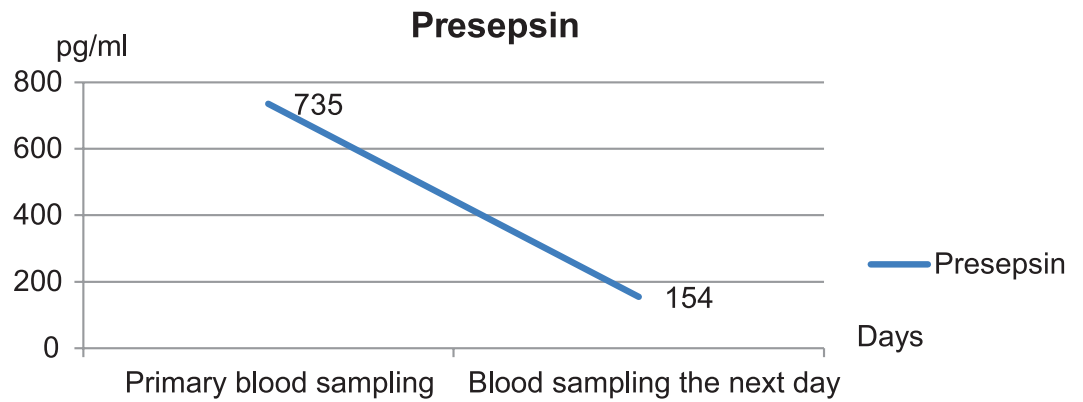


Fig. 2
Concentrations of procalcitonin in the dynamics of patient F.

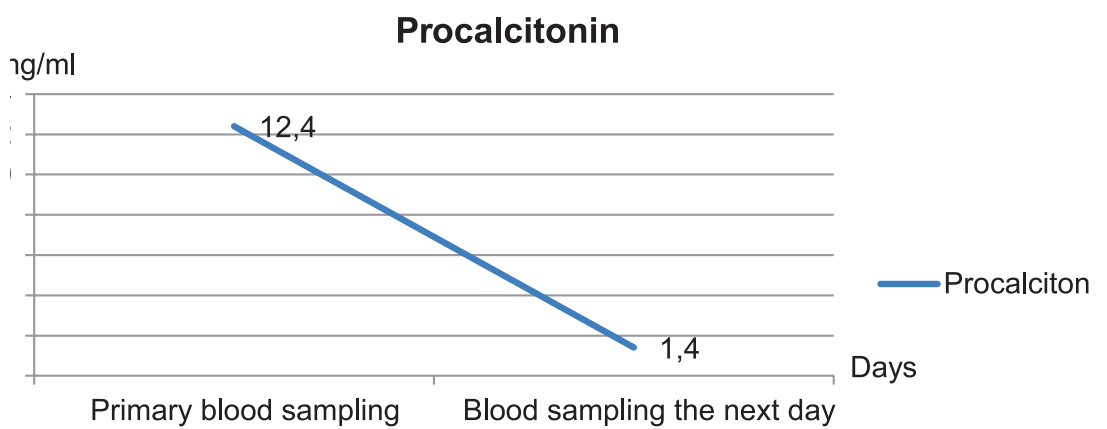
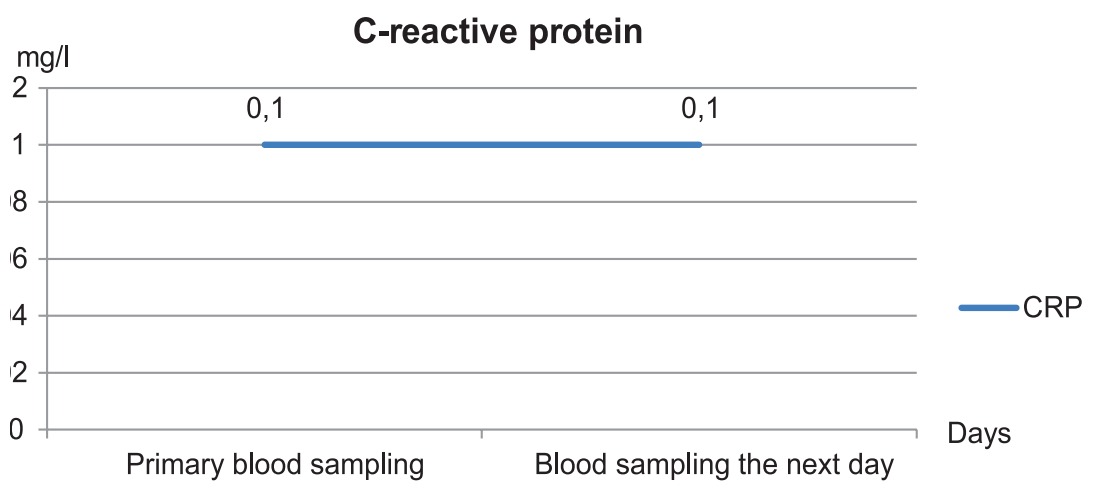


Fig. 3
Concentrations of C-reactive protein in dynamics in patient F.



Also, in the experimental group, studies were conducted in dynamics for sepsis markers up to and after antibiotic therapy to assess the effectiveness of the treatment. A decrease in the concentration of the marker of sepsis - presepsin was observed on the next day on average 1.5 times. To study the state of newborns in the dynamics, laboratory studies were performed in 15 newborns who had high presepsin values during the first analysis. Repeated studies on markers of sepsis were conducted within 1-2 days. The results are shown in the figures.

In Figure 1 clearly shows a decrease in the level of presepsin after the start of antibiotic therapy: at

the first blood sampling, the indicator was 735 pg/ml, the next day it was 154 pg/ml. In fig. Figure 2 shows the dynamics of changes in procalcitonin before and after antimicrobial treatment: at the first blood sampling, procalcitonin was 12.4 ng/ml, on the next day the indicated parameter corresponded to 1.4 ng/ml. While the level of CRP did not change: at the first blood sampling - 0.1 mg/l, on the second day - also 0.1 mg/l (Fig. 3).

As follows from these figures, in the case of determination of presepsin and procalcitonin, there is a tendency to a decrease in the concentration of sepsis markers, which indicates the effectiveness

of antibiotic therapy. However, the level of CRP does not show such dynamics.

Discussion

Performed study emphasizes existing need for presence complementary and interchangeable methods. Moreover, if we take into account that the processes in the septic state in newborns are much faster and harder. None of the widely used indicators of sepsis today does not combine the possibility of early diagnosis of sepsis, stratification of risks, with it related, predicting and monitoring the course of sepsis. While presepsin is a new, promising marker, which after a short period of time (15 minutes) allows for early and accurate diagnosis of sepsis.

As follows from the literature, presepsin (PSP) is a protein (molecular weight 13 KDa), which is the N-terminal fragment of the macrophage receptor CD14. In turn, CD14 is also a protein that has two forms: 1) associated with the membrane (mCD14) and present on the surface of macrophages, monocytes and granulocytes, and 2) soluble (sCD14, s - soluble), circulating in the bloodstream. mCD14 is a receptor that is responsible for transduction of the endotoxin signal into cells. The release of mCD14 into the bloodstream and the formation of sCD14 are associated with infection and some other pathological conditions. When bacterial phagocytosis is activated, sCD14 and mCD14 are cleaved by ly-

sosomal proteinases to form a fragment originally named sCD14-subtype (sCD14-ST), and then renamed presepsin [8, 9, 10].

A number of authors [11] rightly indicate that PSP is a fundamentally new marker of bacterial and fungal systemic infections; the mechanism of PSP production during and during sepsis induction differs from that characteristic of conventional sepsis markers, such as TNF-alpha, IL-6, IL-10, PCT (procalcitonin) and CRP (C-reactive protein), and is mainly associated with activation of phagocytosis; with the development of systemic infections, PSP rises earlier than other markers of sepsis, and regardless of their increase or decrease; PSP with 100% reliability, subsequently confirmed by blood cultures, a) diagnoses sepsis before the manifestation of its clinical symptoms, which allows timely initiation of therapy, and b) predicts favorable and unfavorable outcomes. When monitoring sepsis, PSP, unlike other markers, reliably reflects the real dynamics of its severity, quickly and adequately changes depending on the effectiveness of therapy, predicts relapses of sepsis after remission, when the clinical signs of sepsis and PCT levels normalize.

Conclusions:

1. Presepsin can be used for the early diagnosis of sepsis and the timely initiation of treatment.
2. Presepsin allows predicting possible outcomes of sepsis.

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THE EXPERIENCE OF APPLICATION OF APPARATUS “AKLIDES” IN KAZAKHSTAN FOR THE DIAGNOSIS OF SYSTEMIC AUTOIMMUNE DISEASES

ABOUT THE AUTHORS

Nurakhova Alma Dandybaevna - Associate Professor, Department of Clinical Laboratory Diagnostics, Kazakh Medical University of Continuing Education (KazMUNO), candidate of medical sciences, nad7788@mail.ru.

Maimakova Akmaral Meirbekovna - Head of the Department of Clinical Laboratory Diagnostics, Kazakh Medical University of Continuing Education (KazMUNO), candidate of medical sciences

Abdilova Gulnur Bekmurzaevna - head of the clinical diagnostic laboratory of the National Scientific Center of Surgery named after A.N.Syzganova

Dalibaeva Gulshat Koishankiyevna - rheumatologist, place of work - Asmed medical center, academic degree - master of medical sciences

Nurakhova A.D.¹, Maimakova A.M.¹, Abdilova G.B.², Dalibaeva G.K.³

¹Kazakh Medical University of Continuing Education, Almaty, Kazakhstan

²National Scientific Surgery Center under the name of A.N.Syzganov, Almaty, Kazakhstan

³Medical center “Asmed”, Almaty, Kazakhstan

Abstract

The main methods of laboratory diagnosis of autoimmune diseases (AD) are: the reaction of indirect immunofluorescence, enzyme immunodetection and immunoblotting. There are direct and indirect reaction of immunofluorescence. The method of direct immunofluorescence is used to detect Ig deposits and complement factors in biopsy samples of skin and kidneys. The reaction of indirect immunofluorescence is used to detect Ab in the blood serum and other biological fluids. It should be noted that this method requires very high qualification of the technician. The disadvantages of this method are the subjective account of the results and the complexity, lack of standardization of substrates, reagents, microscope. Computer-based systems for interpreting cell fluorescence tests contribute to the standardization and improvement of reproducibility of the reaction of indirect immunofluorescence in the determination of autoantibodies in patients with rheumatoid diseases.

The blood serum of 17 patients were studied with this method for the presence of the following autoantibodies: Antinuclear Antibodies (ANA), Cytoplasmic antineutrophil antibodies (cANCA), Perinuclear Antineutrophil Antibodies (pANCA). The studies were conducted on the AKLIDES apparatus made by company “Medipan GmbH”, Germany. Modern methods of serological diagnosis RIF were applied in Kazakhstan for the first time to assess serological activity of SLE. Currently in Kazakhstan there is a need for accurate diagnostics of autoimmune rheumatic diseases. The correct diagnosis with early stages of this disease will stop the process of disease progression and improve life quality of patients.

Keywords

autoimmune diseases, laboratory diagnosis, indirect immunofluorescence reaction, autoimmune antibodies, immunoblot.

Қазақстанда «Аклидес» аппаратын жүйесі аутоиммундық ауруларды анықтауда қолдану тәжірибесі

АВТОРЛАР ТУРАЛЫ

Нурыхова Алма Дандыбаевна - Қазақ медициналық үздіксіз білім беру университетінің клиникалық зертханалық диагностика кафедрасының доценті, м.ғ.к. nad7788@mail.ru

Маймакова Акмарал Мейірбекқызы - Қазақ медициналық үздіксіз білім беру университетінің клиникалық зертханалық диагностика кафедрасының меңгерушісі (ҚазМУНО), м.ғ.к.

Абдилова Гульнур Бекмурзаевна – А.Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығының клиникалық диагностикалық зертханасының меңгерушісі

Далибаева Гульшат Коишанкиевна, ревматолог, «Асмед» медициналық орталығы, ғылыми дәрежесі - медицина ғылымдарының магистрі.

Нурахова А.Д.¹, Маймакова А.М.¹, Абдилова Г.Б.², Далибаева Г.К.³

¹Қазақтың медициналық үздіксіз білім беру университеті, Алматы қаласы, Қазақстан

²Атындағы Ұлттық ғылыми хирургия орталығы Сызғанова А.Н., Алматы қаласы, Қазақстан

³«Асмед» медициналық орталығы, Алматы қаласы, Қазақстан

Аңдатпа

Аутоиммунды ауруларды лабораториялық диагностикалаудың негізгі әдістері: жанама иммунофлюоресценция реакциясы, ферментативті иммунды анықтау және иммуноблоттау. Иммунофлюоресценцияның тікелей және жанама реакциялары бар. Тікелей иммунофлюоресценттік әдіс терінің және бүйректің биопсиясындағы Ig шөгінділерін және комплемент факторларды анықтау үшін қолданылады. Қан сарысуындағы және дененің басқа сұйықтықтарындағы антидене анықтау үшін қолданылады. Айта кету керек, бұл әдіс маманның жоғары біліктілігін талап етеді. Бұл әдістің кемшіліктері - нәтижелер мен күрделіліктің субъективті қарастырылуы, субстраттардың, реагенттердің, микроскоптардың стандартталуының болмауы. Жасушалық флуоресценттік тестілерді интерпретациялауға арналған компьютерлік жүйелер ревматоидті аурулары бар науқастарда аутоантиденелерді анықтауда жанама иммунофлюоресценция репродукциясын стандарттауға және жақсартуға көмектеседі.

Бұл әдіспен 17 науқастың қан сарысуында келесі аутоантиденелер бар екендігі тексерілді: Антиядролық антиденелер, Цитоплазмалық антинейтрофилді антиденелер, Перинуклеарлы антинейтрофты антиденелер. Зерттеу «Medipan GmbH», Германия шығарған AKLIDES аппаратында жүргізілді. жанама иммунофлюоресценция реакциясы серологиялық диагностикасының заманауи әдістері Қазақстанда алғаш рет жүйелі қызыл жіңішке эритематоз серологиялық белсенділігін бағалау үшін қолданылды. Қазіргі уақытта Қазақстанда аутоиммунды-ревматикалық аурулардың нақты диагнозы қажет. Аурудың бастапқы кезеңдерінде дұрыс диагноз қою аурудың дамуын тоқтатады және пациенттердің өмір сапасын жақсартады.

Түйін сөздер

аутоиммунды аурулар, зертханалық диагностика, жанама иммунофлюоресценттік реакция, аутоиммундық антиденелер, иммуноблот.

Опыт применения аппарат «Аклидес» в Казахстане для диагностики системных аутоиммунных заболеваний

Нурахова А.Д.¹, Маймакова А.М.¹, Абдилова Г.Б.², Далибаева Г.К.³

¹Казахский медицинский университет непрерывного образования, г. Алматы, Казахстан

²Национальный научный центр хирургии им. А.Н.Сызганова, г. Алматы, Казахстан

³Медицинский центр «Асмед», г. Алматы, Казахстан

Аннотация

Основными методами лабораторной диагностики аутоиммунных заболеваний являются: реакция непрямой иммунофлюоресценции, ферментативная иммунодетекция и иммуноблоттинг. Существуют прямые и непрямые реакции иммунофлюоресценции. Метод прямой иммунофлюоресценции используется для выявления отложенных Ig и факторов комплемента в биоптатах кожи и почек. Реакция непрямой иммунофлюоресценции используется для обнаружения антител в сыворотке крови и других биологических жидкостях. Следует отметить, что этот метод требует очень высокой квалификации специалиста. Недостатками данного способа являются субъективный учет результатов и сложности, отсутствие стандартизации субстратов, реагентов, микроскопа. Компьютерные системы для интерпретации клеточных флуоресцентных тестов способствуют стандартизации и улучшению воспроизводимости. Реакция непрямой иммунофлюоресценции при определении аутоантител у пациентов с ревматоидными заболеваниями.

Сыворотка крови 17 пациентов была исследована этим методом на наличие следующих аутоантител: Антинуклеарные антитела, Цитоплазматические антинейтрофильные антитела, Перинуклеарные антинейтрофильные антитела. Исследования проводились на аппарате AKLIDES производства фирмы «Medipan GmbH», Германия. Современные методы серологической диагностики реакция непрямой иммунофлюоресценции впервые были применены в Казахстане для оценки серологической активности системной красной волчанки. В настоящее время в Казахстане существует необходимость в точной диагностике аутоиммунных ревматических заболеваний. Правильный диагноз с ранними стадиями этого заболевания остановит процесс прогрессирования заболевания и улучшит качество жизни пациентов.

Introduction

Autoimmune diseases (AD) affect 5-7% of the world population, more common in women than in men, and usually at a young age. AD develops when antibodies interact with their own antigens, thereby destroying cells and tissues, which carry these antigens. A vicious circle appears: more autoantibodies – a greater tissue damage – greater exposure of internal antigens – more autoantibodies. Proteins, nucleic acids, phospholipids, sugars, steroids, etc. may serve as autoantigens. Mechanism of cells and tissues autoimmune destruction is the same as naturally in adaptive immunity. Occurred autoimmune process, usually is chronic and leads to long-term tissue damage, whereas the autoimmune reaction is constantly maintained by tissue antigens [1, 2].

Autoimmune diseases (AD) are the third leading cause of chronic diseases in developed countries after cardiovascular and oncological conditions [3].

In the AD progression, both cellular and humoral mechanisms of the immune system play a significant role. Probably, autoimmune cell reactions underlie the basis of AD pathogenesis. However, their estimation, namely the calculation of autoreactive T cells, today is only experimentally possible and does not have independent clinical significance. At the same time, the detection of auto-antibodies is widely used for early and differential diagnosis of

AD, and in some cases can be used for predicting the course of disease and monitoring the effectiveness of therapy [4].

The main methods of laboratory diagnosis of autoimmune diseases (AD) are: indirect immunofluorescence (IIF), enzyme immunodetection and immunoblotting. There are direct and indirect immunofluorescence. The method of direct immunofluorescence is used to detect Ig deposits and complement factors in biopsy samples of skin and kidneys. The RIF is used to detect Ab in the blood serum and other biological fluids. It should be noted that this method requires very high qualification of the technician. The disadvantages of this method are the subjective account of the results and the complexity, lack of standardization of substrates, reagents, microscope. Computer-based systems for interpreting cell fluorescence tests contribute to the standardization and improvement of reproducibility of RIF in the determination of autoantibodies in patients with rheumatoid diseases (rd).

Study methods

The blood serum of 17 patients was studied by the method of RIF for the presence of the following autoantibodies: ANA, cANCA, pANCA. All 17 patients were women, average age is 34 years, age range varied from 15 to 50 years (Table 2).

ОБ АВТОРАХ

Нурахова Алма Дандыбаевна - доцент кафедры клинической лабораторной диагностики Казахского медицинского университета непрерывного образования (КазМУНО), к.м.н., pad778@mail.ru,

Маймакова Акмарал Мейрбековна – заведующая кафедрой клинической лабораторной диагностики Казахского медицинского университета непрерывного образования (КазМУНО), к.м.н.

Абдилова Гулнур Бекмурзаевна – заведующая клинико-диагностической лабораторией Национального научного центра хирургии им. А.Н.Сызганова,

Далибаева Гульшат Койшанкыевна – врач-ревматолог, место работы – медицинский центр «Асмед», магистр медицинских наук

Ключевые слова

аутоиммунные заболевания, лабораторная диагностика, непрямая реакция иммунофлюоресценции, аутоиммунные антитела, иммуноблот.

The studies were conducted on the AKLIDES apparatus made by company "Medipan GmbH", Germany. It provides: automatic screening; quantification; archivation of results; the reproduction and reflection of the samples in the reports; the image of appearance in a live mode; connection to the laboratory information management system (LIMS).

Used test systems: AKLIDES ANA plus REF4065 made by company "Medipan GmbH", Germany, for 120 definitions – a test of indirect immunofluorescence for an automatic separation of antibodies into nuclear and cytoplasmic antigens (ANA) in the serum of human blood. AKLIDES ANA plus – a set of reagents for the qualitative and semi-quantitative separation of antibodies into antigens in the cell nucleus and in the cytoplasm of cells HEp-2 in human blood serum by automatic evaluation of the test results. Titer ≤ 80 – negative result. Titer ≥ 80 – positive result.

Systemic rheumatic inflammatory diseases: systemic lupus erythematosus (SLE) and its variants, progressive systemic sclerosis (PSS), primary Sjogren syndrome, dermatomyositis, Sharp's syndrome (mixed connective tissue disease – (MCTD) and rheumatoid arthritis (RA) are characterized by the emergence of a number of autoantibodies directed against components of the cell nucleus and cytoplasm. These antibodies can be used as markers to determine the aspect of the disease, and as an active parameter [5, 6, 7, 8, 9].

Immunofluorescence test using the cell line Hep-2 is a sensitive screening test for the determination of antinuclear antibodies (ANA). Recognizing individual samples of fluorescence, this test provides an opportunity to talk about the fundamental underlying antigens and diseases associated with them [10, 11, 12].

AKLIDES ANA plus is a test of indirect immunofluorescence for the qualitative and semi-quantitative determination of ANA by the automatic evaluation of the test results.

In the first step of the reaction antibodies of the diluted patient sample or control serum specifically react with antigens of cells HEp-2, fixed on the objects carrier. After 30 minutes of incubation at a room temperature, unreacted components are removed by rinsing.

In the second step unreacted and coupled antibodies specifically react with non-human antibodies (IgG and specific light chain), conjugated with fluorescein isothiocyanate (FITC). After an incubation

period of 30 minutes held at a room temperature has finished, the free conjugate molecules are removed from immune complexes in the solid phase by subsequent washing.

In accordance with the histological arrangement of antigens in the cells HEp-2 there are special samples of fluorescence conditions. After covering and placing objects under the fluorescent microscope (excitation wavelength is 490 nm, emission is wavelength 520 nm), they will be transcribed by an automated measurement system.

Also a test-system AKLIDES of cANCA, REF4060 was used made by company "Medipan GmbH", Germany, for 60 definitions – indirect immunofluorescence analysis for the detection of IgG antibodies to neutrophil cytoplasmic antigens (ANCA) in human serum. A titer of ≤ 20 – negative result. Titer ≥ 20 – positive.

This test system is a kit of reagents for qualitative and semi-quantitative determination of IgG antibodies to antigens in the cytoplasm of neutrophil granulocytes (APSA) in human serum by immunofluorescence on human granulocytes, fixed with ethanol and automated evaluation of results with the purpose of diagnosis of systemic vasculitis (SV).

The pathogenesis of SV is expressed in inflammatory processes of the walls of blood vessels (veins and arteries) and morphological changes. Clinical aspect is expressed through general symptoms: lethargy, fever and weight loss. In the further course of the disease clinical symptoms vary depending on the types of vessels.

Serological diagnosis of SV is based on the determination of antineutrophilic cytoplasmic antibodies (ANCA) by the indirect immunofluorescence on granulocytes, fixed in ethanol. Depending on the sample of fluorescence, there are cytoplasmic ANCA (cANCA) and perinuclear ANCA (pANCA). Ethanol fixation destroys membranes of granules in the cytoplasm of granulocytes; positively charged proteins tend to negatively-charged nucleus. Antibodies are reliably determined to antigens in the cytoplasm (cANCA) by cytoplasmic fluorescence. However, (peri)nuclear fluorescence is caused by antibodies and affects the structures of the cell nucleus; therefore, the pANCA antibodies shall be confirmed by granulocytes, fixed in formalin. On this substrate the separation of the antigen does not occur, ANCA reactions are observed only in the cytoplasm.

Table 1.
Granulocytes, fixed with ethanol and formalin.

	Granulocytes, fixed with ethanol	Granulocytes, fixed with formalin
cANCA	cytoplasmic	cytoplasmic
pANCA	perinuclear	cytoplasmic
ANA	(peri)nuclear	(peri)nuclear (reduced fluorescence)

For immunofluorescence pattern of cANCA proteinase 3 (PR3) is identified as the main antigen, here we are talking about a serine-proteinase 29 kDa. PR3 autoantibodies are described as pathognomic to the Wegener disease. The pattern of pANCA, mainly, is based on the reaction with myeloperoxidase (MPO), 146 kDa protein. Antibodies MPO are usually found in a number of vasculites, such as microscopic form of angiopathy, Churg-Strauss syndrome and polyarteritis nodosa. Other target antigens of the antibodies of cANCA and pANCA are found in patients with heterospecific ulcerative colitis or primary sclerosing cholangitis.

The AKLIDES cANCA represents indirect immunofluorescence analysis for the qualitative and semi-quantitative determination of ANCA on granulocytes fixed with ethanol with an automated evaluation of the results.

At the first stage of the reaction, the antibodies in diluted patient samples or control serum specifically react with antigens on human granulocytes, fixed on the object carriers. Unbound components after 30 minutes of incubation at a room temperature are removed at the stage of rinsing.

IgG with light chains are bounded with fluorescein-isothiocyanate (FITC). Excess conjugate molecules after 30 minutes of incubation at a room temperature, are removed from the attached immune complexes by washing.

After covering object carriers in an automated process are transcribed under a fluorescent microscope (excitation wavelength is 490 nm, emission wavelength is 520 nm). In accordance with the histological structure of the antigens in the cells a specific pattern of fluorescence is determined (cytoplasmic, perinuclear).

Also the test-system AKLIDES pANCA, REF4072 was used made by company "Medipan GmbH", Germany, for 60 definitions – indirect immunofluorescence analysis for the detection of IgG antibodies to neutrophil cytoplasmic antigens (ANCA) in human serum. A titer of ≤ 20 – negative result. Titer ≥ 20 positive.

AKLIDES pANCA is a kit of reagents for (qualitative and semi-quantitative) determination of IgG antibodies to antigens in the cytoplasm of neutrophil granulocytes (ANCA) in human serum using indirect immunofluorescence on ethanol fixed human granulocytes for the purpose of systemic vasculitis (SV) diagnosis. The analysis is used to confirm positive results for pANCA on granulocytes fixed with ethanol. The principle of the method and its stages are similar to those in the set of AKLIDES cANCA.

Research results

Laboratory testing is one of the main methods of the objectification of many of AD, especially au-

toimmune rheumatic diseases (ARD), which are characterized by the variety of clinical manifestations [13, 14]. With early diagnosis of ARD thoughtful clinical examination of the patient has leading importance, which allows to eliminate other causes of symptoms and to suspect the diagnosis of AD.

Today, in autoimmune diagnostics two main approaches to laboratory testing are widely used: indirect reaction of immunofluorescence (RIF) on cells or tissue sections and immunometrics solid-phase methods, which include enzyme immuno-detection, radioimmunoassay, chemiluminescent and fluorescent analyses, as well as line/dot blotting and various options for analysis on immunoreactive microparticles, which allow the selective testing with individual autoantigens [15]. Although solid-phase immunodeficiency method lends itself more easily to automation, the use of its results for screening is limited. This is due to the fact that the method of RIF with fixed cells allows to identify antinuclear antibodies (ANA) on "biological multiparametric chip", which allows to detect a lot more potential autoantigens than all available tests with purified or recombinant single antigens [16, 17]. Therefore, in accordance with international recommendations for initial ANA screening RIF should be used, in the case of testing using other clinical methods laboratory is required to provide the information about those single autoantigens that were used during the screening. A new promising direction is the integration of RIF and immunometric methods for combining the screening and confirmatory tests in one reaction field. To determine APLA, RF and anti-CCP immunometric methods are mainly used, but to identify some families of autoantibodies such as ANA and ANCA, the main screening method is RIF. Due to the identifying a maximum autoantibodies spectrum, RIF is the "gold standard" for the ANA detection in case of suspected ARD in accordance with the recommendations of experts of the European League against Rheumatism (EULAR) and the American College of Rheumatology (ACR) [18,19]. Despite the comparative ease, quickness and cheapness the main disadvantage of RIF is its subjectivity, since until recently, the test result was assessed by a doctor of clinical laboratory diagnostics. It was obstructing the comparison of results from different laboratories, the interpretation of titles and types of RIF luminescence. At the same time, quantitative instrumental measurement of the autoantibody level can be extremely important for assessing a course of the disease on the background of the conducted therapy. As far as the RIF is an obligatory method of screening, attempts were made to standardize this study with the help of automated microscopy and the use of computer programs of image recognition. In recent years an

Table 2.
The data of patients whose serum was investigated

Diagnosis	n%	Age	Sex
SLE	41% (7 patients)	Xav – 43y.	fem
SLE?	18% (3 patients)	Xav – 37y.	fem
Wegener disease	6% (1 patient)	Xav – 55y.	fem
Diagnosis not made	35% (6 patients)	Xav – 40y.	fem
	100% (17 patients)	Xav – 44y.	

objective and partly automated system was developed for accounting of autoantibodies detection results using RIF. The transition to instrumental evaluation of the RIF results can be considered as a component of measures to ensure quality as a part of international requirements for accreditation. Corresponding rooms, analytical equipment, qualified personnel with regular specialized advanced training, internal and external activities for quality assurance are just some of the central points from the requirements list for optimal autoimmune diagnosis. The main prerequisites for the standardization of RIF were methods of semi-automatic analysis of immunofluorescent images which formed the basis of a number of commercially available analytical systems for the RIF results interpretation [20]. An important feature of such systems is that despite the fact that the estimation of the signal is performed on the levels of fluorescence that are not sufficient for laboratory specialist subjective evaluation, but the resulting images allow us to avoid informational losses and to provide the best dynamic signal analysis [21]. Using image analysis systems we can automatically identify and classify different types of ANA, ANCA and detect anti-dsDNA antibodies [22, 23, 24]. Digital assessment of the immunofluorescence level, by means of calibration using test microparticles, allows to standardize the method of RIF [25, 26]. New developments in the field of automatic analysis of immunofluorescent images allow us to reach the previously unattainable analytical parameters of RIF, providing its comparison with other analytical techniques, including solid-phase immunometric analysis. It is important to emphasize that the proposed software and hardware solutions provide a sufficient degree of standardization only in compliance with the exact protocol, which includes the correct dilutions of serum and used immunofluorescent antisera, high quality of biological substrates used in RIF, as well as the time and conditions of the reagents incubation.

Table 3.
Comparison of the fluorescence intensity of antinuclear antibodies (ANA) in seras of patients with rheumatic diseases

n%	-	+/-	+	++	+++	++++
-	6 (35,3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
+/-	0 (0)	1 (5,9)	0 (0)	0 (0)	0 (0)	0 (0)
+	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
++	0 (0)	0 (0)	0 (0)	1 (5,9)	0 (0)	0 (0)
+++	0 (0)	0 (0)	0 (0)	0 (0)	3 (17,6)	0 (0)
++++	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (35,3)

Currently, semi-automatic systems for the immunofluorescent images analysis are at the initial stage of introduction to the standard diagnostic practice. Although the use of software and hardware complexes is still relatively expensive and, furthermore, requires detailed exploration by the laboratory staff, however, their use leads to rapid development of ARD diagnostics by obtaining accurate and standardized results, the quality of which can compete with the quality of expert laboratories [27, 28, 29].

As a result of the analysis of the problem and the literature data on its solution the set task is to apply modern serological diagnostic method of RIF to assess serological activity of SLE using the apparatus AKLIDES made by the company "Medipan GmbH".

Epithelial finite cell line of the human larynx adenocarcinoma HEp-2 is widely used in the determination of antinuclear factor by indirect fluorescence method. HEp-2 cells are a very convenient substrate for laboratory studies, as they have large nuclei and grow on the glass in a single layer. ANA are detected during the bounding of intracellular antigens with cells HEp-2.

Depending on the evaluation results of the illumination type further tactics of patient treatment and appointment of additional research are being developed, clarifying the range of ANA.

In the studied group of patients there were identified diagnoses, which are shown in the Table 2.

The data of the fluorescence intensity obtained on the device AKLIDES when determining the fluorescence intensity of antinuclear antibodies (ANA), cANCA, pANCA in the seras of patients with rheumatic diseases was expressed in the minuses and pluses, and had a numeric expression: results were defined as negative (-), border (+/-), weakly positive (+), positive (++) , strongly positive (+++), very strongly positive (++++) (Tables 2,3,4; figures 1,2,3).

n%	-	+/-	+	++	+++	++++
-	7 (41,2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
+/-	0 (0)	3 (17,6)	0 (0)	0 (0)	0 (0)	0 (0)
+	0 (0)	0 (0)	2 (11,8)	0 (0)	0 (0)	0 (0)
++	0 (0)	0 (0)	0 (0)	2 (11,8)	0 (0)	0 (0)
+++	0 (0)	0 (0)	0 (0)	0 (0)	2 (11,8)	0 (0)
++++	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5,9)

In particular, during the definition of ANA in the patients' blood seras: in 6 cases (35,3%) negative results revealed; in 1 case (5,9%) – border result; 1 patient (5,9%) – positive result; 3 patients (17,6%) – strongly positive results; in 6 (35,3%) – a very positive results. In turn, in the study of cANCA in the patients' blood seras: in 7 (41,2%) the negative results were determined; 3 patients (17,6%) – border results; 2 (11,8%) – weakly positive results; 2 patients (11,8%) – positive results; 2 patients (11,8%) strongly positive results; in 1 patient (5,9%) there was a very positive result. Also during the study of pANCA in the patients' blood seras: in 13 (76,5%) – negative results; in 1 (5,9%) – border results; 2 (11,8%) – weakly positive results; in 1 (5,9%) – a positive result.

As can be seen from table 6 and figure 4, statistical quantitative criteria characterizing measures of central tendency and dispersion of variational series of antinuclear (ANA), antineutrophilic cytoplasmic ANCA (cANCA) and perinuclear ANCA (pANCA) antibodies indicate that antineutrophil cytoplasmic (ANCA) antibodies and cytoplasmic ANCA (cANCA) antibodies are approximately distributed according to normal Gauss-Laplace distribution law (asymmetry = 1,04-1,62; kurtosis = 0,65-1,1, respectively) with averages within $585,5 \pm 153,7$ (ANCA) and $222,3 \pm 88,9$ (cANCA). In contrast to the above variables, the variation series characterizing the quantitative distribution of perinuclear ANCA (pANCA) antibodies, have not been distributed by a normal distribution law (asymmetry = 3,3; kurtosis = 11,3), which implies the use of a number of nonparametric tests such as the median = 3 and interquartile range = 7 as evaluation measures of central tendency and dispersion of the considered variational series.

n%	-	+/-	+	++	+++	++++
-	13 (76,5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
+/-	0 (0)	1 (5,9)	0 (0)	0 (0)	0 (0)	0 (0)
+	0 (0)	0 (0)	2 (11,8)	0 (0)	0 (0)	0 (0)
++	0 (0)	0 (0)	0 (0)	1 (5,9)	0 (0)	0 (0)
+++	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
++++	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Table 4.

The comparison of fluorescence intensity of IgG antibodies to antigens in the cytoplasm of neutrophil granulocytes (cANCA) in seras of patients with rheumatic diseases.

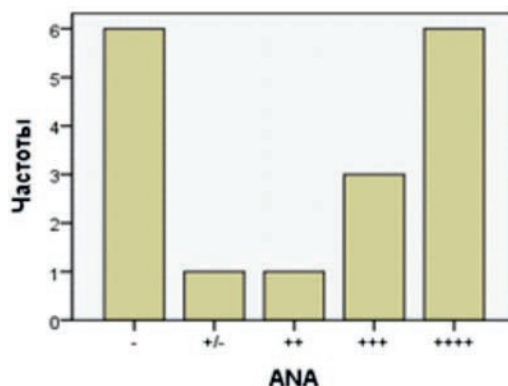


Fig. 1

Frequency of the fluorescence intensity during the determination of the fluorescence intensity of antinuclear antibodies (ANA) in seras of patients with rheumatic diseases. Translation of elements: Частоты – Frequencies.

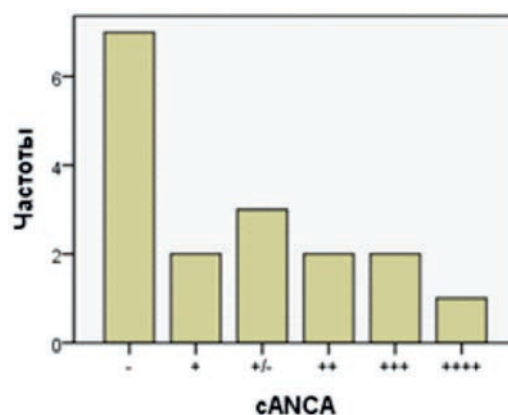


Fig. 2

Frequency of the fluorescence intensity of IgG antibodies to antigens in the cytoplasm of neutral granulocytes (cANCA) in seras of patients with rheumatic diseases. Translation of elements: Частоты – Frequencies.

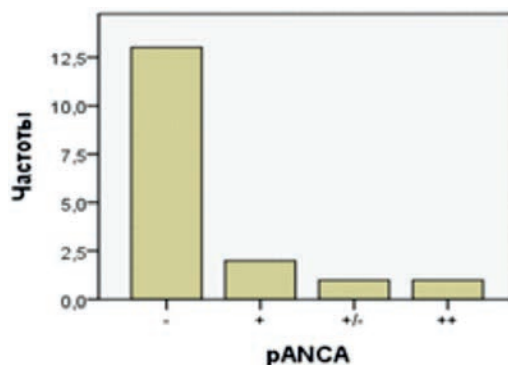


Fig. 3

Frequency of the fluorescence intensity of pANCA in seras of patients with rheumatic diseases. Translation of elements: Частоты – Frequencies.

Table 5.

Comparative table of the intensity of fluorescence of pANCA in seras of patients with rheumatic diseases

Table 6.
Quantitative characteristics of antinuclear (ANA), antineutrophilic cytoplasmic ANCA (cANCA) and perinuclear ANCA (pANCA) antibodies

		Statistics	Std. fault	
ANA	Average	585,4476	153,70158	
	95% confidence interval for the average	Lower limit	259,6148	
		Upper limit	911,2804	
	5% truncated average	531,8957		
	Median	545,5000		
	Dispersion	401611,004		
	Std. deviation	633,72786		
	Minimum	,00		
	Maximum	2134,83		
	Range	2134,83		
	Interquartile range	1014,95		
	Assymetry	1,036	,550	
	Kurtosis	,651	1,063	
pANCA	Average	18,4118	9,81822	
	95% confidence interval for the average	Lower limit	-2,4019	
		Upper limit	39,2255	
	5% truncated average	11,4020		
	Median	3,0000		
	Dispersion	1638,757		
	Std. deviation	40,48157		
	Minimum	,00		
	Maximum	163,00		
	Range	163,00		
	Interquartile range	7,00		
	Assymetry	3,274	,550	
	Kurtosis	11,325	1,063	
cANCA	Average	222,2647	88,91090	
	95% confidence interval for the average	Lower limit	33,7820	
		Upper limit	410,7474	
	5% truncated average	189,5719		
	Median	17,0000		
	Dispersion	134387,504		
	Std. deviation	366,58901		
	Minimum	,00		
	Maximum	1033,00		
	Range	1033,00		
	Interquartile range	317,00		
	Assymetry	1,617	,550	
	Kurtosis	1,114	1,063	

Discussion of obtained results

Thus, for the first time in Kazakhstan a survey on the apparatus AKLIDES was performed to determine autoimmune antibodies in order to clarify the diagnoses of the patients. New system AKLIDES provides the automatic reading of the images of IIF and includes software algorithms for the mathematical description of the indirect immunofluorescence of autoantibodies picture. Such a device allows to clarify the diagnosis of rheumatoid diseases during the screening and previously divide not organ-specific autoantibodies within the routine diagnostics of systemic autoimmune dis-

eases. Automatic system reduces financial costs, brings down the value of cellular IIF analyses and contributes to the reduction of interlaboratory analyses dispersion on the autoantibodies. At suspicion on systemic lupus erythematosus (SLE), Sjogren's syndrome, scleroderma, mixed connective tissue disease, autoimmune hepatitis, juvenile chronic arthritis and a number of other ARD, it is recommended to define antinuclear antibodies (ANA). High diagnostic value of their identification allows to include the ANA identification into the classification criteria of SLE and autoimmune hepatitis [30]. Diagnosis of rheumatoid arthritis

is based on the study of antibodies against cyclic citrullinated polypeptides and rheumatoid factor (RF). Repeated venous or arterial thromboses and pregnancy complications are caused by the appearance of antiphospholipid antibodies (APLA). In systemic vasculitis the anti-neutrophilic cytoplasmic antibodies (ANCA) are primary laboratory marker [31, 32, 33]. At suspicion on rapidly progressive glomerulonephritis detection of ANCA is the only extra test in the ARD diagnosis [34, 35]. The content of the majority of autoantibodies is the highest at the onset or relapse of AD on the background of high clinical activity.

Currently in Kazakhstan there is an urgent need for accurate diagnostics of autoimmune rheumatic diseases. So, correct diagnosis in the early stages of this disease will really help to stop the process of the disease progression and to improve life quality of patients [36].

Conclusions

1. Laboratory autoimmune diagnostics from a purely scientific investigation method is transforming into an independent section of clinical laboratory diagnostics.
2. The current state of knowledge and technological innovations, particularly in the area of digital analysis of immunofluorescence images, allow to provide the necessary standardization and harmonization of autoantibodies detection results.
3. Although the use of software and hardware complexes is still relatively expensive and, furthermore, requires detailed exploration by the laboratory staff, however, their use leads to rapid development of ARD diagnostics by obtaining accurate and standardized results, the quality of which can compete with the quality of expert laboratories.

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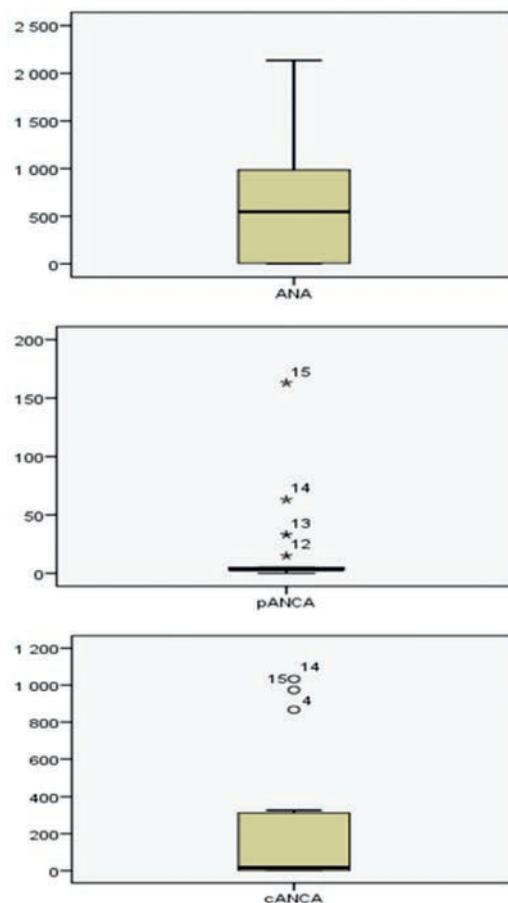


Figure 4. Indicators of central tendency and dispersion of antinuclear (ANA), antineutrophilic cytoplasmic ANCA (cANCA) and perinuclear ANCA (pANCA) antibodies.

Note: *, 0 – pop-up values of the variational series.

4. For the first time in Kazakhstan a survey on the apparatus AKLIDES was performed to determine autoimmune antibodies in order to clarify the diagnoses of the patients.
5. New system AKLIDES provides the automatic reading of the images of IIF and includes software algorithms for the mathematical description of the indirect immunofluorescence of autoantibodies picture.

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CASE OF METASTASIS OF BREAST CANCER IN THE RIGHT VENTRICLE OF THE HEART

МРНТИ 76.29.49

Li V.V., Baiguysova D.Z.

JSC "National scientific center of surgery named after A.N. Syzganov", Almaty, Kazakhstan

ABOUT THE AUTHORS

Baiguysova Dinara Zulkhanevna - Doctor of Radiation Diagnostics, Head of the Department of Radiation Methods of Research JSC NSCS named after A.N. Syzganov.

Li Vladimir - Resident of radiology NSCS named after A.N. Syzganov.

Abstract

We report a case of metastatic cardiac tumor developed from breast cancer. It describes the diagnosis of the disease from the moment of arrival until discharge of the patient, as well as the difficulties caused by patient's deliberate withholding of information. Conclusions were made about the most and the least informative research methods for this diagnosis, the importance of thorough history recording, and the need to double check and compare the clinical data with the words of the patient.

Keywords

Heart metastasis, secondary cardiac tumor, EchoCG, computer tomography, right ventricle.

Жүректің оң қарыншағындағы сүт безі обырының метастазасы

Ли В.В., Байгуисова Д.З.

«А.Н.Сызғанов атындағы Ұлттық ғылыми хирургия орталығы» АҚ, Алматы, Қазақстан

АВТОРЛАР ТУРАЛЫ

Байгуисова Динара Зулхарнаевна – А.Н. Сызғанов атындағы ҰҒХО сәулелі тәсілдермен зерттеу бөлімінің меңгерушісі, сәулелі зерттеу дәрігері.

Ли Владимир Вячеславович - А.Н. Сызғанов атындағы ҰҒХО сәулелі тәсілдермен зерттеу бөлімшесінің резиденті.

Аңдатпа

Сүт безі қатерлі ісігіне байланыс дамыған метастатикалық жүрек ісігінің пайда болуы жайлы хабарлаймыз. Мұнда науқастың ауруханаға түсіп, емделіп шығуға дейінгі диагностикалық сипаттамасы, және емдеу барысында науқастың айтпаған ауруларының шеңберінде туындаған қиыншылықтар жайлы да сипатталған. Осы диагноз шеңберінде зерттеудің ең тиімді және пайдалы тәсілдерін қолдана отырып қорытындылар жасалды, қосымша қайта тексеруге және клиникалық мағлұматтарды аурудың сөздерімен салыстыруға, анамнезді мұқият тексеруге нұсқаулық берілді.

Түйін сөздер

жүрек метастаздары, қайталама жүрек қатерлі ісігі, ЭхоКГ, компьютерлік томография, оң жақ қарынша.

Случай метастазирования рака молочной железы в правый желудочек

Ли В.В., Байгуисова Д.З.

АО «Национальный научный центр хирургии им. А.Н. Сызганова», Алматы, Казахстан

ОБ АВТОРАХ

Байгуисова Динара Зулхарнаевна – врач лучевой диагностики, заведующая отделом лучевых методов исследования ННЦХ им. А.Н. Сызганова.

Ли Владимир Вячеславович - резидент отдела лучевых методов исследования ННЦХ им. А.Н. Сызганова.

Аннотация

Мы сообщаем о случае метастатической опухоли сердца, развившейся из рака молочной железы. В нем затрагивается диагностика заболевания с момента поступления до момента выписки пациентки, также трудности, вызванные непосредственно утаиванием ею информации. Были сделаны выводы о наиболее и наименее информативных методах исследования при данном диагнозе, о важности тщательного сбора анамнеза, и необходимости перепроверять и сопоставлять клинические данные со словами пациента.

Ключевые слова

метастазы в сердце, вторичная опухоль сердца, ЭхоКГ, компьютерная томография, правый желудочек.

Introduction

Primary cardiac tumors are rare with a frequency of about 0.0017-0.28% of patients at the autopsy [1,3]. Cardiac metastases occur more frequently than primary cardiac tumors, with a highly variable incidence ranging from 2.3% to 18.3% in autopsy reports [2]. Secondary or metastatic heart tumors are relatively more common, at least 6-40 times more often than primary heart tumors [1,4]. The cardiac metastasis rate varies in different autopsy series and ranges from 2.7% to 25% in all patients with cancer [5]. Patients often have symptoms associated with heart lesions, either due to functional disorders of the blood flow from the mass itself (fainting, heart failure, embolism) or arrhythmia, delayed conduction or pericardial effusions. Heart metastases usually indicate a systemic disease and are rarely solitary [6]. The incidence of cardiovascular metastases identified at the autopsy, the number of cancer patients is 1.5% - 8.3% of patients dying from malignant diseases [2]. Heart metastases occur predominantly in patients in the sixth and seventh decades of life [7,8]. They are found in the heart more often at autopsy [9]. The most common tumors with metastatic potential in the heart are carcinomas of the lung, breast and esophagus, malignant lymphomas, leukemia and malignant melanoma. Malignant melanomas have a higher incidence of cardiac metastasis than carcinomas or malignant lymphomas. [7,3]. The pericardium, myocardium or endocardium may be involved separately or in combination. the disease may be clinically silent or have a wide range of non-specific symptoms and signs [2]. Pericardium, myocardium and endocardium are involved, from most to least frequent. The development of metastases in the pericardium or myocardium depends on the preferential metastatic path of the tumor origin [7]. Cardiac metastasis most commonly involves the pericardium and epicardium comprising two thirds of all cardiac metastases, however, involvement of myocardium, endocardium, cardiac cavities, great vessel and coronaries can also occur [10]. Like primary heart tumors, metastases can mimic valvular heart defects or cause heart failure, ventricular or supraventricular cardiac rhythm disturbances, conduction defects, syncope, embolism, or, quite often, pericarditis. Often, invasion of heart tumors contributes to the mechanism of death of patients [7].

Case report

The patient 57 years old entered 10/19/2018 to the NSCS named after A.N. Syzganov with complaints of shortness of breath after light physical activity (walking up to 10 meters), shortness of

breath, dry cough, nausea, dizziness, palpitations. In anamnesis heredity is complicated with oncology.

Physical examination revealed swelling of neck veins. The border of the heart is left-1 cm outward from the left midclavicular, upper-3 intercostal space, right-on the right edge of the sternum. AP (dexter) -105/71 mmHg, AP (sinister) -105/71mmHg. At the time of admission, a series of instrumental and laboratory studies of biochemical blood tests were carried out: a slight increase in creatinine to 100 $\mu\text{mol/l}$. ECG on which sinus tachycardia was determined. HR 100 beats / min. The vertical position of the EAH. Diffuse-dystrophic changes in the myocardium. EchoCG showed a massive formation in the cavity of the right ventricle (7.0 cm x 4.0 cm), obturating the fibrous ring of the three-fold valve and partially the output path of the right ventricle. The aorta is not dilated. Aortic valve 3-folding, intact. Heart cavities: Left Ventricle-squeezed, Right Atrium-enlarged. Indicators of systolic function of the myocardium in the normal range. The valves of the Mitral Valve move in antiphase. MR II Art. The tricuspid valve is obturated (measuring the systolic pressure of the pulmonary artery is not possible). Pericardial cavity fluid - separation of pericardial sheets along the posterior wall +1.0 cm, +1.5 cm of the anterior wall of the right ventricle closer to the apex. Thyroid ultrasound: a moderate enlargement of the thyroid gland. Diffuse changes in the parenchyma of the thyroid gland by type AIT. CT of the heart: The heart is dilated across, mainly due to the right sections. In the right ventricle, the presence of a formation with uneven contours, 80x64x64 mm in size, is noted; after the injection of a contrast agent, the structure of the structure determines the presence of vessels, as well as decay sites. Formation almost completely fills the right ventricle, involving its wall, right coronary artery, tricuspid valve, spread in the right atrium. A 7 mm thick layer of free fluid is found in the pericardium. Conclusion: CT scan of the V-formation of the right ventricle (sarcoma?). Free fluid in the pericardium.

Based on complaints, anamnesis and clinical data, the diagnosis was made: right ventricular sarcoma? It was decided to hospitalize the patient for surgical treatment. In the hospital, the patient was interviewed several times, after which they confessed that they were hiding the fact that in 2017 mastectomy was performed to treat a formation in the right breast. Due to new details, a number of required primary and additional examinations were carried out: radiography determined a slight dilatation of the heart to the left, the waist intact, underlined CTI-55%, and left-sided pleu-

ris. Ultrasound of the pelvic organs: Involutive changes of the pelvic organs. Ascites. Cervical cyst Mts lesion of the iliac and inguinal lymph nodes on the left. Ultrasound of the abdominal organs and kidneys: Diffuse changes in the liver parenchyma with the expansion of the IVC. Echo signs of chronic pyelonephritis of both kidneys. Interstitial effusion in the pelvis in small quantities. CT scan of abdominal organs: Hepatomegaly. Diffuse decrease in liver density, more likely to be of a stagnant nature. Cholelithiasis. Ascites. Adenopathy of the inguinal and iliac region on the left. MRI of the brain: Mr picture of moderate subatrophic changes in the brain. MR data for a secondary lesion is not determined. MRI of the pelvic organs: The MRI is more consistent with a secondary lesion of the lymph nodes of the external iliac, inguinal group and left sciatic bone. Ascites.

Consultation of the oncologist: Carcinoma of the right breast stage T4N0M0. Condition after sanitary amputation. Progression of the Mts process of the pelvic, iliac and inguinal lymph nodes on the left. Tumor of the right ventricle. Hormone therapy was recommended.

The concilium was held where it was decided that, given the prevalence of the tumor process, the presence of distant metastases, the risk of surgical intervention is extremely high and exceeds the risk of further disease. In this connection, the patient decided to transfer to conservative treatment. The patient was discharged for further treatment and observation at the place of residence. In this case, surgical treatment was not carried out due to the presence of distant metastases in the pelvic bones and iliac and inguinal lymph nodes.

Discussion

Secondary tumors of the heart are 100 times more common than primary tumors, but clinical manifestation is extremely rare [3]. Considering this clinical case in retrospect, it is worth to note a poor clinical picture, in which there was only a slight decrease in blood pressure and tachycardia, but at the same time the presence of an uncommon symptom - cervical vein swelling. The most informative research methods were echocardiography and cardiac CT [2,3,7,8,11]. This is supported by the research of other authors. The ECG also showed diffuse-dystrophic changes; other authors also reported similar changes [8,9]. The least informative was the radiography of the chest, which is confirmed in the publications of other authors. However, some researchers indicate that there may be no changes on the ECG, as well as on the radiograph [1]. As a rule, the differential diagno-

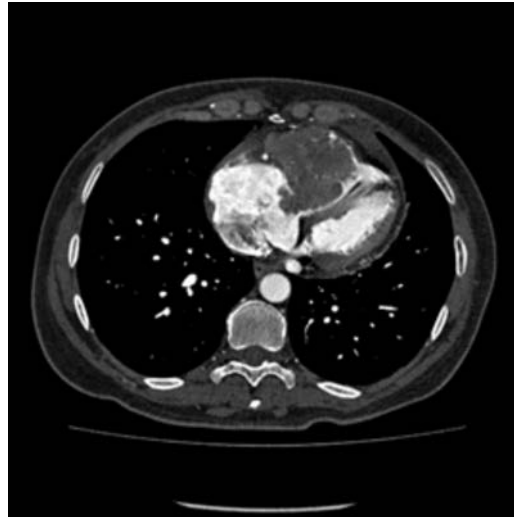


Fig 1.
Formation of right ventricle in axial projection

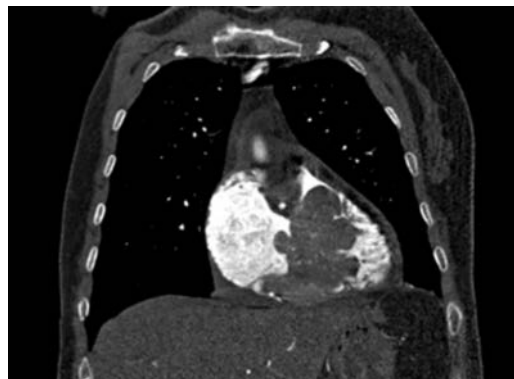


Fig 2.
Formation of right ventricle in coronal projection

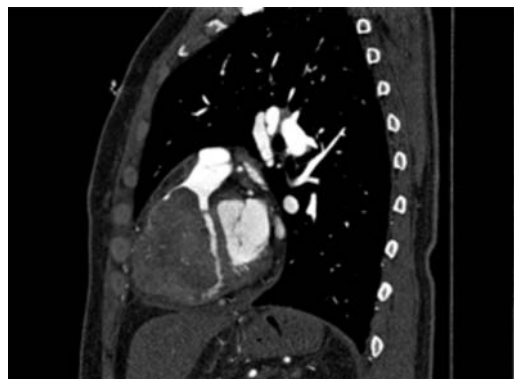


Fig 3.
Formation of right ventricle in sagittal projection

sis of metastatic heart disease does not cause difficulties, but without clinical manifestations it is difficult to suspect heart damage. This clinical case showed similar data with other clinical cases published in the literature that described a similar clinical picture and age.

Conclusion

This clinical case is interesting because without a clear anamnestic data, it is difficult to make a correct diagnosis, primarily because of the patient hiding the information. Its results show data similar to other published clinical cases, that describe a similar clinical picture, age and research methods.

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HEMODYNAMIC CHANGES DUE TO PULMONECTOMY (EXPERIMENTAL STUDY)

МРПТИ 76.29.35

**Nadyrov M.T., Baymakhanov A.N., Almabayev I.A.,
Orazbek A.A., Deryabin L.P.**
National Medical University named after S.D. Asfendiyarova, Almaty, Kazakhstan

ABOUT THE AUTHORS

Nadyrov M.T. – PhD-doctoral, National Medical University named after S.D. Asfendiyarova

Baymakhanov A.N. – Ph.D. prof., National Medical University named after S.D. Asfendiyarova

Almabayev I.A. – M.D. prof., National Medical University named after S.D. Asfendiyarova

Orazbek A.A. – assistant, National Medical University named after S.D. Asfendiyarova

Deryabin L.P. – Assistant, National Medical University named after S.D. Asfendiyarova

Abstract

Relevance. Currently, the main directions of treatment of postoperative disorders after pulmonectomy are infusion-transfusion maintenance of hemodynamics, antibacterial chemoprophylaxis of infectious complications and perioperative nutritional support. An analysis of the literature data showed that the severity and originality of the course of the postoperative period is determined by hemodynamic disturbances and the function of vital organs, which determines the relevance of this problem.

Purpose. In this study, we studied hemodynamic status indicators with subsequent pulmonectomy in experimental animals.

Materials and methods. The study was conducted on 12 laboratory animals (rabbits). The state of the pulmonary artery, pulmonary tissue and portal blood flow was studied by radioisotope method from the moment of pulmonary artery ligation up to one month after pulmonectomy. Hemodynamics was evaluated after 1 and 3 hours, 1; 3 and 7 days and a month later.

Results. Removal of one lung significantly disrupts the hemodynamics of the remaining lung, which occurs during ligation of the pulmonary artery. Violation of pulmonary blood flow, in turn, leads to a violation of the portal-venous blood flow that occurs during blinking of the bronchi, and a violation of local blood flow is recorded 3 hours after pulmonectomy.

Keywords

Pulmonectomy, hemodynamic changes

Пulьмонэктомияға байланысты гемодинамикалық өзгерістер (Тәжірибелік зерттеу)

**Надыров М.Т., Баймаханов А.Н., Алмабаев Ы.А.,
Оразбек А.А., Дерябин Л.П.**
С.Ж. Асфендияров атындағы Ұлттық медициналық университеті, Алматы, Қазақстан

АВТОРЛАР ТУРАЛЫ

Надыров М.Т. – PhD-докторант, С.Ж. Асфендияров атындағы Қазақ Ұлттық медицина университеті.

Баймаханов А.Н. – к.м.н. проф., С.Ж. Асфендияров атындағы Қазақ Ұлттық медицина университеті.

Алмабаев Ы.А. – д.м.н. проф., С.Ж. Асфендияров атындағы Қазақ Ұлттық медицина университеті.

Оразбек А.А. – ассистент, С.Ж. Асфендияров атындағы Ұлттық медициналық университеті

Дерябин Л.П. – ассистент, С.Ж. Асфендияров атындағы Ұлттық медициналық университеті.

Аңдатпа

Өзектілігі. Қазіргі уақытта пульмонэктомиядан кейінгі операциядан кейінгі бұзылуларды емдеудің негізгі бағыттары гемодинамиканың инфузиялық-трансфузиялық қамтамасыз етілуі, инфекциялық асқынулардың бактерияға қарсы химиопрофилактикасы және периоперативті тамақтану болып табылады. Әдебиет деректерін талдау операциядан кейінгі кезеңнің ауырлығы мен өзіндік ерекшелігі гемодинамикалық бұзылулармен және өмірлік маңызды органдардың қызметімен анықталады, бұл мәселенің өзектілігін анықтайды.

Мақсаты. Бұл жұмыста біз гемодинамикалық күйді зерттедік, содан кейін тәжірибелік жануарларда пульмонэктомия жасалды.

Материалдар мен әдістер. Зерттеу 12 зертханалық жануарға (қоян) жүргізілді. Өкпе артериясының, өкпе тінінің және порталдағы қан ағымының жағдайы радиоизотоптық әдіспен өкпе артериясы байланған сәттен бастап пульмонэктомиядан кейін бір айға дейін зерттелді. Гемодинамика 1 және 3 сағаттан кейін бағаланды, 1; 3 және 7 күн және бір айдан кейін.

Нәтижелері. Бір өкпені алып тастау қалған өкпенің гемодинамикасын айтарлықтай бұзады, бұл өкпе артериясы байланған кезде пайда болады. Өкпе қан ағымының бұзылуы, өз кезегінде, бронхтар жыпылықтаған кезде пайда болатын портал-веноздық қан ағымының бұзылуына әкеледі және пульмонэктомиядан 3 сағат өткен соң жергілікті қан ағымының бұзылуы тіркеледі.

Түйін сөздер

пульмонэктомия,
гемодинамикалық өзгерістер

Гемодинамические изменения на фоне пульмонэктомии (Экспериментальное исследование)

ОБ АВТОРАХ

Надыров М.Т. – PhD-докторант, Национальный медицинский университет им.С.Д. Асфендиярова

Баймаханов А.Н. – к.м.н. проф., Национальный медицинский университет им.С.Д. Асфендиярова

Алмабаев Ы.А. – д.м.н. проф., Национальный медицинский университет им.С.Д. Асфендиярова

Оразбек А.А. – ассистент, Национальный медицинский университет им.С.Д. Асфендиярова

Дерябин Л.П. – ассистент, Национальный медицинский университет им.С.Д. Асфендиярова

**Надыров М.Т., Баймаханов А.Н., Алмабаев Ы.А.,
Оразбек А.А., Дерябин Л.П.**

Национальный медицинский университет им.С.Д. Асфендиярова, Алматы, Казахстан

Аннотация

Актуальность. В настоящее время основными направлениями лечения послеоперационных нарушений после пульмонэктомии являются инфузионно-трансфузионное поддержание гемодинамики, антибактериальная химиопрофилактика инфекционных осложнений и периоперационная нутритивная поддержка. Анализ литературных данных показал, что тяжесть и оригинальность течения послеоперационного периода определяются гемодинамическими нарушениями и функцией жизненно важных органов, что определяет актуальность данной проблемы.

Цель. В этом исследовании мы изучали показатели гемодинамического статуса с последующей пульмонэктомией у экспериментальных животных.

Материалы и методы. Исследование проведено на 12 лабораторных животных (кроликах). Состояние легочной артерии, легочной ткани и портального кровотока изучали радиоизотопным методом с момента перевязки легочной артерии до одного месяца после пульмонэктомии. Гемодинамику оценивали через 1 и 3 часа, 1; 3 и 7 дней и месяц спустя.

Результаты. Удаление одного легкого значительно нарушает гемодинамику оставшегося легкого, что происходит при перевязке легочной артерии. Нарушение легочного кровотока, в свою очередь, приводит к нарушению портально-венозного кровотока, возникающему при моргании бронхов, а нарушение локального кровотока регистрируется через 3 часа после пульмонэктомии.

Ключевые слова

пульмонэктомия,
гемодинамические изменения

Introduction

Performing extensive surgical interventions on the lungs, including combined reconstructive plastic surgery on the lungs remains a difficult unsolved problem [1].

According to the literature, the complication rate after extended and combined lung operations reaches 44-60%, and mortality - 11.2% or more, significantly increasing in patients with initially low functional reserves

Achievement of anesthesiology, intensive care and thoracic surgery of recent years allows expanding the circle of patients who can undergo lung resection for oncological diseases. Neither advanced age, nor pronounced concomitant pathology are currently contraindications for thoracic interventions [2, 3].

In this regard, the most urgent problems are the restructuring of vital functions of the body, both during lung resection and in the immediate postoperative period, which takes place in order to maintain adequate ventilation-perfusion relations in the remaining part of the lungs.

As a rule, the proportion of thoracic patients with initially expressed dysfunctions of the external respiration function is small, while some changes in the cardiovascular system occur in the vast majority of patients who undergo lung cancer surgery [4,5]. According to the literature, questions regarding aspects of the compensatory activity of systemic hemodynamics and the pulmonary circulation (MMC) in

response to a sharp decrease in pulmonary vascular capacity during pulmonary artery ligation (PLA) remain unresolved. Obviously, the leading roles in this case belong to the right ventricle (RV) of the heart, as well as to the reduced vascular pulmonary bed, which is forced to redistribute the entire volume of circulating blood during pulmonectomies.

In turn, violations of blood oxygenation in the lungs are considered as one of the main reasons for the development of postoperative hypoxia and associated fatal outcomes.

In patients with lung cancer after pulmonectomy, the primary etiological factor of respiratory dysfunction is ventilation-perfusion disorders due to a twofold increase in blood flow through a single lung [6].

The processes of gas exchange in the lungs are closely interconnected with other non-gas exchange functions, primarily with the metabolic and detoxifying activity of the pulmonary parenchyma.

At the same time, the lungs are the only organ that controls the concentration of most metabolites in arterial blood, and in the presence of their own disease they are able to release toxic substances into the arterial collector.

Currently, the main directions of treatment of postoperative disorders after pulmonectomy are infusion-transfusion maintenance of hemodynamics, antibacterial chemoprophylaxis of infectious complications and perioperative nutritional support.

A number of authors suggest using drugs with antihypoxic properties more actively in the postop-

erative period to both correct metabolic disorders in a single lung and reduce the severity of systemic effects of hypoxia.

Surgical methods occupy an important place in increasing the effectiveness of treatment of patients with respiratory pathology. The generally accepted radical method of surgical treatment of patients with cancer, pulmonary tuberculosis and non-specific purulent lung diseases is pneumonectomy.

Pneumonectomy, accompanied by a significant decrease in the volume of the vascular bed of the pulmonary circulation and respiratory surface, gives a high percentage of postoperative complications and mortality.

Despite this, the proportion of pneumonectomy among all operations performed for tuberculosis, cancer and non-specific respiratory diseases remains high.

An analysis of the literature data showed that the severity and originality of the course of the postoperative period is determined by hemodynamic disturbances and the function of vital organs, which determines the relevance of this problem.

Purpose of the study - to study hemodynamic status indices during subsequent pneumonectomy in experimental animals.

Material and methods

The study was conducted on the basis of the Research Institute of FP them. B. Atchabarova at the Laboratory of Experimental Medicine on 12 laboratory animals (rabbits), age –24–36 months, weighing 8–10 kg. All manipulations carried out on laboratory animals were carried out with the obligatory observance of the Helsinki declaration of protection of vertebrate animals used for experiments and other scientific purposes (from 1975 and its revised version of 2008).

To solve the tasks, we conducted 2 series of experiments:

- 1 series - control thoracotomy performed only on the left;
- 2 series - pneumonectomy on the left by the general method (without shunting), which contributed to the removal of 42–43% of lung tissue mass.

The state of the pulmonary artery, pulmonary tissue and portal blood flow was studied by radioisotope method from the moment of pulmonary artery ligation up to one month after pneumonectomy. Hemodynamics was evaluated after 1 and 3 hours, 1; 3 and 7 days and a month later.

Results and discussions

From the diagram it follows that after thoracotomy, the pressure in the pulmonary artery was 20 ± 1.0 mm Hg. Art., In the left atrium - 10.0 ± 0.4 mm RT. Art., In the portal vein - 9 ± 0.4 mm RT. St., And in the femoral artery - 93 ± 2.2 mm RT.

Doping of the left pulmonary artery led to a significant increase in pressure in the pulmonary trunk by 60% ($p < 0.01$). At the same time, the pressure in the left atrium increased by 15%, in the portal vein by 2.2%, and the pressure in the femoral artery decreased slightly ($p > 0.05$).

During ligation of the left pulmonary veins, the pressure in the pulmonary trunk increased significantly by 55% (31 ± 1.9 mm Hg). A significant increase in pressure in the pulmonary trunk ($p < 0.01$) led to an increase in pressure in the portal vein system. This figure was 10.7 mm Hg. St., which is 18.9% more than the control value.

The pressure in the left atrium and in the femoral artery did not differ from the previous stage of the operation. During blinking of the bronchi, there is a slight decrease in pressure in the pulmonary trunk (28.7 ± 1.8 mm Hg. Art.). However, this indicator was 43.5% higher than with thoracotomy, and the increase was statistically significant ($p < 0.01$).

The pressure in the portal vein remained elevated and amounted to 10.1 ± 0.5 mm RT. ($p < 0.01$). At this stage of the operation, the pressure in the left atrium was within the control values.

15 minutes after the end of the operation, the pressure in the pulmonary trunk was maintained at 25.9 ± 1.1 mm Hg. St., Which is 29.5% more than the initial value, and the significance of differences from control was $p < 0,01$. The pressure in the portal vein is 10.4 ± 0.7 mm Hg. St., Which is 15.5% more than the control indicator, and the significance of the differences was not in doubt ($p < 0.01$). The decrease in pressure in the femoral artery was statistically significant ($p < 0.05$).

The pressure in the left atrium decreased slightly compared to the previous period and amounted to 10.1 ± 0.8 mm RT. Art. ($p > 0.05$).

30 minutes after the operation, the pressure in the pulmonary trunk was 23.4 ± 0.08 mm Hg. St., which is 17% more than with thoracotomy. This value, although lower than in the previous period, remains statistically significant ($p < 0.05$). There is a noticeable (17%) increase in pressure in the left atrium.

The increase in pressure in the left atrium coincided, on the one hand, with a relative decrease in pressure in the pulmonary artery, and on the other, with a continuing increase in pressure in the portal vein system by 28.8% ($p < 0.01$), a further decrease in systemic arterial tone continues, as evidenced by a decrease in pressure in the femoral artery by 10.1%, amounting to 83.6 ± 1.7 mm RT. ($p < 0.05$).

An hour after the left-sided pneumonectomy, in the generally accepted way, the pressure in the pulmonary trunk was 30% higher than in thoracotomized animals, and was statistically significant. A constant increase in pressure in the pulmonary artery system, which occurs after a pneumonectomy

due to a decrease in the vascular bed, in turn, leads to a decrease in pressure in the left atrium ($10, 1 \pm 0.8$ mm Hg) by 20.2%, and in portal vein, on the contrary, it will increase pressure by 33.3%. Against this background, there is a further decrease in pressure in the femoral artery to 13.0% ($p < 0.05$).

Consequently, an increase in pressure in the pulmonary trunk can lead to the development of phlebohypertension in the portal vein pool and a decrease in systemic blood pressure. We explain the increase in pressure in the left atrium at the stages of the operation by ligation of the pulmonary vessels, since they are baroreceptor fields of pulmonary circulation. In the future, it was necessary to trace the effect of hemodynamic disturbances after pulmonectomy on the state of blood flow in the portal vein and lung tissues and vessels.

A TED blood flow after pulmonectomy indicates that the test measurements in the pulmonary arterial blood flow reached 128 ± 4.8 , pulmonary tissue blood flow - 84 ± 3.7 ml / min / 100 g in the portal circulation - 68 ± 2.0 ml / min / 100 g.

Ligation of the left pulmonary artery leads to a significant decrease in pulmonary arterial blood flow by 24.2%, pulmonary tissue blood flow by 7.1%, and portal blood flow is at the initial level.

When ligation of pulmonary veins, a decrease in pulmonary arterial blood flow to 96 ± 3.6 ml / min / 100 g was noted ($p < 0.01$). This, in turn, leads to a decrease in blood flow in the lung tissue by 10.7% ($p < 0.05$). The decrease in portal blood flow was statistically unreliable ($p > 0.05$).

Flickering of the bronchi caused a significant decrease in pulmonary arterial blood flow by 25.8%, which, in turn, led to a decrease in pulmonary tissue blood flow and amounted to 70 ± 1.6 ml / min / 100g. This indicator is 16.7% below the control value. The established violations of blood flow in the pulmonary circulation led to a violation of portal hemodynamics. Portal venous blood flow is significantly reduced ($p < 0.05$) to 59 ± 2.9 ml / min / 100 g, which is 13.2% less than the initial values.

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An hour after pulmonectomy, arterial blood flow in the lungs decreased by 28.1%, local pulmonary blood flow - by 28.2%, portal venous blood flow - by 17.7%. Moreover, a decrease in blood flow was statistically significant ($p < 0.05$).

3 hours after the operation, a further significant decrease in blood flow in the organs under investigation continues at all studied objects. In this case, pulmonary arterial blood flow was 84 ± 4.3 ml / min / 100 g, local lung tissue - 64 ± 1.8 ml / min / 100 g and portal-venous - 55 ± 2.5 ml / min / 100 g.

The maximum decrease in pulmonary arterial, pulmonary tissue blood flow occurred a day after surgery, and portal-venous blood flow - on the 3rd day. On the 7th day after pulmonectomy, there is a tendency to increase the studied blood flow compared with the previous period. In this case, pulmonary arterial blood flow was 98 ± 3.8 ml / min / 100 g, pulmonary tissue blood flow was 72 ± 2.4 ml / min / 100 g and portal venous blood flow was 59 ± 1.4 ml / min / 100 g. However, in a benchmark study, the numbers indicated a significant decrease.

Analysis of the data obtained a month after the operation showed that there was a significant improvement in hemodynamics in the lungs, but complete restoration of the studied blood flow parameters did not occur.

Findings

Removal of one lung significantly disrupts the hemodynamics of the remaining lung, which occurs during ligation of the pulmonary artery. Violation of pulmonary blood flow, in turn, leads to a violation of the portal-venous blood flow that occurs during blinking of the bronchi, and a violation of local blood flow is recorded 3 hours after pulmonectomy.

In this case, the most critical decrease in blood flow occurs during the first three days after surgery. It should be noted that even a month after pulmonectomy surgery, complete compensation of pulmonary blood flow does not occur.

ATRIUM MECHANICAL FUNCTION IN PATIENTS WITH ISCHEMIC MITRAL REGURGITATION

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Musayev S.A., Abbasov F.E., Qurbanov E.F., Mahmudov R.M.

Scientific center of surgery named after M.A. Tophubashov, Baku, Azerbaijan

ABOUT THE AUTHORS

Musayev S.A. – senior researcher of the Scientific Center of Surgery named M.A. Tothubashov

Abbasov F.E. – professor of the Scientific Center of Surgery named M.A. Tothubashov

Qurbanov E.F. – researcher of the Scientific Center of Surgery named M.A. Tothubashov

Mahmudov R.M. – researcher of the Scientific Center of Surgery named after M.A. Topchubashev

Abstract

Aim. To assess the left atrium (LA) mechanical function in patients with ischemic mitral regurgitation (IMR) using technologies of vector analysis of endocardium movement rate.

Materials and methods. The study enrolled 107 patients aged $56 \pm 7,5$ among which 96 men (89,7 %). The entry criteria: I-III degree of ischemic mitral regurgitation on echocardiography, angiography revealing coronary artery disease requiring surgical revascularization, sinus rhythm with the heart rate ranging from 60 to 89 per minute, superior echocardiography visualization of LA endocardium. We hypothesize that atrial changes in deformation and deformation rate can be associated with severity of regurgitation.

Results. Values of left atrium mechanical function decline proportionally to IMR severity. Longitudinal deformation and LA deformation rate reflect link with IMR greater than conventional indices used for estimation of LA geometry.

Conclusions. Left atrium mechanical function values are associated with IMR and connected with mechanical remodeling of the left atrium.

Keywords

Ischemic mitral regurgitation, left atrium, longitudinal deformation, deformation rate

Ишемиялық митральды регургитациясы бар науқастарда жүрекшелердің механикалық функциясы

Мусаев С.А., Аббасов Ф.Е., Гурбанов Е.Ф., Махмудов Р.М.

М. А. Топчубашев атындағы ғылыми хирургия орталығы, Баку, Әзірбайжан

Аңдатпа

Мақсаты. Жүректің ишемиялық ауруы (ЖИА) бар науқастардың сол жақ жүрекшесінің механикалық қызметін бағалау үшін эндокард қозғалысы жылдамдығын векторлық талдау технологиялары пайдаланылды.

Материалдар және әдістер. Зерттеуге $56 \pm 7,5$ жас аралығындағы 107 науқас қатысты, оның ішінде ер адамдардың саны – 96 (89,7%). Қатысу критерийлері: эхокардиографиядағы I-IV дәрежелі ишемиялық митральді регургитация, хирургиялық реvascularизацияны қажет ететін жүректің ишемиялық ауруы ангиографиясы, жүректің минутына 60-90 рет жиырылу жиілігінің синустық ритмі, СЖ эндокардының тамаша эхокардиографиялық визуализациянуы. Біз жүрекше деформациясының және деформация жылдамдығының өзгеруі регургитацияның күрделілігіне байланысты болуы мүмкін деп тұжырымдаймыз.

Нәтижелері. Сол жақ жүрекшенің механикалық қызметінің мәні IMR ауырлығына пропорционал шамада төмендейді. СЖ геометриясын бағалау үшін пайдаланылатын дағдылы индекстерге қарағанда, бойлық деформация мен СЖ деформациясының жылдамдығы IMR-мен байланысты толығырақ айқындайды.

Қорытынды. ЖИА бар науқастарда сол жақ жүрекше қызметінің өзгеруі оның механикалық қайта құрылуына байланысты.

АВТОРЛАР ТУРАЛЫ

Мусаев С.А. – М.А. Топчубашев ат. ФХИ аға ғылыми қызметкері

Аббасов Ф.Е. – М.А. Топчубашев ат. ФХИ профессоры

Гурбанов Е.Ф. – М.А. Топчубашев ат. ФХИ ғылыми қызметкері

Махмудов Р.М. – М.А. Топчубашев ат. ФХИ ғылыми қызметкері

Түйін сөздер

Ишемиялық митральді регургитация, сол жақ жүрекше, бойлық деформация, деформация жылдамдығы.

Механическая функция предсердий у пациентов с ишемической митральной регургитацией

ОБ АВТОРАХ

Мусаев С.А. –
Старший научный сотрудник НЦХ им. М.А.
Топчубашева

Аббасов Ф.Е. –
Профессор НЦХ им. М.А. Топчубашева

Гурбанов Е.Ф. –
Научный сотрудник НЦХ им. М.А.
Топчубашева

Махмудов Р.М. –
Научный сотрудник НЦХ им. М.А.
Топчубашева

Мусаев С.А., Аббасов Ф.Е., Гурбанов Е.Ф., Махмудов Р.М.

Научный центр хирургии им. М. А. Топчубашева, Баку, Азербайджан

Аннотация

Цель. Для оценки механической функции левого предсердия (ЛП) у пациентов с ишемической митральной регургитацией (ИМР) использованы технологии векторного анализа скорости движения эндокарда.

Материалы и методы. В исследование были включены 107 пациентов в возрасте $56 \pm 7,5$ лет, среди которых 96 мужчин (89,7%). Критерии включения: I-IV степень ишемической митральной регургитации на эхокардиографии, ангиография с ишемической болезнью сердца, требующей хирургической реваскуляризации, синусовый ритм с частотой сердечных сокращений от 60 до 89 в минуту, пре-восходная эхокардиографическая визуализация эндокарда ЛП. Мы предполагаем, что предсердные изменения в деформации и скорости деформации могут быть связаны с серьезностью регургитации.

Результаты. Значения механической функции левого предсердия снижаются пропорционально тяжести ИМР. Продольная деформация и скорость деформации ЛП отражают связь с ИМР больше, чем обычные индексы, используемые для оценки геометрии ЛП.

Выводы. Изменение функции левого предсердия у пациентов ИБС связаны с механическим ее ремоделированием.

Ключевые слова

Ишемическая митральная регургитация, левое предсердие, продольная деформация, скорость деформации

Introduction

The issues of ischemic mitral regurgitation (IMR) remains most relevant in the treatment of patients with coronary heart disease (CHD), since even a small degree of IMR is associated with an increased risk and poor prognosis [9]. Potentially, the assessment of the hemodynamic significance of varying degrees of insufficiency in a particular patient and the study of its influence on the remodeling of the heart can help in the choice of treatment approach. At the same time, heart chambers or hemodynamic characteristics, which change due to the direct impact of IMR, can be considered effectors of regurgitation [7]. One of the main effectors of chronic IMR is the left atrium (LA). It is known that an increase in the volume of LA is a powerful predictor of mortality, but it is unclear how its mechanical function changes, which depends on the overload with a regurgitating volume and thus may become an important component in assessing the effects of regurgitation [7]. In study by Y. Y. Liu et al. it has been shown that strain indicators and strain rate of LA are earlier and more sensitive indicators of volume overload than geometric changes in the atria [13]. There are number of studies regarding the changing strain in patients with arterial hypertension, CHD, and atrial fibrillation, while the contribution of mechanical LA function to the process of global heart remodeling in patients with IMR has not been practically evaluated. In the literature, there are few data on the mechanics of LA in patients with MR during the reservoir and systolic phase of the LA

[10]. Features of the strain indicators in the other phases of the atrium (absorption phase and conduit period) have not been evaluated. The features of the functional volumetric and mechanical parameters of the LA depending on the severity of MR in all phases of the LA activity are not yet described. We assume that atrial strain and strain rate may be associated with the severity of IMR. The aim of the study is to evaluate the mechanical function of the LA in patients with IMR using the vector analysis of the movement rate of the endocardium.

Materials and methods

The study included 107 patients aged 56 ± 7.5 years old, of which 96 (89,7%) are men - hospitalized with coronary artery disease at our clinic in 2017. All participants signed informed consent, and the study was approved by ethical institution committee. Inclusion criteria: echocardiography showing I – III degree of MR, the presence of coronary artery disease showed by angiography requiring surgical revascularization, sinus rhythm with the heart rate ranging from 60 to 89 per minute, superior echocardiography visualization of LA endocardium.

Exclusion criteria: the presence of acute coronary syndrome, a history of surgical revascularization, degenerative and other non-ischemic mitral valve lesions, pathology of aortic, tricuspid, and pulmonary valves of any etiology, documented supraventricular rhythm, constant use of diuretics and inotropic agents, presence of non-cardiac

Data	Study group	Control group	P <
Heart rate (beats / min)	68,96±12,1	70,28±12,7	0.69
End diastolic volume (ml, Simpson)	116,3±26,2	90±12	0.0001
LVEF (% , Simpson)	43±11,2	60±5	0.0000
The average pressure in the pulmonary artery, mm Hg.	26,5±10,2	14,3±4,5	0.0002
Maximum volume of LA (ml)	78,5±26,5	47,6±10,2	0.0000
Minimum volume of LA (ml)	53,4±22,2	31,4±7,6	0.0000
P-volume LA (ml)	66,3±24,6	38,8±8,1	0.0000
The fraction of passive emptying of LA (%).	16,7±7,8	27,2±10,3	0.001
The fraction of active emptying of LA (%).	22,4±9,9	28,1±7,3	0.03
LA Expansion Index	0,8±0,5	2,46±0,7	0.0000

Table 1.
Basic echocardiographic characteristic of the examined patients.

diseases associated with pulmonary hypertension. The comparison group consisted of 20 healthy volunteers, of which men - 10 (50%), aged between 38 to 65 (52.6 ± 13.4) years old. The study group included 12 (11.2%) patients with functional class II angina pectoris, 69 (64.5%) patients with functional class III angina pectoris and 26 (24.3%) patients with functional class IV angina pectoris. The time from the onset of symptoms of IHD was 4.5 ± 3.3 years. Patients who underwent a Q-wave myocardial infarction - 68 (63.6%), anterior with a Q-wave - 21 (19.6%), repeated myocardial infarction - 18 (16.8%). Symptoms of heart failure of II functional class were registered in 12 (11.2%) patients, III functional class in 64 (59.8%) patients and IV functional class in 31 (29.0%) patients. 21 patients (19.6%) had concomitant diabetes mellitus type 2, and arterial hypertension was detected in 60 (56%) patients.

Patients received conservative therapy that complies with current guidelines for treatment of IHD such as aspirin, statins, beta-blockers, angiotensin-converting enzyme inhibitors [3]. All patients underwent a complex of clinical, laboratory and instrumental examinations (ECG, general and biochemical blood tests, coagulation parameters, chest X-ray, 24-hour ECG monitoring, echocardiography, coronary angiography. All the patients underwent echocardiography examination using Acuson S2000 (Siemens Medical Systems, Mountain View, CA, USA) equipped with a 4V1c probe. The severity of the IMR was assessed by several quantitative parameters, including the measurement of the width of the proximal regurgitation jet (vena contracta, VC, average 0.52 ± 0.21 cm for the group), the index of the area of the regurgitation flow (percentage of the jet relative to the area of the LA, the average MR value is $28.7 \pm 11.5\%$) [8, 11].

The mean end-diastolic volume (EDV) in the study group was 116.3 ± 26.2 ml, the LV ejection fraction (EF) – $43.0 \pm 11.2\%$, the maximum volume of LA - 78.5 ± 26.5 ml, the average pressure in the pulmonary artery - 26.5 ± 10.2 mmHg.

All the patients in comparison group had no MR as shown in echocardiography and all the echocardiographic data corresponded to the norm [4]. For echocardiographic examination of the LA following indicators were evaluated characterizing the geometry (volumes), the function (volume change), and the mechanics of the LA (longitudinal deformation and strain rate). To study the function of the LA, the fraction of passive emptying as a characteristic of the conductor function, the fraction of active emptying (as a characteristic of the pumping function), and also the expansion index of the LA as an indicator of the reservoir function were evaluated [2]. Vector analysis of the longitudinal strain (strain, S, %) and strain rate (SR, s^{-1}) of the LA was carried out on the basis of a dynamic assessment of a two-dimensional echocardiographic image using the patented Speckle Tracking Syngo VVI technology (Siemens Medical Systems, Mountain View, CA, USA).

SR and S were studied during the four phases of the LA activity: 1) the reservoir phase or the accumulation period, characterizes the flow of blood from the pulmonary veins during LV systole, when the mitral cusps are still closed; data acquisition was performed from the opening of the aortic valve cusps to the opening of the cusps of the mitral valve synchronously with the ECG: from the beginning of the ST segment to the end of the T wave; 2) conduit phase or percolation period associated with the flow of blood from the LA to the LV during its early diastole, the values were recorded from the opening of mitral valves until the end of the diastasis, synchronously with the ECG: from the end of the T wave to the beginning of the P wave; 3) the contractile phase or the period of atrial systole, displays the active flow of blood from the LA to the late LV diastole, measurements were performed from the beginning of the P wave to the R wave on the ECG; 4) the absorption phase reflects the flow of blood from the pulmonary veins and the filling of the LA in the early LV systole, estimated from the closing of mitral cusps to the opening of the aortic

Table 2.
Echocardiographic values
of the mechanical function
of the left atrium

Phase	Study group(n=107)		Control group (n = 20)	
	Mean (%)	Index of 10ml LA Volume	Mean	Index of 10ml LA Volume
Contractile	-3,6±2,3	-0,98±0,3	-12,4±1,8	-5,6±0,7
Suction	-1,2±0,3	-0,9±0,1	-0,44±0,7	0,09±0,02
Reservoir	26.5±3.8	2.9±0,7	29.8±2.7	7.3±1.1
Conduit	-0.1±0.17	-0.0012±0.01	-0.37±0.2	-0.08±0.01
Contractile	-0.57±0.4	-0.1±0.002	-1.83±0,31	-0.64±0,003
Suction	0.1±0.07	0,08±0.004	0.43±0,08	0.16±0.001
Reservoir	1.3±0.7	0.15±0.03	2.3±0.6	0.6±0.01
Conduit	-1.4±1,5	-0.22±0,1	-3.5±1.0	-0.8±0.3

valve cusps, which corresponds to the period from the peak of the R wave to the end of the S wave on the ECG [15].

Statistical analysis of the data was carried out using Statistica 8.0. For the description of quantitative data, the values of mean M and standard deviation SD were used. The evaluation of the statistical significance of differences p between the groups was carried out using parametric criteria with a normal distribution of the trait – the two-sample Student's t-test for comparisons of means (M ± SD). Differences in values were considered significant at level of p < 0.05. Determination of the relationship between the studied quantitative values was carried out using the Spearman linear correlation coefficient Rs. The dependence of the variables and the verification of the significance of differences between the averages within the groups were determined using ANOVA.

Results and discussion

Maximum (78.5 ± 26.5 ml), minimum (53.4 ± 22.2 ml) and P-volumes of the left atrium (66.3 ± 24.6 ml) significantly differed in the patients of the study group and in the comparison group (47.6 ± 10.2 ml, 31.4 ± 8 ml, 38.8 ± 8.1 ml, respectively, p < 0.05). Only a moderate direct correlation was found between the volumes of the LA and the MR area index of the flux (Rs = 0.46 for the MR and the maximum volume of the LA, Rs = 0.5 for the minimum, Rs = 0.45 for the P-volume of the LA). The fraction of passive emptying of the LA in the comparison group was significantly higher than in patients with MR, which indicates a decrease in atrial conduction function in patients with IMR (26.5 ± 10.3% versus 15.3 ± 8.2%, p < 0.05).

A moderate inverse correlation was found between the index of the area of the flow of the MR and the fraction of passive emptying of the LA (Rs = -0.55). The larger id MR, the smaller the volume of fluid flowing through the LA into the LV during the conduit phase of the atria, thereby reducing the contribution of the atrium to the LV stroke volume, therefore, to the LV systolic function. A moderate

direct correlation was found between the fraction of passive emptying and LV EF (Rs = 0.46), which indicates a moderate association between LV and LV dysfunction. The fraction of passive emptying which reflects pumping function of LA was significantly reduced in patients with MR compared with the control group (22.4 ± 9.9% versus 28.1 ± 7.3%, p < 0.05). There was a mild inverse correlation between the fraction of active emptying of the LA and MR (Rs = -0.27). The LA expansion index characterizing the atrial reservoir function was significantly higher in the comparison group (patients with MR 0.8 ± 0.5 versus 2.47 ± 0.8 in the comparison group, p < 0.05). There was a strong inverse correlation between the LA expansion index and the index of the area of the flow of the MR (Rs = -0.76), which confirms the deterioration of the atrial reservoir function. When analyzing differences in the functional parameters of the LA depending on the degree of MR we found the absence of a significant difference in the fraction of passive emptying of LA between patients with moderate and severe MR (with second degree MR 13.9 ± 8%, with third degree MR 14.8 ± 7.2%, p = 0.6).

However, when indexing the obtained data to the corresponding volume of the LA, significant differences were found (S in the group with MR -2.8 ± 0.7% / 10 ml of the maximum volume of the LA, in the comparison group - 7.5 ± 1.2% / 10 ml of the maximum volume of LA, (p = 0.001), which confirms the hemodynamic significance of chronic overload with regurgitating volume of blood of LA. Longitudinal systolic deformation of LA was significantly reduced in the contractile phase (in patients with MR -3.6 ± 2.3% versus -12.4 ± 1.8% in the comparison group, p < 0.05) and in the absorption phase (in patients with MP -1.2 ± 0.3% versus -0.44 ± 0.7% in the comparison group, p < 0.05). In the conduit phase, the deformation was minimal both in patients with MR and in the comparison group, but paradoxically larger values were recorded in patients with MR than normal (-0.37 ± 0.2 and -0.1 ± 0.17%, respectively, p < 0.05). A pronounced direct correlation of S in the systolic phase of the LA and

Degree of MR	SR				S			
	systole phase	suction phase	reservoir phase	conduit phase	systole phase	suction phase	reservoir phase	conduit phase
I (n = 19)	-1.8±0.07	0.4±0.02	2.4±0,1	-3.1±0.8	-12.3±2.8	-0.3±0.03	29.7±0.61	-0.4±0.01
II(n = 17)	-1.1±0.04	0.17±0,02	1.8±0,2	-2,3±1,2	-6,5±1,4	-1,1±0,06	24,8±0,72	-0,2±0,02
III(n = 46)	-0,2±0,03	0,07±0,01	0,81±0,1	-0,3±0,17	-2,3±0,2	-1,5±0,08	27,6±0,5	-0,03±0,02
IV(n = 25)	-0,2±0,04	0,08±0,02	0,72±0,1	-0,2±0,1	-1,9±0,23	-1,3±0,07	25,8±0,7	-0,01±0,02

Table 3.

Phase analysis of deformity and deformation rate of the left atrium depending on the degree of mitral regurgitation (M±SD; -95 to +95%).

MR (RS = 0.88), moderate S in the conduit phase and MR (RS = 0.5) and inverse correlation S in the phase of absorption and MR (RS = -0.58), S in the reservoir phase and MP (RS = -0.5). We analyzed indicators S of LA depending on MR (tab. 3).

The maximum differences were found in individuals without MR and in patients with minor MR during the systole of LA (-12.4 ± 1.8% vs. -6.5 ± 2.2%, p < 0.05, respectively) and during the absorption phase (-0.44 ± 0.7% vs. -1.1 ± 0.07%, p < 0.05, respectively), as well as between patients with mild and moderate MR (S during the period of LA systole in patients with MR Grade I -12.3 ± 2.8% versus -6.5 ± 1.4% with MR of Grade II, p < 0.05); S during the absorption phase with MP of the I degree -1.8 ± 0.07% versus -1.4 ± 0.07, p < 0.05). Similarly to the indicators of SR between patients with moderate and severe MR, no differences in S values were found in all phases (see Table 3).

The qualitative assessment of LA deformation and its practical value has been the subject of discussion in the last decade [6]. Stoylen et al showed that LA deformation is reciprocally associated with LV deformation, in other words, all mechanical processes in the atrium are only a mirror reflection of LV deformation and are more dependent on movement of the annular plane of LV systolic and diastolic functions [14]. However, further studies showed significant limitations of these data, demonstrating the significance of atrial contribution (systolic negative deformation) in the formation of an adequate preload of the LV and the contribution of reservoir phase (diastolic positive deformation of the LA) in the formation of the LV stroke volume [6]. In contrast to previous studies of mechanical function of LA, which evaluated only the peak positive longitudinal S and SR (as indicators of the accumulation period) and the peak negative S and SR (as indicators of the systolic phase of the LA), we attempt to give a comprehensive assessment of the atrial activity along with the contribution of the conduit and suction phase. Of course, the conduit period is difficult to evaluate, since it is biphasic: during the beginning of early filling of the LV, atrial deformity is minimal, but the deformation rate is highest, however in the second period, we witness the plateau, when both the deformation and the deformation rate are close to or equal to

0. In addition, the conduit function of LA depends on afterload, largely determined by the pressure in the receiving chamber which is LV, which increases as the diastolic stiffness and systolic dysfunction of the LV increases [15]. Thus, the deformation values obtained during the period of blood flow from the LA to the LV in the normal state more reflect LV function than the LA function. But, as demonstrated in our study, the presence of chronic MR significantly changes the deformation rate of LA in the conduit period proportionally to the severity of regurgitation (which is confirmed by a direct correlation of MR and SR during this phase). Deformation in patients with minor MR in the conduit phase are minimal, and in patients with moderate and severe MR, they are close to zero during the entire phase. Consequently, the LA in the conduit period in patients with moderate and severe MR in terms of deformity functions as a "passport" with minimal S and SR values even during the early filling of the left ventricle. With inhibition of the deformity in the systolic phase of the LA, it becomes clear that the mechanical contribution to the filling of the LV is significantly reduced, despite the increase in the maximum volume of the LA. Perhaps these changes are related to the processes of structural remodeling of the atrium and loss of elastic properties due to chronic overload with the regurgitated blood volume. S.S Kuppahally et al., showed that a decrease in S and SR is an independent predictor of ultrastructure changes in LA, in particular interstitial fibrosis [12]. Consequently, a decrease in deformity into the conduit phase of LA may be considered an effector of hemodynamic significance of MR. Several authors indicated the reduced SR and S in the atrial systole are associated with the severity of regurgitation [5]. The changes of the deformation we detected in the absorption phase were multidirectional in the control group, patients with minor regurgitation and patients with III - IV degree of MR. Deformation in this phase is close to zero, which is normal (in the control group S -0.44 ± 0.7). The presence of more negative results of deformation in patients with MR (-1.3 ± 0.07%) during this period remains unclear. In patients with III and IV degree of MR, the deformation values were even lower than in patients with mild MR. It is possible that due to atrial remodeling caused by MR, since the deformation

was recorded synchronously with the ECG (from the R-wave to S), from the view of electrical processes, this was already the phase of LA absorption, and from the point of view of mechanics, the end of the LA systole period. It is because of the complexity of differentiation of the onset of the phases most researchers prefer to ignore this phase and not to study its features. Our data regarding the reservoir period are dissonant with the results of A. N. Borg et al., who showed that the longitudinal deformation during the accumulation period was higher in patients with MR compared with the healthy group [7]. Normally, during the phase of the LA reservoir (towards the end of the LV systole), the maximum (among all LA phases) positive deformity is recorded, which is accompanied by the greatest increase in atrial volume. The reservoir period depends on the preload conditions and is fundamentally volume dependent. This means that the deviation of the mechanical characteristics from the normal range is related to the additional volume appearing in the atrium during this period (i.e., directly from the MR). The data obtained by us can be explained by taking into account the mechanical and functional changes along with the all phases of the LA. With a mild degree of MR, there was an increase in the active volume of the LA, due to which, in patients with stage I of MR, the fraction of active emptying remained within normal limits and compensated for the mechanical synergy. But with a moderate and pronounced degree of IMI, indicators charac-

terizing contractility were decreased. Similarly to the classical Frank – Starling curve after a certain “threshold” volume of chambers further growth of contractility does not occur: it begins to decrease. In our study, this “threshold” was not the atrial volume, but the LA expansion index, which functionally characterizes the reservoir phase. A correlation was found between the expansion index and the fraction of active emptying of the LA ($R_s = 0.70$), the expansion index and the deformation rate of the LA in the reservoir phase ($R_s = 0.63$).

In this study, we demonstrated the importance of analyzing mechanical data (SR and S in patients with IMR) for complex assessment of the function of LA, along with traditional geometric parameters. Atrial activity can be interpreted not only from the standpoint of changes in atrial size and volume, but also on the basis of the evaluation of the mechanical properties of LA. Particularly noteworthy is the identification of a significant difference in SR inhibition between patients with mild and moderate MR and uncertain differences in SR indices in patients with moderate and severe MR. The results obtained probably indicate comparable ultrastructural changes in the atria that occur with chronic volume overload of MR from grade II and higher. Further detailed study of the dynamics of the mechanical function of the LA in patients with MR may be a promising and useful tool in assessing its hemodynamic significance and in the choice of surgical approach for additional intervention on mitral valve with IMR.

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SURGICAL TACTICS IN COMBINED PATHOLOGIES OF THE BILIARY SYSTEM

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Farajli V.F.

Azerbaijan Medical University, III Department of surgical diseases, Baku, Azerbaijan

ABOUT THE AUTHORS**Farajli V.F.** – researcher of the Azerbaijan Medical University**Abstract**

For creation of system of the correct and timely choice of tactics at the combined pathologies of biliary system within 5 years researches on 80 patients were carried out. Cholecystectomy was performed in 20 patients on the background of chronic pancreatitis with a concomitant exacerbation of chronic stone cholecystitis, after which the developed pancreatitis in 40% of patients became the cause of death. For a thorough solution of the problem in the combined pathologies of the biliary system, the authors created an algorithm table due to the fact that the results of examinations and anamnestic data exceed the figure 35 and difficulties are created in the differential evaluation of such a number of indicators. The data is processed on the computer according to the created algorithm table. The use of 60 patients divided into 3 groups provides timely thorough diagnosis, adequate preventive measures corresponding to the detected pathological changes both before and during the operation, drainage of the bile ducts along with cholecystectomy provides early and persistent treatment of acute pancreatitis. Mortality among these patients is 5%.

Also, the diagnosis of the algorithm program allows you to timely recognize the developed pathological and functional changes (in most cases, left aside) not only in the biliary system, but also in other parts of the digestive tract, as well as the implementation of the necessary measures during the operation. This in turn leaves no room for the development of pathological syndromes after surgery. The accuracy of the program in the diagnosis is 92.7%, the prognosis of the disease is 86.2%. The proposed surgical tactics are confidently offered to practitioners.

Keywords

biliary system, the concomitant pathology, the algorithm of surgical tactics

Билиарлы жүйенің қосарланған патологиялардың барысындағы оталық тәсілі

Фараджли В.Ф.

Әзірбайжан Медициналық Университеті, хирургиялық аурулар кафедрасы, Баку қ., Әзірбайжан

АВТОРЛАР ТУРАЛЫ**Фараджли В.Ф.** – ӘМУ – дың ғылыми қызметкері**Аңдатпа**

Билиарлы жүйенің қосарланған патологиялары барысында қолданылатын тәсілді өз уақытында таңдау және дұрыс жүйені қалыптастыру үшін 5 жыл бойы 80 науқасқа зерттеулер жүргізілді. Созылмалы панкреатиттің аясында қосарланған асқынған созылмалы тасты холециститі бар 20 науқасқа холецистектомия жасалды. Содан кейін науқастардың 40% -ы асқынған панкреатиттің себебінен көз жұмды. Билиарлы жүйенің қосарланған патологиялары барысында туындаған мәселелердің жүйелі шешімін табу үшін авторлар алгоритм кестесін дайындады, өйткені зерттеулердің және анамнестикалық мәліметтердің нәтижелері 35-тен асады, ал мұндай көрсеткіш мөлшері дифференциалдық бағалау кезінде қиындықтар тудырады. Мәліметтер алгоритмдер кестесі бойынша компьютерде өңделеді. 60 науқасты 3 топқа бөлу арқылы диагноз уақытында қойылады, операцияға дейін және операция уақытында анықталған патологиялық өзгерістерге сәйкес алдын алу шараларын жүргізе алады, холецистэктомиямен қатар өт түтігін дренаждау арқылы жедел панкреатитті ерте және тұрақты емдеуді қамтамасыз етеді. Мұндай науқастардың арасындағы өлім 5%-ды құрайды.

Сондай-ақ алгоритм бағдарламасы бойынша диагностика жасау билиарлық жүйедегі ғана емес ас қорыту жолының басқа да бөлімдеріндегі (көп жағдайда назардан тыс қалатын) функционалдық және патологиялық өзгерістерді өз уақытында анықтауға, сонымен қатар операция уақытында қажетті шараларды орындауға мүмкіндік береді. Бұл өз кезегінде операциядан кейінгі патологиялық синдромдардың асқинуына жол бермейді. Диагностика жасаудағы бағдарламаның дәлдігі 92,7%-ды, ал ауру ағымын болжаудағы дәлдік 86,2%-ды құрайды. Жоғарыда аталған хирургиялық тәсіл тәжірибеші дәрігерлерге сенімді түрде ұсынылады.

Түйін сөздер

билиарлы жүйе, жанамалас патологиялар, алгоритм, хирургиялық тәсіл

Хирургическая тактика при сочетанных патологиях билиарной системы

ОБ АВТОРАХ

Фараджи В. Ф. –
Научный сотрудник АМУ

Фараджи В. Ф.

Азербайджанский Медицинский Университет, кафедра хирургических болезней, Баку, Азербайджан

Аннотация

Для создания системы правильного и своевременного выбора тактики при сочетанных патологиях билиарной системы в течении 5 лет были проведены исследования на 80 больных. У 20 больных на фоне хронического панкреатита при сочетанно развившемся обострении хронического каменного холецистита была проведена холецистэктомия, после которой развившийся панкреатит у 40% больных стал причиной смерти. Для основательного решения создавшейся проблемы при сочетанных патологиях билиарной системы авторы создали таблицу алгоритма по причине того, что результаты обследований и анамнестические данные превышают цифру 35 и создаются трудности в дифференциальном оценивании такого количества показателей. Данные обрабатываются на компьютере по созданной таблице алгоритма. Применение у разделённых на 3 группы 60 больных обеспечивает своевременную основательную постановку диагноза, адекватное проведение профилактических мероприятий соответствующих обнаруженным патологическим изменениям как до так и во время операции, дренирование жёлчных протоков наряду с холецистэктомией обеспечивает раннее и стойкое лечение острого панкреатита. Смертность среди этих больных составляет 5%.

Также диагностика по программе алгоритма позволяет своевременно распознать развившиеся патологические и функциональные изменения (в большинстве случаев оставшиеся в стороне) не только в билиарной системе, но и в других отделах пищеварительного тракта, а также выполнение нужных мероприятий во время операции. Это в свою очередь не оставляет места для развития после операции патологических синдромов. Точность программы в диагностике составляет 92,7%, прогнозирование течения болезни составляет 86,2%. Предложенная хирургическая тактика с уверенностью предлагается практическим врачам.

Ключевые слова

билиарная система, сочетанные патологии, алгоритм, хирургическая тактика

Complications caused by pathologies of individual members of the biliary system still create undesirable problems for clinicians (2,3,5,10). Despite the fact that with the help of modern laboratory and instrumental research methods, it is possible to identify changes in the liver, intra- and extrahepatic bile ducts, gallbladder and common bile duct, Vater's papilla and 12-duodenum. There are still unresolved problems (1,12,13). The combined description of the pathologies of these zones requires careful differential diagnosis (6,8,9,10,11). With this approach, it is clear that the aspects that are the main and auxiliary in the combined development of pathologies, their relationship, i.e., the pathogenesis and mechanism of the development of the combination still remains unresolved (1,2,4).

This analysis of the problem allows you to reveal many points. Any pathology that has developed in any Department of the biliary system brings with it other changes and the timely detection and correct assessment of these changes ensures the timely conduct of operations, as well as along with the operation of preventive measures (3,7,11).

Until now, the document of a single program reflecting the pathogenetic basis of the types of operations selected with combined changes in the hepatobiliary system and duodenum remains undeveloped (7,14).

The aim of the study is to improve the results of surgical treatment taking into account the dis-

closure of pathogenetic aspects reflecting the development of combined pathologies of the biliary system.

Materials and methods: the Research was carried out for 5 years at the clinical bases of the Department of surgical diseases. Examinations were carried out on 80 patients admitted to the clinic with a diagnosis of acute cholecystitis, which developed on the background of chronic pancreatitis. Despite the confirmation of the diagnosis of exacerbation of chronic pancreatitis after cholecystectomy, the detection of existing combined pathologies, possibly covering the hepatobiliary region and the 12th duodenum and taking into account the possible need for preventive measures before surgery. Patients along with traditional methods of research were carried out contrast radiography of the stomach, 12-duodenum, RPH and CT.

A transnasal probe is inserted into the patient together with a thin catheter prior to RPHG. During endoscopy, a catheter with a probe is inserted into the lower horizontal part of the duodenum and stored there for decompression. After the end of RPHG, a catheter with a diameter of 0.3 cm passing through the Vater's nipple, which plays the role of a stent, is stored there for the purpose of decompression – the outflow of bile and pancreatic fluid; the other end is located outside, so it allows you to observe the outflow of bile. These are preventive measures. All patients underwent cholecystectomy,

including 60 patients with laparoscopic, 20-and laparotomy. The 80 patients involved in the study were divided into 4 groups.

Group I: 20 patients developed acute cholecystitis on the background of pancreatitis. These patients had no interventions before and during surgery for pancreatitis. In 12 of them, cholecystectomy was performed laparoscopically, in 8 patients-by the open method. In this group of patients, the mortality rate was 40%.

Group II: in this group, consisting of 20 patients before surgery due to chronic pancreatitis, endoscopic drainage was performed with a probe to ensure the outflow of bile and pancreatic juice (a catheter with a diameter of 0.3 cm passing through the Vater nipple) and decompression of the 12-duodenum.

Only then were cholecystectomy and strong's surgery performed to prevent chronic 12-duodenal obstruction. 12 patients underwent laparoscopic surgery, 8 patients underwent open surgery.

Chronic pancreatitis and chronic obstruction of the duodenum 12 were found in 20 patients of group III before surgery. Before the operation for the developed acute stone cholecystitis, drainage through the Vater nipple and decompression of the 12-duodenum was performed. Along with open cholecystectomy in these patients, strong's surgery was also performed and this eliminated chronic duodenal obstruction.

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In 20 patients of group IV, along with acute cholecystitis, which developed against the background of chronic pancreatitis, structural changes and a decrease in the conductivity of the biliary tract and the Virsung duct were found during the examination. The sealing of the Vater's nipple and its circumference was also found, as well as the

impossibility of preserving the inserted catheter in the lumen of the duct. These patients underwent open surgery. After cholecystectomy, 14 patients underwent drainage of the common bile duct by the Pikovsky method.; internal drainage and strong's surgery were performed in 6 patients by the Monastery method. The development of acute pancreatitis in combined pathologies confirms the operation in an open way. Developing in acute pancreatitis diseases of intraperitoneal hypertension syndrome further exacerbate acute pancreatitis (4). With laparoscopic operations, there is inevitably an even greater increase in intra-abdominal pressure. The use of numerous laboratory and instrumental methods of examination indicates that none of them individually or in a systematic form is completely satisfied with clinicians.

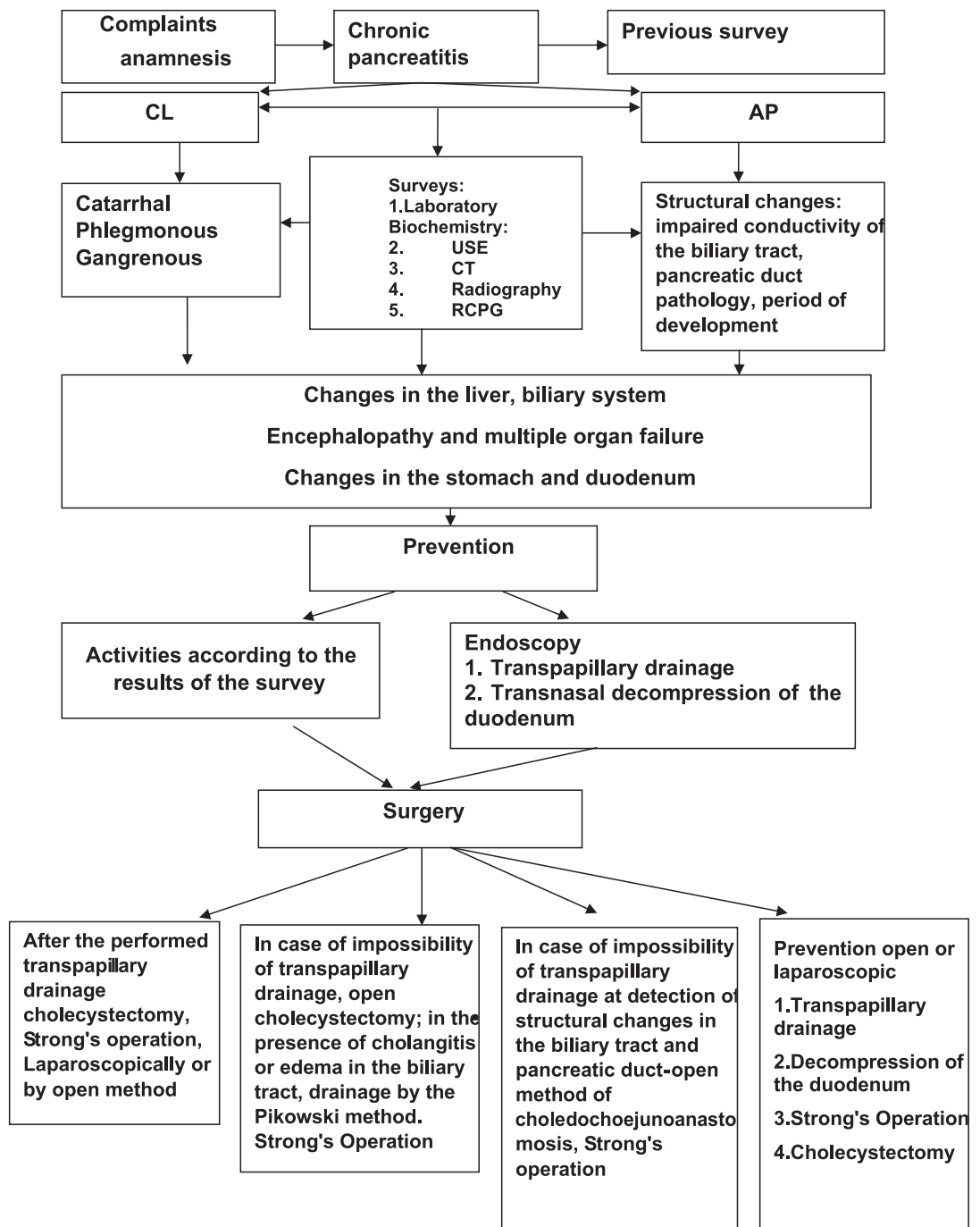
Also, the collected anamnesis, the results of laboratory, instrumental and special methods of examination are scattered. They cannot play a role in the primary early diagnosis of acute pancreatitis, acute acute stone cholecystitis, developed against the background of chronic pancreatitis. When multiple organ failure in patients is overlooked a large number of indicators, or remains hidden in the background. Therefore, we considered it important to create an algorithm table, which is the guarantor of the correct design of treatment tactics, as well as early diagnosis and prevention of these combined pathologies and their complications, combined under one system (table.1).

It is important to use a computer program for the full functioning of the new and newly created algorithm table. Thus, all the data received are processed on a computer and a single system is created. A comparative analysis of the data obtained in this system with the normal indicators of markers is carried out, after that these data are recorded. In the end, conditions are created for the disclosure of ways to improve the results of cholecystectomy operations and prevention of chronic pancreatitis; acute stone cholecystitis. We conduct our research on the basis of this program. Practically, carrying out research work on the created program led to obtaining good results and getting rid of complications in the postoperative period. Mortality decreased from 40% to 5%.

Thus, we can say that the created program of the algorithm fully reflects the goal and the tasks emanating from it. It is an excellent document that plays the role of a beacon in revealing hidden moments. Certainly and with confidence can be offered for use by practitioners.

The results of personal experience and analysis the study of local and foreign authors gives grounds to come to the conclusion that the combined pathology of the biliary system may develop

Table 1.
Table of algorithm of treatment and prevention of exacerbation of chronic pancreatitis after cholecystectomy



pronounced pathological changes in other areas of the digestive tract.

Therefore, for the full formulation of the diagnosis and plan of surgery, it is necessary to find out the following points (table. 2).

Adequate creation of preventive and therapeutic measures selected as a result of the analysis of diagnostic examinations provides the basis for the identification and simultaneous elimination of hidden pathologies; in parallel, gives the basis for the systematic use of data on a computer program in accordance with the prepared algorithm table.

Results and discussion: Based on the data of

instrumental examinations and clinical and laboratory indicators obtained on the first day after admission to the hospital, up to 35 clinical and laboratory symptoms were detected for the correct assessment of pathological changes, allowing for differential diagnosis.

In the current situation, the method leading to the correct solution of the tasks – can be considered an algorithm table and a computer program.

So, on the first day after admission of patients differential diagnosis of numerous indicators, the degree of development of chronic pancreatitis, forecasting its exacerbation after cholecystectomy

Nº	Detect changes	Number	Selectable operations	Number
1	SHH, RE	16	Hernioplasty	16
2	AS, GP	12	Surgical treatment	12
3	DS, DGR	24	Duodenography, Strong's operation	4+20
4	GD, DD	4+4	Elimination of diverticulum by crimping seam	8
5	CL, CP	80	Cholecystectomy	80
6	BD, HPBD	14+12	Biliary drainage	60
7	XK	10	Colopexy	10

Table 2.
Detected changes corresponding to the operation.

Qeyd:

- 1) SHH - sliding Hiatal hernia
Re-reflux-esophagitis
- 2) AS - atony of the stomach, GP - gastropod
- 3) DS-duodenostasis; DGR-duodenogastric reflux
- 4) GD-gastric diverticulum; DD-duodenal diverticulum; BD-biliary dyskinesia; HPBD-hepatopancreatobiliary disorders
- Cl – cholelithiasis; CP-chronic pancreatitis; CC-chronic colostasis.

makes it possible to make the right choice, the planned operation and other activities.

The developed algorithm and the effectiveness of the computer program was proved by the use of 60 patients. In this case, the accuracy of the program in the diagnosis is 92.7%, the prognosis during the disease is 86.2%. Also, the advantage of the proposed program is that the graphical drawing of the results allows doctors to adjust the appropriate treatment tactics and freely assess the expected results and diagnosis

The application of the program in the clinic showed that the belonging of patients to a particular group determines the tactics of treatment. Thus, the treatment was carried out according to the group, but in patients from the group the post-operative period proceeded unfavorably, 8 of 20 patients died, of which 5 patients were operated laparoscopically, 3-e by laparotomy. In this group of patients, the algorithm program was not applied. Other 3 groups (60 patients) were examined according to the developed program, they were performed preventive and therapeutic measures in the order specified in the program. In these groups, only 3 patients died due to multiple organ failure.

2 of them were operated laparoscopies, 1 patient surgery was carried out by laparoscopy. As can be seen on the table (Tab. 2) combined pathologies of the hepatopancreatobiliary system can develop

simultaneously with diseases of individual areas of the digestive tract and in this case, the operations used are aimed at eliminating them as a whole.

This solution does not leave room for the development of any syndromes in the postoperative period. The results of examination of patients in different periods after surgery confirms the above.

Thus, it can be noted that the combined pathology of the biliary system is also combined with pathologies of other parts of the digestive system. In the initial examination of patients, as noted in the program, these points should be taken into account. It can be concluded that the problems associated with the pancreas, arising after cholecystectomy for combined pathologies of the biliary system not only remain, but they are even more aggravated lead to high mortality (40%). In patients who make up the main group, preventive measures drainage of the biliary tract before and during surgery-not only prevents exacerbation of the pathology, it also plays the role of pathogenetic treatment and prevents chronic changes in the hepatobiliary system, developed before surgery. Mortality among such patients was reduced to 5%. This gives reason to say that when detecting pathologies of the biliary system and along with developed other pathologies of the digestive tract. The developed program can become a normative document for practicing physicians.

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ESTIMATION OF RISK FACTORS AND FORECAST OF BLEEDING RELAPSES FROM ESOPHAGEAL VARICES IN PATIENTS WITH PORTAL HYPERTENSION AT LONG-TERM TREATMENT

Mamedov A. Ya.

Scientific Center of Surgery named after academician M.A. Topchibashev, Baku, Azerbaijan

ABOUT THE AUTHORS

Mamedov. A. Ya. - Scientific Center of Surgery named after academician M.A. Topchibashev, Baku, Azerbaijan.
email: akifym@gmail.com

Abstract

The aim of the study: to develop prognostic criteria for assessing the severity of PH, as well as for conducting stage-by-stage endoscopic prophylaxis of bleeding from esophageal and gastric varices in the long-term treatment

Materials and methods. This study is based on the research of the results of endoscopic treatment of 157 patients with EGV admitted to the Scientific Center for Surgery named after M.A. Topchibashev for the period from 2009-2019. Among these patients with PH, 111 (70.7%) were male, 46 (29.3%) were female. The age of patients varied from 31 to 83 years (average 46.3 \pm 1.7 years). The age of 77.7% (122 patients) of the studied was 31-60 years, which indicates the prevalence of the working age persons among the studied patients.

Conclusion. In the literature there are various mathematical models for predicting the postoperative stage of the disease. It should be noted that today there is no ideal model for predicting the relapse of bleeding. Since a significant part of the models was developed before the widespread use of endoscopic intervention in clinical practice.

Keywords

portal hypertension, bleeding, varicose veins, endoscopic hemostasis, prognosis

Ұзақ мерзімді емдеу барысында портальдық гипертензиясы бар науқастардың өңеш көктамырларының варикозды кеңеюінің нәтижесінде қан кетудің қайталануын болжау және қауіп-қатер факторларын бағалау

Мамедов А.Я.

Академик М.А. Топчибашев атындағы Ғылыми Хирургия Орталығы, Баку, Әзірбайжан

АВТОРЛАР ТУРАЛЫ

Мамедов А.Я. - Академик М.А. Топчибашев атындағы Ғылыми Хирургия Орталығы, Баку, Әзірбайжан.
email: akifym@gmail.com

Аңдатпа

Мақсаты: ұзақ мерзімді емдеу барысында өңеш пен асқазан көктамырларының варикозды кеңеюінің нәтижесінде қан кетудің кезеңдік эндоскопиялық профилактикасын жүргізу мақсатында ПГ ауырлық дәрежесін бағалауға арналған болжамалы критерийлерді дайындау.

Материалдары және әдістері. Бұл зерттеу жұмысы 2009-2019 жж. аралығында М.А. Топчибашев атындағы Ғылыми хирургия орталығына өңеш пен асқазан көктамырларының варикозды кеңеюі деген диагнозбен түскен 157 науқасты эндоскопиялық емдеу барысындағы нәтижелерді зерттеуге негізделген. ПГ-ы бар науқастардың 111 (70,7%) – ер адамдар, 46 (29,3%) – әйел адамдар. Науқастардың жастары 31-ден 83 жасқа дейін түрленеді (орта есеппен 46,3 \pm 1,7 жас). Зерттеуге алынған науқастардың 77,7%-ның (122 науқастың) жасы 31-60 жасты құрайды, бұл зерттеуге алынған тұлғалардың арасында еңбекке қабілетті жастағы адамдардың басым екенін көрсетеді.

Тұжырым. Әдебиеттерде осы сырықаттың операциядан кейінгі кезеңдерін болжауға арналған түрлі математикалық модельдер бар. Алайда бүгінгі таңда қайта қан кету рецидивін болжауға арналған мінсіз модель жоқ екенін айтып өтуіміз керек. Өйткені модельдің негізгі бөлігі клиникалық практикада кең қолданыс тапқанға дейін дайындалғандықтан, қазіргі уақытта түзетулер мен тиісті өзгертулер енгізуді қажет етеді.

Түйін сөздер

портальдық гипертензия, қан кету, көктамырдың варикозды кеңеюі, эндоскопиялық гемостаз, болжау

Оценка факторов риска и прогнозирование рецидивов кровотечения из варикозно расширенных вен пищевода у больных с портальной гипертензией в отдаленные сроки лечения

ОБ АВТОРАХ

Мамедов А.Я.

Мамедов А.Я. -
Научный Центр Хирургии
имени академика М.А. Топчибашева,
Баку, Азербайджан.
email: akifym@gmail.com

Научный Центр Хирургии имени академика М.А. Топчибашева, Баку, Азербайджан

Аннотация

Цель: разработать прогностические критерии оценки тяжести ПГ для поэтапной эндоскопической профилактики кровотечений из варикозно расширенных вен пищевода и желудка при длительном лечении.

Материалы и методы. Данное исследование основано на изучении результатов эндоскопического лечения 157 пациентов с расширением вен пищевода и желудка, поступивших в Научный центр хирургии им. М. А. Топчибашева за период 2009-2019 гг. Среди этих больных ПГ 111 (70,7%) были мужчины, 46 (29,3%) - женщины. Возраст пациентов варьировал от 31 до 83 лет (в среднем $46,3 \pm 1,7$ года). Средний возраст 77,7% (122 пациента) обследованных больных составил 31-60 лет, что свидетельствует о преобладании среди обследованных лиц трудоспособного возраста.

Вывод. В литературе имеются различные математические модели для прогнозирования послеоперационной стадии заболевания. Следует отметить, что на сегодняшний день не существует идеальной модели для прогнозирования рецидива кровотечения, поскольку значительная часть моделей была разработана до широкого применения эндоскопических вмешательств в клинической практике.

Ключевые слова

портальная гипертензия, кровотечение, варикозное расширение вен, эндоскопический гемостаз, прогноз

Relevance

Observations of recent years show an increase in the number of patients with portal hypertension (PH). Many authors believe that the main reason for this is the growth of factors leading ultimately to liver cirrhosis (LC) [1,2].

The development of PH in 40-60% of cases is accompanied by bleeding from varicose dilated veins of the esophagus and stomach (VDVES (ESOPHAGEAL AND GASTRIC VARICES (EGV)?)), which in some cases leads to death [3,4].

In recent years, in many countries of the world, including Azerbaijan, endoscopic methods of hemostasis are widely used to eliminate this complication - endoscopic ligation (EL), sclerotherapy (ES), as well as other methods [3,5,6]. However, it should be noted that in the analysis of literature data, the timing of these methods, indications for the choice of endoscopic hemostasis, depending on the severity of the disease, as well as comparative results in the long term are not described at the proper level.

The data show that the prevention and treatment of bleeding from EGV in patients with PH remains an urgent problem in modern medicine. We believe that in order to improve the results of complex treatment, it is necessary to evaluate prognostic criteria, and on their basis to improve methods for choosing the treatment of bleeding from EGV, as well as staged prevention of bleeding recurrence in patients with PH.

The aim of the study

To develop prognostic criteria for assessing the severity of PH, as well as for conducting stage-by-stage endoscopic prophylaxis of bleeding from esophageal and gastric varices in the long-term treatment

Materials and methods

This study is based on the research of the results of endoscopic treatment of 157 patients with EGV admitted to the Scientific Center for Surgery named after M.A. Topchibashev for the period from 2009-2019. Among these patients with PH, 111 (70.7%) were male, 46 (29.3%) were female. The age of patients varied from 31 to 83 years (average 46.3 ± 1.7 years). The age of 77.7% (122 patients) of the studied was 31-60 years, which indicates the prevalence of the working age persons among the studied patients.

The diagnosis of PH and the presence of EGV was made on the basis of generally accepted diagnostic methods.

I degree of expansion was noted in 32 (20.4%), II degree in 51 (32.5%), III degree in 68 (43.3%), and IV degree in 6 (3.8%) cases.

By studying localization, it was found that in 86 (54.8%) patients EGV was located in the lower third of the esophagus, in 9 (5.7%) patients in the stomach, and in 62 (39.5%) it was cardioesophageal.

Types of endoscopic interventions	Quantity	
	Abs.	%
Endoscopic ligation of varicose veins of the esophagus	120	76,4
Endoscopic sclerotherapy of varicose veins of the esophagus	35	22,3
Endoscopic ligation of varicose veins of the stomach	16	10,2
Endoscopic sclerotherapy for varicose veins of the stomach	17	10,8
Obstruction of varicose veins of the bottom of the stomach with histoacrylic glue	6	3,8

Table 1. Endoscopic interventions on esophageal and gastric varices in patients with portal hypertension

The degree of expansion of varicose veins (x_1^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
I-II degree	2	11,11	50	58,14	p<0,001
III-IV degree	16	88,89	36	41,86	p<0,001
Total	18	100	86	100	

Table 2. The degree of expansion of varicose veins

The degree of expansion of varicose veins (x_1^i)	Number of observations		Probabilities	
	With relapse	Without relapse	$P(x_1^i / A_1)$	$P(x_1^i / A_2)$
I-II degree	2	50	0,111	0,581
III-IV degree	16	36	0,889	0,419
Total	18	86	1	1

Table 3. Diagnostic table

In the studied patients, PH in 109 (69.4%) cases was the result of liver cirrhosis (LC), and in 48 (30.6%) cases - the result of extrahepatic causes (portal vein thrombosis), portal cavernous transformation, portal vein thrombosis.

To conduct a comparative analysis of the treatment results, we divided the observed groups into 2 groups: group I included 81 patients who were admitted to the hospital urgently with bleeding from EGV; group II included 76 (48.4%) patients who were admitted as planned (without bleeding) for endoscopic diagnosis and treatment.

The severity of the underlying disease in 83 (52.9%) cases was complicated by the presence of concomitant diseases, among which the prevailing were cardiovascular as well as endocrine diseases.

Table 1 shows the types of endoscopic interventions performed to the studied patients.

In the postoperative period (12 months), 104 patients were examined - 18 with relapse of repeated bleeding and 86 without relapse.

According to the data before and postoperative examinations, the following significant risk factors for repeated bleeding were determined: the degree of varicose vein dilatation, the presence of vasculopathy and gastropathy, classification according to Child Pugh, thrombocytopenia, bad habits, portal hypertension >20 mmHg.

To predict relapse of bleeding, we used the well-known Bayes formula, which is successfully used to predict various phenomena [7].

$$P(A_k / x_j^i) = \frac{P(A_k)P(x_j^i / A_k)}{\sum_k P(A_k)P(x_j^i / A_k)} \quad (1)$$

where $P(A_k)$ – is the a priori probability of the state A_k , $k=1,2,\dots,l$; $\sum P(A_k) = 1$;

$P(x_j^i)$ – a priori probability of gradation x_j^i , $j=1,2,\dots,r$, $i=1,2,\dots,m$;

r – is the total number of features, m – is the number of values of each feature.

In this study, two variants of the condition were considered ($k=2$): A_1 – there is a relapse of repeated bleeding, A_2 – there is no relapse.

According to the above data, the a priori probabilities of states are calculated:

$$P(A_1) = 0,17; P(A_2) = 0,83.$$

The frequency of occurrence was determined and diagnostic tables were compiled for each risk factor.

It should be noted that among the studied parameters, the degree of expansion of varicose veins in the prognostic aspect (to study the likelihood of bleeding) is one of the most basic. Studies have shown that the presence of III and IV degree of expansion of the veins of the esophagus and stomach are high risk factors, which dictates the need for a planned procedure for staged prophylaxis of bleeding with endoscopic methods.

However, it should be noted that in patients with PH in the presence of I-II degree of EGV, vasculopathy and gastropathy, the risk of bleeding increases several times.

The reason for this is erosive changes in the mucosa of the esophagus and stomach, as well as degenerative changes in the wall of varicose veins.

When conducting staged prophylaxis of bleeding recurrence in the long-term treatment period, it is necessary to study the severity of the underlying

Table 4.
The presence of vasculopathy and gastropathy

Vasculopathy and gastropathy (x_2^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
Yes	16	88,89	39	45,35	$p < 0,001$
No	2	11,11	47	54,65	$p < 0,001$
Total	18	100	86	100	

Table 5.
Diagnostic table

Vasculopathy and gastropathy (x_2^i)	Number of observations		Probabilities	
	With relapse	Without relapse	$P(x_1^i / A_1)$	$P(x_1^i / A_2)$
Yes	16	39	0,889	0,453
No	2	47	0,111	0,547
Total	18	86	1	1

Table 6.
Child Pugh classification

Child Pugh classification (x_3^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
Class A	4	22,22	53	61,63	$p < 0,001$
Class B	9	50,00	26	30,23	$p > 0,05$
Class C	5	27,78	7	8,14	$p < 0,05$
Total	18	100	86	100	

Table 7
Diagnostic table

Child Pugh classification (x_3^i)	Number of observations		Probabilities	
	With relapse	Without relapse	With relapse	Without relapse
Class A	4	53	0,222	0,616
Class B	9	26	0,500	0,302
Class C	5	7	0,278	0,081
Total	18	86	1	1

Table 8.
The presence of thrombocytopenia

Thrombocytopenia (x_4^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
Yes	13	72,22	41	47,67	$p > 0,05$
No	5	27,78	45	52,33	$p < 0,05$
Total	18	100	86	100	

Table 9.
Diagnostic table

Thrombocytopenia (x_4^i)	Number of observations		Probabilities	
	With relapse	Without relapse	With relapse	Without relapse
Yes	13	41	0,722	0,477
No	5	45	0,278	0,523
Total	18	86	1	1

Table 10.
Bad habits

Bad habits (x_5^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
Yes	8	44,44	21	24,42	$p < 0,05$
No	10	55,56	65	75,58	$p < 0,005$
Total	18	100	86	100	

Table 11.
Diagnostic table

Bad habits (x_5^i)	Number of observations		Probabilities	
	With relapse	Without relapse	With relapse	Without relapse
Yes	8	21	0,444	0,244
No	10	65	0,556	0,756
Total	18	86	1	1

ing disease. So, in the case of PH, the cause of which was the LC, it is necessary at the stages of treatment to study the severity according to Child Pugh.

The diagnostic table shown in table 7 indicates the high prognostic significance of this parameter for choosing the time for prophylactic endoscopic interventions for EGV.

Among the risk factors for bleeding from EGV, thrombocytopenia is limited not only by a high prognostic value.

This parameter is an indicator of the functional state of the liver, the compensatory capabilities of the body, the presence of congenital hematological disorders. It is necessary for the choice of complex treatment methods, since the methods of endoscopic and drug hemostasis for bleeding from EGV in most cases were ineffective and fatal. This indicates the need for a thorough staged prevention of bleeding in these patients.

Another informative risk factor for the development of bleeding from EGV in the prognostic plan is the presence of a patient's history of bad habits. The latter include nutritional factors: the use of alcohol, nicotine, an irrational lifestyle, etc.

Table 11 indicates the significance and likelihood of the risk of developing bleeding from EGV in patients with unhealthy habits.

One of the important prognostic factors for the development of bleeding in the observed patients is hypertension in the portal vein. The study of the portal gradient in the dynamics of treatment is necessary for the adoption of appropriate preventive and therapeutic measures.

The diagnostic table shown in table 13 indicates the prognostic value of this indicator for studying the likelihood of developing bleeding from EGV.

Thus, all indicators for the application of formula (1) are defined:

In the future, given the above tables, according to the Bayes formula, we can calculate the probability of the outcome depending on the signs:

$$P(A_1 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = \frac{0.17 \cdot \prod_{j=1}^6 P(x_j^i / A_1)}{0.17 \cdot \prod_{j=1}^6 P(x_j^i / A_1) + 0.83 \cdot \prod_{j=1}^6 P(x_j^i / A_2)} \quad (2)$$

$$P(A_2 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = \frac{0.83 \cdot \prod_{j=1}^6 P(x_j^i / A_2)}{0.17 \cdot \prod_{j=1}^6 P(x_j^i / A_1) + 0.83 \cdot \prod_{j=1}^6 P(x_j^i / A_2)} \quad (3)$$

where x_j^i – gradations of a sign. Values of $P(x_j^i / A_1)$ and $P(x_j^i / A_2)$ are calculated from the above data.

Example 1. Patient A.B.A., born in 1953, case history No. 22794, was admitted to the clinic with a diagnosis of "Portal hypertension complicated by bleeding from varicose veins of the esophagus." The degree of expansion of varicose veins - IV degree, vasculopathy and gastropathy are recorded, classification according to Child Pugh - class B, thrombocytopenia - was observed, has bad habits, hypertension in the portal vein is >20 mmHg.

Given the data in table 14, using formulas 2 and 3, we obtain that, in the presence of these signs $P(A_1 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = 0,752$, $P(A_2 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = 0,248$. Thus, the probability of relapse of bleeding in this patient, according to the developed prognostic model, is 75.2%. In a repeated examination of the patient 12 months after the operation, a relapse of repeated bleeding was recorded, which corresponds to our calculations.

Example 2. Patient A.S.B., born in 1967, case history No. 18887, was admitted to the clinic with a diagnosis of "Portal hypertension complicated by bleeding from varicose veins of the esophagus." The degree of expansion of varicose veins - III degree, vasculopathy and gastropathy are recorded, classi-

Hypertension in the portal vein (x_6^i)	With relapse (n=18)		Without relapse (n=86)		Confidence in the difference
	abs.	%	abs.	%	
>20 mmHg	15	83,3	38	44,2	p<0,001
≤20 mmHg	3	16,7	48	55,8	p<0,001
Total	18	100	86	100	

Table 12. Hypertension in the portal vein >20 mmHg

Hypertension in the portal vein (x_6^i)	Number of observations		Probabilities	
	With relapse	Without relapse	With relapse	Without relapse
>20 mmHg	15	38	0,833	0,442
<20 mmHg	3	48	0,167	0,558
Total	18	86	1,0	1,0

Table 13. Diagnostic table

Table 14.

	Sign (x_j)	Gradations of a sign: x_j^i	$P(x_j^i / A_1)$	$P(x_j^i / A_2)$
1	The degree of expansion of varicose veins	III-IV degree	0,889	0,419
		I-II degree	0,111	0,581
2	Vasculopathy and gastropathy	Yes	0,889	0,453
		No	0,111	0,547
3	Child Pugh classification	Class A	0,222	0,616
		Class B	0,500	0,302
		Class C	0,278	0,081
4	Thrombocytopenia	Yes	0,722	0,477
		No	0,278	0,523
5	Bad habits	Yes	0,444	0,244
		No	0,556	0,756
6	Portal vein hypertension	>20 mmHg	0,833	0,442
		<20 mmHg	0,167	0,558

Table 15.
Prognosis model feasibility table

Relapse observation result	Relapse prognosis		Total
	Expected	Not expected	
Observed	16	2	18
Not observed	2	31	33
Total	18	33	51

fication according to Child Pugh - class A, thrombocytopenia - was observed, does not have bad habits, hypertension in the portal vein is ≤ 20 mmHg.

Given the data in table 14, using formulas 2 and 3, we obtain that, in the presence of these signs $P(A_1 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = 0,124$, $P(A_2 / x_1^i, x_2^i, x_3^i, x_4^j, x_5^i, x_6^i) = 0,876$. Thus, the probability of relapse of bleeding in this patient, according to the developed prognostic model, is 12.4%. In fact, upon repeated examination of the patient 12 months after surgery, relapse of repeated bleeding was not observed.

To assess the effectiveness of the prognostic model, we examined the performance of all 18 patients with relapse of bleeding and 33 without relapse (51 in total) after surgery.

According to empirical data, a model feasibility table was compiled (Table 15) [8].

According to the table calculated performance indicators:

Sensitivity Model: SE = 0.889

Model specificity: SP = 0.939

The overall skill of the model: P = 0.922

Model accuracy criterion: Q = 0.828

As shown, the effectiveness of the predictive model using the Bayes formula has a level in the range of 82-92%.

Conclusion

In the literature there are various mathematical models for predicting the postoperative stage of the disease. It should be noted that today there is no ideal model for predicting the relapse of bleeding. Since a significant part of the models was developed before the widespread use of endoscopic intervention in clinical practice, there is currently a need for improvements and appropriate amendments.

Our model, which includes a number of basic preoperative parameters, improves the prediction of relapse recurrence.

Findings

The prognostic model developed by us (using the Bayes formula) allows us to timely assess the real state of EGV in patients with PH, take step-by-step preventive measures to prevent the development of bleeding, and reduce mortality and thereby improve treatment outcomes.

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MODERN ASPECTS OF SURGICAL TREATMENT OF PATIENTS WITH DUODENAL ULCER, COMPLICATED BY BLEEDING (REALITY AND PROSPECTS). LITERATURE REVIEW

ABOUT THE AUTHORS

Mehitiev A.G. –
PhD of the Scientific Center of Surgery
named M.A. Tothubashov

Mehitiev A.G.

Scientific Center of Surgery named M.A. Tothubashov, Baku, Azerbaijan

Abstract

Bleeding is complicated by both acute and chronic duodenal ulcers. The most severe bleeding is complicated by chronic ulcers, which, as a rule, penetrate deeply into the DNA wall and penetrate into neighboring organs. In these cases, the bleeding can be massive, since the blood vessels, gaping in the ulcer with tight edges and bottom, are poorly thrombosed. Surgical tactics in the treatment of patients with acute bleeding from an ulcer depends largely on the accuracy of the diagnosis, the nature of the ulcer (acute or chronic).

The problems of treating patients with penetrating duodenal ulcer persist. Researchers study the possibilities of different surgical methods for treating patients with pronounced morphological changes in the area of duodenal ulcers, developing during its penetration, and determine the optimal type of operation for this duodenal ulcer, the choice of treatment for patients with duodenal ulcer with pronounced morphological changes attracts special attention of researchers. There are various proposals for its surgical treatment. In patients with this category, the question of preference for gastrectomy or vagotomy remains. Moreover, the need for surgery in patients with penetrating ulcers, a number of authors questioned. The solution of the problems posed was the purpose of the present study.

Keywords

duodenal ulcer,
bleeding, treatment

Он екі елі ішек ойық жарасы қансырап асқынған науқастарды хирургиялық емдеудің заманауи аспектілері (қазіргі уақыт және келешек). Әдеби шолу

АВТОРЛАР ТУРАЛЫ

Mehitiev A.G. –
M.A. Topchubashov at. FXI M.F.K.

Mehitiev A.G.

M.A. Topchubashov at. FXI, Baku, Azərbaycan

Аңдатпа

Қансырау жіті және созылмалы он екі елі ішек ойық жараларының асқынуынан орын алады. Тым асқынған қансырау ДНҚ қабырғасына және көршілес мүшелерге тереңдеп енген созылмалы ойық жаралардың қабынуынан болады. Бұл жағдайларда қансырау өте ауқымды болуы мүмкін. Өйткені ойық жараның жіңішке жиектері мен түбіндегі қан тамырлары нашар тромбталған.

Ойық жарасының жіті қансырауы бар науқастарды емдеу барысында пайдаланылатын хирургиялық тәсіл көп жағдайда диагноздың нақтылығына, ойық жараның (жіті немесе созылмалы) сипатына байланысты.

Он екі ішектің ойық жарасы бар науқастарды емдеу мәселелері әлі де өзекті. Зерттеушілер он екі елі ішек ойық жарасының аймағындағы айқын морфологиялық өзгерістері бар науқастарды емдеудің түрлі хирургиялық тәсілдерін, мүмкіндіктерін зерттеп, он екі елі ішектің ойық жарасына операция жасаудың оңтайлы нұсқасын анықтау үстінде. Он екі елі ішек ойық жарасының айқын морфологиялық өзгерістері бар науқастарды емдеу тәсілдерін таңдауға зерттеушілер ерекше қызығушылық танытып отыр. Бұл жараны хирургиялық емдеу бойынша түрлі ұсыныстар бар. Осы категория бойынша емделетін науқас гастрэктомианы немесе ваготомияны таңдауы тиіс. Сонымен қатар, ойық жарасы бар науқастарға ота жасау қажеттілігіне бірқатар авторлар күмән білдіреді. Бұл зерттеу жұмысының мақсаты – осы мәселелердің шешімін табу.

Түйін сөздер

он екі елі ішектің ойық жарасы, қансырау, емдеу

Современные аспекты хирургического лечения больных с язвой двенадцатиперстной кишки, осложненной кровотечением (реальность и перспективы). Литературный обзор

Мехтиев А.Г.

НЦХ им. М.А. Топчибашева, Баку, Азербайджан

ОБ АВТОРАХ

Мехтиев А.Г. – к.м.н., НЦХ им. М.А. Топчибашева

Аннотация

Кровотечение осложняется как острыми, так и хроническими язвами двенадцатиперстной кишки. Наиболее сильное кровотечение осложняется хроническими язвами, которые, как правило, глубоко проникают в стенку ДНК и проникают в соседние органы. В этих случаях кровотечение может быть массивным, поскольку кровеносные сосуды, зияющие в язве с узкими краями и дном, плохо тромбированы. Хирургическая тактика при лечении больных с острым кровотечением из язвы во многом зависит от точности диагноза, характера язвы (острой или хронической).

Проблемы лечения больных с проникающей язвой двенадцатиперстной кишки сохраняются. Исследователи изучают возможности различных хирургических методов лечения больных с выраженными морфологическими изменениями в области язв двенадцатиперстной кишки, развивающимися при ее проникновении, и определяют оптимальный тип операции при этой язве двенадцатиперстной кишки, выбор метода лечения пациентов с язвой двенадцатиперстной кишки с выраженной Морфологические изменения привлекают особое внимание исследователей. Существуют различные предложения по его хирургическому лечению. У пациентов этой категории остается вопрос о предпочтении гастрэктомии или ваготомии. Более того, необходимость операции у пациентов с проникающими язвами у ряда авторов поставлена под сомнение. Целью настоящего исследования было решение поставленных задач.

Ключевые слова

язва двенадцатиперстной кишки, кровотечение, лечение

Bleeding is complicated by both acute and chronic duodenal ulcers [2, 7, 9, 20, 24]. The most severe bleeding is complicated by chronic ulcers, which, as a rule, penetrate deeply into the DNA wall and penetrate into neighboring organs. In these cases, the bleeding can be massive, since the blood vessels, gaping in the ulcer with tight edges and bottom, are poorly thrombosed. Surgical tactics in the treatment of patients with acute bleeding from an ulcer depends largely on the accuracy of the diagnosis, the nature of the ulcer (acute or chronic). Endoscopic examination is of great practical importance for diagnosing and determining the tactics of treating patients with bleeding duodenal ulcer [10, 11, 14]. Mortality during acute gastrointestinal bleeding ulcerative etiology reaches 20% [3, 5, 9, 25]. The number of emergency operations in the treatment of patients with bleeding duodenal ulcer is not reduced [9, 19]. In patients under the age of 50, the risk of bleeding from an ulcer is 11–13%, and at an older age – 24% [8]. An early relapse of bleeding from an ulcer after it stops occurs in at least 25% of cases. At the same time, in 90% of cases, early recurrences of bleeding develop within the next 2-3 days after the bleeding stops at first sight. In 30% of cases, recurrence of bleeding develops within the next 5 years after the first hemorrhage from the ulcer. After repeat bleeding from an ulcer, the risk of another recurrence of bleeding

increases to 60% [24, 25]. Spontaneously, bleeding stops, on average, in 70% of patients. In 30% of cases, bleeding from the ulcer continues [2.4, 3, 25]. Without unique answer, there is still a question about the indications for surgical treatment of patients with acute bleeding from an ulcer [4, 9, 22]. During massive bleeding, when the diagnosis is clear, the blood loss is large and continues, unstable hemodynamic indicators are detected, vomiting with fresh or oxidized blood and tarry feces are noted, the question of surgical tactics is solved simply - after a short preparation or at the same time such patients are subject to urgent surgical treatment [3]. It is more difficult to decide the timing of surgery in patients whose condition relatively stable during the observation period and hope for the success of conservative treatment is not lost [4, 17, 19, 24]. But in the absence of confidence in the stability of hemostasis, a number of authors consider it necessary to conduct an operative intervention [3, 24]. In patients older than 60 years, mortality during surgery and in the immediate postoperative period with massive bleeding reaches 70% [12, 22, 25]. Some surgeons consider the surgical treatment of ulcerative bleeding with severe concomitant diseases in the decompensation stage [12, 20] to be contraindicated. After a single non-abundant bleeding from a duodenal ulcer during satisfactory condition of the patient, many authors prefer to refrain

from emergency surgery [14, 21, 24,]. The steady of hemostasis during bleeding duodenal ulcer is one of the most important criteria when determining indications for surgery. Early recurrence of bleeding after its initial stopping is an absolute indication for surgery [25]. The criterion for the intensity of bleeding is hemorrhagic shock, which represents an immediate threat to the life of the patient. Signs of bleeding intensity are bloody vomiting and melena, a decrease in the hemoglobin content below 6 g / l, a hematocrit value below 0.25, and the need for more than 1 liter of blood to be transfused to stabilize hemodynamics [15]. Endoscopy was done soon patient in the hospital, allows for 90 - 95% of patients to clarify the location and nature of the ulcer, as well as to predict the recurrence of bleeding from it [10]. The risk of early recurrence of bleeding from the ulcer in patients in a state of hemorrhagic of shock during the visible thrombus or thrombosed vessel in the bottom of the ulcer is 50 - 79%. In the case of endoscopic signs of stable hemostasis in bleeding from chronic ulcers, an early relapse of bleeding was observed in less than 5% of cases [20]. The probability of early recurrence of bleeding also depends on the location of the ulcer, its size and the depth of the defeat of the intestinal wall. With localization of the ulcer on the posterior lower side of the duodenum and the visible vessel in the bottom of the ulcer, the risk of early recurrence of bleeding reaches 77%, with localization of the ulcer on the front wall - 34.7% [21]. Currently, in the treatment of patients with bleeding from the ulcer, endoscopic hemostasis is used (thrombogenic drugs, mechanical methods, electrocoagulation, laser photocoagulation, injection methods, etc.) [19, 21, 25]. These methods for stopping bleeding do not always prevent the development of re-bleeding, but only allow you to quickly and adequately stabilize the patient's condition.

The central link in the treatment of patients with bleeding from duodenal ulcer is an emergency or urgent operation. The choice of surgical intervention in patients with bleeding duodenal ulcer significantly affects the outcome of the disease [3, 10]. Surgical intervention for acute bleeding from duodenal ulcer should be "radical" and short-lived [3, 10]. The choice of method of operation depends on the nature and localization of the ulcer, the general condition of the patients, their age, the likelihood of early recurrence of bleeding, the risk of operative lethality, complications in the early postoperative period, and is also determined by the qualification of the surgeon [8]. stitching of the ulcer, devascularization of the pyloroduodenal zone, gastrectomy, various types of vagotomy with antrumectomy or stomach draining operations, during which the ulcer is stitched or excised, and pyloro- or duodenoplasty

is performed. In severe conditions of patients with profuse bleeding from ulcers, it is possible to perform only the so-called palliative operations that do not affect the etiological and pathogenetic mechanisms of its development. Stitching and ligation of a bleeding vessel in an ulcer is applicable only in rare cases, since after these interventions the ulcer defect often does not scar, and sometimes (still in the early postoperative period) the bleeding from the ulcer recurs [17]. Stitching or excision of bleeding duodenal ulcer is possible only in those patients in whom the severity of the condition does not allow for surgical intervention with an impact on the etiological and pathogenetic mechanisms of the disease. The operative lethality at stitching or excision of an ulcer as an independent operation often exceeds 50% [24]. Devascularization of the pyloroduodenal zone by ligation of the gastro-duodenal artery is currently carried out only as an additional method for TV with surgery draining the stomach in combination with flashing of the posterior duodenal ulcer [24].

Gastric resection for bleeding duodenal ulcer is used by many surgeons [18, 19, 23]. But this operation in cases of bleeding from an ulcer is extremely traumatic intervention. Only a few surgeons report a small incidence of operative lethality after gastrectomy performed on duodenal ulcer complicated by massive bleeding [24]. Resection of the stomach can significantly reduce the acid-producing zone and eliminates the antral mechanism of regulation of the acid-forming function of the stomach. After gastrectomy performed for bleeding duodenal ulcer, the frequency of peptic ulcer gastroenteroanastomosis in the long-term observation of patients does not exceed 3%, but disorders of the functions of the digestive organs are observed more often than when carrying out such an operation in a planned manner [19, 24]. After resection of the stomach according to the Billroth-1 method, dysfunctions are less pronounced than after resection according to the Billroth-II method [12].

During treatment of patients with duodenal ulcer complicated by bleeding, some surgeons consider as an operation of choice an economical resection of the stomach – antrumectomy with vagotomy. In case of a bleeding ulcer of the posterior wall of the duodenum, antrumectomy is recommended to be supplemented with ligation of the gastro-duodenal artery above and below the ulcer crater with the formation of a C-stitch in the center of the ulcer crater [19]. One of the most dangerous complications of stomach resection according to the Billroth-II method in patients operated on for bleeding duodenal ulcer is the failure of the duodenal stump [3, 12].

At present various types of vagotomy in combination with stomach draining operations are widely

used in the surgical treatment of patients with bleeding duodenal ulcer [6, 15]. Vagotomy with draining operations of the stomach not only significantly reduces the acid production of the stomach, but also reduces blood flow in the duodenal mucosa, i.e., indirectly affects the blood circulation in the ulcer zone [21]. Unfortunately, after vagotomy, the frequency of recurrence of the ulcer is high, which somewhat levels the positive aspects of this operation [10, 25].

For reducing the incidence of adverse gastric dysfunction in patients with a bleeding ulcer after vagotomy, some surgeons suggested performing selective vagotomy with gastric drainage operations [5,9]. With the localization of ulcers on the front wall of the duodenum, it is usually excised, and duodenotomy is transformed into pyloroplasty. When a bleeding ulcer is localized on the posterior wall of the duodenum, duodenotomy is performed, flashing of the vessels in the ulcer or the ulcer itself, as well as covering the ulcer with a shifted mucosa or flap of the duodenum [24]. The operation is completed with pyloroplasty in various modifications; in some cases, single-row suture technique is used. The technical implementation of selective vagotomy is more complicated than the intersection of the trunks of the vagus nerves, therefore, at present, selective vagotomy in the treatment of patients with duodenal ulcer is almost never used.

[12, 13] during treatment of patients with duodenal ulcer complicated by bleeding, it is recommended to perform SST; other authors agree with them [22]. In case of small ulcers of the anterior wall of the duodenum, an ulcer is excised, duodenoplasty, and then SPV [11]. Some authors when performing SPV in patients with bleeding duodenal ulcer do not recommend extraduodenal ligation of the gastro-duodenal artery due to the increased risk of ischemic necrosis of the lesser curvature of the stomach [23].

Despite certain advantages in terms of minimizing the frequency of disorders of the functions of the digestive organs, SST does not find wide application in emergency surgery due to duodenal ulcer due to technical complexity and time-consuming, which does not comply with the principles of emergency surgery. Particularly noteworthy is the use of anterior seriotomy of the body and the fundus of the stomach in patients with a bleeding duodenal ulcer in combination with posterior TV. This operation preserves the positive aspects of the PWV and at the same time is more simple to perform, short-lived and available to most surgeons.

Thus, the search for optimal methods of surgical treatment of duodenal ulcer complicated by bleeding continues. To date, inadequate methods of treatment tactics have been noted in assisting

patients with bleeding duodenal ulcer. In particular, there is no proper consistency in understanding the urgency of surgical treatment of these patients, and there is a striking confusion in the names of operations depending on the timing of admission to the patient in the hospital. A completely different interpretation of an immediate, urgent, emergency, urgent and delayed operation is found, although, from the linguistic point of view, these concepts are synonymous. This state of affairs leads the practical doctor away from understanding the essence of the therapeutic process when patients with a bleeding duodenal ulcer enter the hospital, gives rise to the tactics of passive observation of patients and makes scientific analysis and comparison of data from different authors extremely difficult. The lack of a common understanding of the endoscopic signs of the stability of hemostasis also often leads to unjustified waiting tactics. For various reasons, in many medical institutions, endoscopic methods for stopping bleeding are not used, in which patients are removed from a serious condition and prepared for pathogenetically substantiated surgery. So far, there is no unified point of view on infusion-transfusion therapy programs for acute gastrointestinal bleeding of ulcerative etiology.

During help patients with a bleeding duodenal ulcer, the method of surgical intervention is often chosen because of the surgeon's personal affections, which are often based on little experience. The problem of treatment of acute gastrointestinal bleeding from duodenal ulcer remains relevant and requires a thorough study, both in theoretical and in practical terms. Features of surgical treatment of duodenal ulcer complicated by pyloroduodenal stenosis. Stenosis of the pyloroduodenal zone is one of the most frequent indications for surgical intervention for duodenal ulcer and occurs in 10–54% of all patients with this disease [9,14].

Many surgeons think that surgical treatment is indicated for any degree of ulcerative stenosis of the duodenum, while emphasizing that the results of surgical treatment are better than when the operation is performed [17]. However, in most cases (almost 60%), the operation is performed on patients already with sub- and decompensated degrees of stenosis of the pyloroduodenal zone. After the first operation performed on ulcerative stenosis of the pyloroduodenal zone, more than 100 years have passed. And yet, surgeons are saved and the tasks of treating patients with this complication of duodenal ulcer are not solved.

Planned surgical intervention in the treatment of patients with ulcerative stenosis of the pyloroduodenal zone pursues a number of objectives: restoration of unobstructed patency of the food bolus along the gastrointestinal tract, impact on

the etiological and pathogenetic mechanisms of ulcer formation and creation of conditions for the normalization of the motor-evacuation function of the stomach [9,14]. There is no universal method of operation in the treatment of patients with ulcerative stenosis of the pyloroduodenal zone. In case of a serious condition of a patient, surgery that affects the etiological and pathogenetic mechanisms of ulcer formation may be inadequate or difficult to achieve. In these cases, the surgeon primarily seeks to restore the patency of the gastrointestinal tract using only operations draining the stomach, which is accompanied by minimal operational risk.

In determining the surgical tactics in patients with ulcerative stenosis of the pyloroduodenal zone, first of all, take into account information about the degree of stenosis and activity of the ulcerative process. In addition, they take into account the possibility of a combination of duodenal stenosis with other complications of the disease, indices of gastric acid production, clinical features that determine a high degree of risk of surgical intervention [9,14,19]. Drainage operations (in particular, gastroenterostomy), used as independent methods in the treatment of patients with stenosing duodenal ulcer, are undoubtedly effective for restoring the advancement of the food bolus along the gastrointestinal tract and are accompanied by low mortality, especially in elderly and elderly patients.

Stable remission of duodenal ulcer after these operations is rarely observed. Surgical intervention, providing persistent achlorhydria, is a resection of the stomach. However, postoperative mortality after this intervention remains high, reaching 3–5% [3,8], and in about 14–15% of cases, diseases of the operated stomach develop in the form of dumping syndrome, afferent loop syndrome, alimentary dystrophy, etc. [10]. Many of these patients require repeated surgical treatment, and some patients steadily lose their working capacity and are forced to remain on disability [3,8,12,18] think that with decompensated stenosis, it is advisable to perform a particularly extensive stomach resection, as in these cases violated the contractile ability of his muscles.

However, with the decompensated stenosis of the pyloroduodenal zone, the need for resection of an overstretched stomach does not always occur, as with properly performed drainage operations, as a rule, there is a gradual normalization of the muscle tone of the stomach [16, 25]. According to [10,15], the need to remove part of the stomach occurs with a concomitant gastric ulcer, very high rates of acid-forming function of the stomach, chronic obstruction of the duodenum. Moreover, these authors believe that resection of the stomach should be carried out in an economical version (no

more than 1/3 1/2) in combination with vagotomy .. Mortality after gastrectomy performed in a planned manner reaches 4-5% [13, 21]. The lack of alternative gastric resection for the treatment of duodenal ulcers complicated by stenosis seems to be very doubtful, and under these conditions the question arises about the use of sparing surgical treatment methods, in particular, vagotomy. But there are concerns that the use of vagotomy, which sometimes causes atony of the stomach, is especially dangerous [9,13].

Published examples of severe postvagotomichesky atony of the stomach, necessitating repeated surgery [23]. Some surgeons, using vagotomy with drainage operations of the stomach with duodenal ulcer complicated only with compensated and subcompensated stenosis, object to the use of this operation in patients with decompensated stenosis of the pyloroduodenal zone. Other authors apply vagotomy with any duodenal stenosis [11, 17]. Impaired motor-evacuation function of the stomach in patients with duodenal ulcer complicated by stenosis after vagotomy, as a rule, are associated with insufficiently effective gastric drainage [8, 19]. The standard application of pyloroplasty according to Heinecke – Mikulich with decompensated stenosis is perverse [8, 20]. In these cases, stenosis in the pyloroduodenal zone recurs. The use of a pyloroplasty according to Finney or a gastrojejunostomosis on a short loop helps to prevent the violation of motor-evacuation function of the stomach [8,20]. The experience of using vagotomy in treating patients with DIC ulcer complicated by stenosis shows that the long-term results of this operation are favorable [8, 20]. On the other hand, “vagal denervation” of the stomach against the background of a sharply weakened contractile ability of the body previously seemed extremely risky [9, 11].

In most patients, this complication of vagotomy in the early postoperative period is eliminated by conservative treatment and is noted briefly [8,20]. This circumstance, as well as the high incidence of recurrence of the disease in patients undergoing vagotomy [9,16], promoted the introduction of the pyloroduodenal vagotomy with antrumectomy for treatment of patients with ulcerative stenosis [9,19]. A number of authors believe that the best operation for the treatment of patients with ulcerative wall pyloroduodenal area is antrumectomy in combination with CB [15, 19]. A new way to consider the surgical treatment of duodenal ulcers, including stenosis of the pyloroduodenal zone, was allowed by the use of SST in clinical practice [22], causing minimal disruption of the motor function of the stomach, preserves the mechanism of antral regulation of its secretion, which ensures secretory processes in the stomach at a level close to physi-

ological [18]. That is why SST, characterized by low postoperative mortality and not having in most cases adverse effects, has been used in the surgical treatment of patients with duodenal ulcer complicated by stenosis [17]. The undoubted advantage of PWV is low operative and postoperative mortality [13]. This circumstance allows its use in exhausted, debilitated patients, especially in patients of elderly and old age. In addition, with the complication of duodenal ulcer stenosis of the pyloroduodenal zone, the frequency of relapses of the disease is less high than with other complications of duodenal ulcer and less frequent disorders of the functions of the digestive organs [19]. Manifestations of dumping syndrome, noted in some patients who underwent SST with pyloroplasty, in most cases are mild and quickly resolved by conservative treatment [17,22]. When treating patients with duodenal ulcer complicated by decompensated stenosis, besides choosing an adequate method of vagotomy, it is also important and determination of the most rational method of stomach draining operation [9, 14]. As a rule, pyloroplasty is used as a method of gastric drainage. Gastroenterostomy is used only for special reasons. Currently, the priority are those methods of gastroduodenal anastomosis formation, which allow to reliably drain the expanded stomach and prevent the development of cicatricial changes in the area of the fistula. This is achieved mainly by adhering to its proper size (at least 3 - 3.5 cm). Such is pyloroplasty according to Finney, which has received the most widespread [8]. [11] proved that with duodenoplasty stenosis, duodenoplasty is advisable, while the organ's good permeability is restored, the pylorus musculature and the antrum of the stomach are not damaged, which approximates the functional results of vagotomy with duodenoplasty to the results of isolated SST. However, duodenoplasty is not always used. A special problem is the surgical treatment of patients with duodenal ulcer with a combination of stenosis of the pyloroduodenal zone with an ulcer perforation or acute gastrointestinal bleeding from it [3,4,6].

Thus, in the treatment of patients with duodenal ulcer complicated by pyloroduodenal stenosis, there is no consensus in the choice of the method of surgical treatment. There is no doubt that this choice should be influenced by the degree of viola-

tion of patency in this area, the patient's age, his somatic status and the presence of concomitant pathology in which surgical intervention has to be performed. Surgical methods of treatment of penetrating duodenal ulcer. Penetration of duodenal ulcers to neighboring organs is often combined with other complications of duodenal ulcers (bleeding from ulcers, cicatricial stenosis of the pyloroduodenal zone, etc.) - In these cases, the indication for surgical treatment is often not a complication of ulcer penetration, but other complications of duodenal ulcer, which is most often and determines the outcome of the operation [9,16]. However, in 10–15% of cases among operated patients with duodenal ulcer, the indication for surgical treatment is only penetration of the ulcer into neighboring organs. Penetrating ulcers of the duodenum have different sizes. Most often, their diameter does not exceed 1 cm. There is no generally accepted gradation of duodenal ulcers. Some authors emphasize ulcers with a diameter of 0.5 cm, 0.8 cm and 2 cm [9,16], other researchers - up to 1 cm, 1-2 cm, more than 2 cm [10]. Observations of truly giant ulcers are given [8,12, 16, 21]. Some authors refer to a large ulcer defect of size 2 cm or more [4,5, 21].

Thus, the problems of treating patients with penetrating duodenal ulcer persist. Researchers are exploring the possibilities of different surgical methods of treating patients; the question of preference for gastrectomy or vagotomy remains. with pronounced morphological changes in the duodenal ulcer, developing during its penetration

The problems of treating patients with penetrating duodenal ulcer persist. Researchers study the possibilities of different surgical methods for treating patients with pronounced morphological changes in the area of duodenal ulcers, developing during its penetration, and determine the optimal type of operation for this duodenal ulcer, the choice of treatment for patients with duodenal ulcer with pronounced morphological changes attracts special attention of researchers. There are various proposals for its surgical treatment. In patients with this category, the question of preference for gastrectomy or vagotomy remains. Moreover, the need for surgery in patients with penetrating ulcers, a number of authors questioned. The solution of the problems posed was the purpose of the present study

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THE CURRENT STATE AND PROBLEMS OF THE ORGANIZATION OF SURGICAL TREATMENT OF COMBINED ECHINOCOCCOSIS OF THE CHEST AND ABDOMINAL ORGANS (LITERATURE REVIEW)

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Akimniyazova B.B., Kausova G.K., Yeshmuratov T.S.

Kazakhstan's medical university «KSPH»,
Center of modern medicine «Mediterra»,
National Center of surgery named after A.N. Syzganov, Almaty, Kazakhstan

ABOUT THE AUTHORS

Yeshmuratov T.S. – Head of the Department of thoracic surgery and pulmonology of center of the modern medicine "Mediterra"

Akimniyazova B.B. – PhD student of KSPH

Abstract

Combined Echinococcosis of the chest and abdomen is one of the causes of morbidity and disability in the Republic of Kazakhstan. The incidence, according to statistics, in 2017 per 100,000 people was 217 cases of Echinococcosis (1). The article reviewed the organization of surgical care in the combined Echinococcosis of the chest and abdominal organs, from these data there are obvious problems in the health care system and the necessity of the optimize the diagnosis and treatment.

Keywords

Organization of surgical care, thoracic surgery, combined Echinococcus, multidisciplinary approach

Кеуде және іш қуысы ағзаларының аралас эхинококкозын хирургиялық емдеуінің қазіргі жағдайы мен проблемалары (Әдеби шолу)

Акимниязова Б.Б., Каусова Г.К., Ешмуратов Т.Ш.

«ВШОЗ» Қазақстандық медицина университеті
«Mediterra» Заманауи медицина орталығы
«А.Н. Сызғанов атындағы мемлекеттік хирургия орталығы», Алматы, Қазақстан

АВТОРЛАР ТУРАЛЫ

Ешмуратов Т. Ш. – «Mediterra» заманауи медицина орталығының кеуде хирургиясы және пульмонология департаментінің басшысы.

Акимниязова Б. Б. – ҚДСЖМ PhD докторанты

Аңдатпа

Кеуде және іш қуысының аралас эхинококкозы Қазақстан Республикасында ауру мен мүгедектіктің себептерінің бірі. Статистикаға сәйкес, 2017 жылы 100 000 адамға шаққандағы 217 ауруда эхинококкоз болды (1). Мақалада кеуде және іш қуысының мүшелерінің эхинококкозындағы хирургиялық көмек көрсетуді ұйымдастыру қарастырылған, денсаулық сақтау жүйесіндегі айқын өзекті мәселелер, диагностикасы мен емдеуін оңтайландыру қажеттігі туралы деректер ұсынылған.

Түйін сөздер

Хирургиялық көмек көрсету, кеуде хирургиясы, аралас эхинококкоз, мультидисциплинарлық әдіс

Современное состояние и вопросы организации хирургического лечения сочетанного эхинококкоза органов грудной клетки и брюшной полости

Акимниязова Б.Б., Каусова Г.К., Ешмуратов Т.Ш.

Казахстанский медицинский университет «Высшая школа общественного здравоохранения»
Центр современной медицины «Mediterra», Алматы, Казахстан

ОБ АВТОРАХ

Ешмуратов Т.Ш. – Руководитель департамента торакальной хирургии и пульмонологии центра современной медицины "Mediterra"

Акимниязова Б.Б. – PhD докторант ВШОЗ

Аннотация

Сочетанный эхинококкоз органов грудной клетки и брюшной полости является одной из причин заболеваемости и инвалидизации в Республике Казахстан (РК). Заболеваемость, согласно статистике, в 2017 году на 100 000 человек составляло 217 случаев эхинококкоза (1). В статье проведен обзор по организации хирургической помощи при сочетанном эхинококкозе органов грудной клетки и брюшной полости, из приведенных данных очевидны имеющиеся проблемы в системе здравоохранения и необходимость оптимизации диагностики и лечения.

Ключевые слова

Организация хирургической помощи, торакальная хирургия, сочетанный эхинококкоз, мультидисциплинарный подход

Relevance

The basis for the development of the health care system has always been and still is the improvement of the organization of medical care to the population. In the current environment of severe economic changes and deterioration of the general health of the population, improvement of the organization and quality of surgical care takes a leading place in the reform of the health care system of the Republic of Kazakhstan (2,3).

In recent years, there have been significant changes in the dynamics and level of surgical morbidity, which was a consequence of various economic changes in the country, namely, an increase in the private health care sector, a reduction in the number of medical and preventive institutions, and the lack and shortage of qualified professionals, especially in rural areas. Accordingly, the population's access to adequate surgical care has decreased (4,5).

The current stage of health care reform is related to the development of conceptual provisions of the new economic mechanism. The main directions of formation of health care perspective model are optimization of planning and financing, development and introduction the innovative technologies into medical care organization, increase of professional potential of health care workers, optimization of legislative activity and correction of normative-legal base of health care, improvement of drug supply, increase of efficiency of management and provision of quality of medical care, creation of a complex multidisciplinary approach to health care (6,7,8).

Parasitic diseases, according to WHO, are the cause of death in more than 32% of cases. Echinococcosis is one of the most dangerous zoo-anthropogenic diseases. Echinococcosis is widespread in various regions of Kazakhstan. Surgical method is the main one in the treatment of Echinococcosis. Despite the successes achieved in the surgery of the disease, its treatment remains a complex problem. Proof of this is a large number of postoperative complications 6.7-47.5%, high lethality up to 4.5%-10.2% and a significant incidence of recurrence of the disease 3.3-54%, prolonged postoperative bedday (21.9-62 days). Difficulties in surgical treatment of echinococcosis are related to the lack of sufficiently effective methods to optimize the algorithm of patient care at both the diagnostic and treatment levels (9).

A number of dissertations and monographs have been devoted to the treatment of Echinococcosis, indicating the growing and continuing interest of scientists in many aspects of the disease. Despite this, many issues of surgical treatment of lungs Echinococcosis remain controversial and have not been fully resolved: indications and contraindications and tactics in different locations of the Echinococcal cyst, increased efficiency of

surgical interventions, tactics in combined, bilateral, complicated and giant forms. Also the most interesting area are the issues of application of new technologies in the complex surgical treatment of lung Echinococcosis; the problem of bilateral lung Echinococcosis, surgical tactics, validity of single-stage sequential operations on lungs, sequence of single-stage sequential operations remains controversial. Accordingly, problematic issues have a significant impact on the results of treatment of these patients, on the level of disability, mortality and quality of life of the population (10).

The peculiarity of the lungs Echinococcosis clinic is relatively early and quite frequent addition of such complications as perforation of the Echinococcal cyst in the bronchial or pleural cavity, suppuration of the cyst, pulmonary bleeding. In the case of complicated course of the disease with the presence of intoxication of the body and functional disorders of the cardiovascular system, the lungs, indicated preoperative preparation, consisting in antibacterial therapy, desensitization, tonic treatment, rehabilitation of the tracheobronchial tree.

There has been insufficient study of single-stage sequential surgeries for combined liver and lung Echinococcosis, and simultaneous right and left lung Echinococcosis. This technique has not become part of the daily practice of surgeons. There is disagreement over the tactics for bilateral lung Echinococcosis. The sequence of surgery is a contentious issue, as is the safety of single-stage operations (11).

A number of authors recommend starting the operation from the side of the most severe defeat, where there are signs of complications. If this is not the case, giant cysts or cysts that threaten to break should be removed first. In case of bilateral multiple lung echinococcosis with equal cysts size, it is necessary to operate on the side where there are more cysts in the lung. In case of bilateral single cystic lung lesion, when cysts are approximately the same size and have no signs of complications (bleeding, breakthrough, suppuration, etc.), the order of operation has not the practical importance. There are proposals to operate in a one-step sequence and even in a one-step two brigades. However, opponents of one-stage operations on the lungs, lungs and liver believe that such operations are more prestigious than expedient.

When choosing a tactic for bilateral lung Echinococcosis, according to some authors, it is advisable to perform consecutive surgery first on one lung and then on the other lung at intervals of 1-3 months. However, supporters of one-stage operations on the lungs indicate that after removal of the cyst on the one side, the remaining Echinococcal cyst on the other side begins to grow with the

following formidable complications and therefore recommend operating on another lung without discharging patient from the hospital at as short an interval as possible (15-20 days). Full longitudinal transverse access to remove Echinococcal cysts from both lungs is also offered. However, this method is very traumatic and the incision does not allow for a complete and thorough revision of the pleural cavity with adequate echinococectomy. This access also makes pneumolysis very difficult (12).

A combination of lung and abdominal Echinococcosis and other abdominal organs is not uncommon. One common combination is lung and liver damage. Surgical tactics and the choice of the sequence of surgery on the lung or liver should be decided on a strictly individual basis, depending on the nature of the lesion, the number of cysts, their size and localization. In uncomplicated combined Echinococcosis of the lungs and other organs it is customary to first remove the cyst from the lung, as the lung has a rapid growth of the cyst and a high risk of early complications, such as perforation in the bronchi, pleura, festering cysts. At the expressed clinical symptomatology at the combined Echinococcosis of lung and liver the one-stage echinococcosis through pleural access is expedient. It is customary to perform diaphragmotomy for liver access, followed by careful closure of diaphragm wounds. According to RAMS 2002, it is convenient to perform from thoracophrenolaparotomy on VII intercostal space with the intersection of the cartilage of VII or VIII ribs, which gives a wide view for a thorough revision, allows you to radically remove the cysts from the thoracic cavity and lower right lung. The authors performed surgeries through this access in 278 patients and confirmed the reliability and radicality of the operation and the absence of postoperative complications (13).

In recent years, along with successful percutaneous drainage of solitary cysts of kidneys, abscesses and liver non-parasitic cysts, puncture aspiration of Echinococcosis under ultrasound control has become an effective method of treatment of some forms and locations of liver Echinococcosis, especially in patients with increased risk of surgery. There is also evidence of the treatment of complicated Echinococcal cysts of the lung by transthoracic percutaneous cysts drainage.

The accumulated experience of various endovideoscopic operations also allowed to perform lung echinococectomy using endovideothoracic technique. The problem of relapse during the operation was solved by treatment of the parasite's lair after hot steam echinococectomy and other scolecidicides. However, the authors note the complexity of intraoperative preventions of bronchogenic dissemination of germinal elements and difficulties in the elimination of residual cavity in the lung,

suggesting to supplement it with minithoracotomy in difficult cases. Currently, the number of endovideosurgical interventions in surgery is estimated at tens of thousands, these operations are increasingly used in the treatment of a number of diseases of the chest and abdominal cavity (14).

Widespread use of minimally invasive and, above all, endovideosurgical methods of surgery seemed to have led to the desired results, namely, to a reduction in the time of surgical access (the duration of the operation is much longer than with traditional access, the indicator decreases with the experience of the surgeon (D.V. Seliverstova, 1995), less tissue traumatization, good cosmetic effect, reduction of pain syndrome, to reduce the length of stay in hospital and the temporary disability of patients and, accordingly, their more rapid work and social rehabilitation. However, as the number of endovideosurgical interventions is increasing and they are becoming more widespread, non-specific complications, both intra- and postoperative, have emerged.

In a number of foreign and domestic literary sources the technical nuances of the majority of currently performed endovideosurgical operations are considered in detail, but both general and specific indications and contraindications to them are not always clearly defined. In a number of cases, excessive passion for discussing technical aspects of these operations leads to less coverage of no less important issues of examination of patients, general tactics of their management and adequate determination of indications for surgical treatment with justification of the advisability of the recommended option of surgical intervention - traditional ("open") or endovideosurgical (thoracoscopic) (15).

In various sections of the surgery there are carried out researches aimed at comparative analysis of parameters of traumatism of operative interventions, quality of life of patients, economic efficiency of various types of surgical treatment (endovideosurgical, traditional, mini-accesses) that allows to evaluate and demonstrate the effectiveness and expediency of these or those, to specify the indications to them.

The study of immediate and distant results of surgical treatment has shown that the course of the postoperative period is largely associated with the localization and size of the surgical wound rather than with the volume of surgery in a thoracic or abdominal cavity. In this regard, the study of the results of surgery should take into account such a factor as traumatism (so-called surgical stress).

Summarizing numerous literary data of leading specialists of anesthesiologists and reanimators, P.S. Vetshev et al. (2002) provide the following definition of surgical stress: a set of general (nonspecific) and local (specific, depending on the area of op-

eration and its nature) pathophysiological reactions of the body in response to emergency exposure of a specific type. Surgical stress is assessed by assessing the hormonal response to surgical trauma, changes in respiratory function parameters, and the number and nature of analgesics required for adequate analgesic pain relief in the postoperative period, among other factors.

According to WHO experts and leading specialists, the efficiency of surgical treatment is assessed by the quality of life of patients in the postoperative period. When studying the quality of life, it can be clearly imagine the essence of the clinical problem, choose the most rational approach to treatment that meets the needs of the patient, and, most importantly, to assess its effectiveness by parameters that are at the intersection of the scientific approach of surgeons and the subjective point of view of the patient. It is believed that the influence of surgical treatment on the quality of life in the distant

future has not been studied yet, and it is impossible to judge with a full measure of objectivity the advantages and disadvantages of this or that type of surgical operation.

Quality of life is an integral characteristic of a person's physical, psychological, emotional and social functioning based on his subjective perception.

Despite the presence of many works on treatment tactics in the case of Echinococcosis isolated chest, in a combined lesion of the chest and abdominal cavity, there is no optimal algorithm for diagnosis and treatment of this category of patients. In the available literature we have not found any works related to the complex analysis of the results of different types of surgical operations at combined Echinococcosis with the subsequent evaluation of the quality of life in the postoperative period. In this connection, it is necessary to develop the public health system by improving the organization of medical care to the population.

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RESULTS OF AORTIC VALVE REPLACEMENT USING AUTOLOGOUS PERICARDIUM BY OZAKI TECHNIQUE. REVIEW OF LITERATURE

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Sagatov I.Y., Momynov B.M.

JSC "National scientific center of surgery named after A.N. Syzganov", Almaty, Kazakhstan

ABOUT THE AUTHORS

Sagatov Inkar Yergalievich - Department head of SRW management of the JSC "NSCS named after A.N. Syzganov", doctor of medical sciences.

Momynov Bahytzhan Meirambekovich - resident of specialty "Cardiac surgery and child cardiac surgery" of the JSC "NSCS named after A.N. Syzganov".

Abstract

A review of the results of aortic valve replacement using autologous pericardium was carried out using the Ozaki technique. The article shows data on 30-day and long-term mortality, the percentage of aortic stenosis or regurgitation due to Ozaki surgery, freedom from reoperation, as well as the mean and peak gradient on the aortic valve according to various authors.

Keywords

aortic valve, autologous pericardium, results

Ozaki әдісімен аутологиялық перикардты қолдану арқылы қолқа қақпақшасын алмастыру нәтижелері. Әдебиет шолуы

Сағатов І.Е., Момынов Б.М.

«А.Н. Сызғанов атындағы Ұлттық ғылыми хирургия орталығы» АҚ, Алматы, Қазақстан

АВТОРЛАР ТУРАЛЫ

Сағатов Іңкар Ергалиұлы - «А.Н. Сызғанов атындағы ҰҒХО» АҚ-ның ҒЗЖ менеджменті бөлімінің басшысы, медицина ғылымдарының докторы.

Момынов Бақытжан Мейрамбекұлы – «Кардиохирургия, оның ішінде балалар» мамандығы бойынша «А.Н. Сызғанов атындағы ҰҒХО» АҚ-ның резиденті.

Аңдатпа

Ozaki әдісі бойынша өзіндік перикарды қолдану арқылы қолқа қақпақшасын ауыстыру нәтижелеріне шолу жасалынған. Мақалада әртүрлі авторлардың мәліметтеріне сәйкес 30-күндік және алшақ өлім-жітім, Ozaki отасынан кейінгі қолқа тарылуы және регургитациясының кездесу жиілігі, отаға қайта түсуден бостандық, сондай-ақ, қолқа қақпақшасындағы орташа және пиктік градиенттері көрсетілген.

Түйін сөздер

қолқа қақпақшасы, өзіндік перикард, нәтижелері

Результаты замены аортального клапана с использованием аутологичного перикарда по методике Ozaki. Обзор литературы

Сағатов И.Е., Момынов Б.М.

АО «Национальный научный центр хирургии им. А.Н. Сызганова», Алматы, Казахстан

ОБ АВТОРАХ

Сағатов Инкар Ергалиевич – руководитель отдела менеджмента НИР АО «ННЦХ им. А.Н. Сызганова», доктор медицинских наук.

Момынов Бахытжан Мейрамбекевич – резидент по специальности «Кардиохирургия, в т.ч. детская» АО «ННЦХ им. А.Н. Сызганова»

Аннотация

Проведен обзор результатов замены аортального клапана с использованием аутологичного перикарда по методике Ozaki. В статье показаны данные о 30-дневной и отдаленной летальности, процент наличия аортального стеноза или регургитации после операции Ozaki, свобода от реоперации, а также средний и пиковый градиент на аортальном клапане по данным различных авторов.

Ключевые слова

аортальный клапан, аутологичный перикард, результаты

Background

Aortic valve construction using pericardial tissue has been known since the late 1960s. The procedure was reintroduced by Ozaki in 2010 and is currently used to treat specific aortic valve diseases. The exact sizing of the neo-cusps and the insertion of the commissures remain the keys to success when performing this procedure [2-7].

Discussion

The largest number of operations and the study of their immediate and long-term results of treatment belongs to the author of the method of replacing the aortic valve using an autologous pericardium, the Japanese heart surgeon Ozaki. According to him, the 30-day mortality rate after Ozaki surgery ranges from 0 to 3.5%, depending on the age category of the operated patients [10-16]. Other authors point to the same corridor of fluctuations in 30-day mortality - from 1.9 to 3.3% [9, 17].

Long-term results of Ozaki surgery were assessed by the absence or presence of aortic stenosis, regurgitation on the aortic valve, freedom from reoperation, and average and peak gradient values on the aortic valve. It should be noted that almost the majority of authors indicate a complete absence of stenosis of the aortic valve in the long term after surgery Ozaki. Long-term mortality in the Ozaki procedure ranges from 0-13.0% [9-16].

Aortic valve repair is possible due to low mortality in many patients with aortic regurgitation. This shows better results in terms of freedom from valve-related complications compared to conventional aortic valve replacement. Important milestones in the development of aortic valve repair have already been achieved as it becomes a viable alternative to aortic valve replacement in patients with aortic regurgita-

tion. The origin of aortic valve repair can be traced back to the early era of cardiac surgery. Aortic valve restoration was performed using native valve cusps using various methods, which include commissurotomy, annuloplasty, expansion of the free edge, re-suspension of the valve, reinforcement of the supra-ortal crest, reinforcement of the free edge, resection of the wedge, and so on. This type of conservative recovery is not always possible, especially for calcified AS in elderly patients. Simple decalcification or cutting of tubercles did not show good results. On the other hand, there is an obvious limitation of longevity with bioprosthetic valves and an obvious lack of anticoagulation with mechanical prostheses. Moreover, both prostheses cannot create good hemodynamics compared to the native aortic valve.

According to Bazylev V.V. (2019) in patients with severe stenosis of the AV against the background of a small diameter of the fibrous ring, Ozaki prosthetics demonstrates better echocardiographic parameters compared with indicators in patients after prosthetics AV biological prosthesis with annulo-expanding plastic aortic root. In the group of patients after prosthetics of the valves with auto-pericardium according to the Ozaki technique in the medium-term regression is noted hypertrophy, restoration of LV systolic activity and functional class decrease by NYHA heart failure [1, 19]. In patients with severe stenosis of AV on against the background of the small diameter of the fibrous ring, the Ozaki procedure may be the method of choice to avoid prosthetic patient mismatch.

Technique of operation

Surgical technique for reconstruction of the aortic valve has been reported and investigated previously. The preparation of autologous pericardi-

Table 1.
The results of Ozaki procedure according different authors

Authors	Publication year	Patients		Mean age, M±m	Mean follow-up, month	Results Ozaki procedure			
		Male	Female			30-day mortality, %	No stenosis, %	Freedom from reoperation, %	Post-op peak aortic valve gradient, mm Hg
Ozaki S. et al.	2011	43	45	70.6±10.5	36.0	0.0	100.0	100.0	12.9±5.8
Ozaki S. et al.	2014	201	203	69.0±12.9	23.7±13.1	1.7	100.0	96.2	13.8±3.7
Ozaki S. et al.	2014	27	59	82.9±2.5	41.4	3.5	100.0	100.0	N/d
Ozaki S. et al.	2014	75	33	47.8±11.2	34.2±15.7	0.0	100.0	98.9	12.8±3.1
Ozaki S. et al.	2015	182	234	71.2±12.0	25.2±17.5	1.9	100.0	96.7	14.3±5.
Rosseykin E.V. et al.	2016	20		60.5±13,7	1.0	0.0	100.0	N/d	10.8±3.78
Nguyen D.H. et al.	2017	4	5	44.7	1.0	0.0	100.0	N/d	N/d
Ozaki S. et al.	2018	444	406	71.0	53.7±28.2	1.9	100.0	98.2	15.2±6.3
Reuthebuch O. et al.	2018	20	10	66.8±10.6	3.0	3.33	100.0	100.0	14.8±6.21
Mourad F. et al.	2019	33	19	60.0	11.2±4.2	1.9	100.0	90.4	N/d

um began with the cleansing of fat and other excess tissue on the outer surface of the pericardium using a harmonic scalpel. The pericardium was excised at least 7 x 8 cm. Then, the excised pericardium was treated with a 0.6% glutaraldehyde solution with buffer for 10 minutes. The treated pericardium was washed 3 times with saline for 6 minutes. The human pericardium is usually thin near the cranial end and thick caudally near the diaphragm. For the Ozaki procedure, a thinner part of the pericardium is used for small sharp protrusions to make the movement smoother, and a thicker part for large sharp protrusions to withstand more stress. All reconstructive procedures of the aortic valve are performed during cardiac arrest during cardiopulmonary bypass. In short, diseased cusps are carefully excised. In the case of strong calcification along the aortic ring, an ultrasonic surgical suction pump is very useful for removing calcium without damaging the ring tissue. The distance between each commissure is then measured using the originally developed calibration device. The inter-commissory distance is measured using the original calibration apparatus, giving the appropriate tension, similar to the reproduction of the ring during diastole. Correct measurement is vital to complete this operation.

New "cups" with a size corresponding to the measured value are trimmed with an original tem-

plate from an autologous pericardium treated with glutaraldehyde. Finally, the annular edge of the pericardial tip is sutured with 4-0 monofilament stitches to each ring. The smooth surface of the pericardium is located on the side of the left ventricle. For effective natural three-dimensional protrusion of tubercles, a running seam should be used. The pericardium is carefully stitched to the top of the commissure, and it is designed for deep coaptation, which reaches the same horizontal plane as the commissure. Commissural coaptation is provided by additional 4-0 monofilament sutures. The coaptation of 3 new valves is provided by visual control under negative pressure by ventilation of the left ventricle, before closing the aortotomy.

Conclusion

An analysis of recent literature data shows that the Ozaki procedure is a highly effective method for the surgical treatment of patients with aortic valve defects. It was noted that postoperative regurgitation on the valve is 0%, and freedom from repeated operations reaches 96-100% in the medium-term observation period [18-19, 23-26]. All these and other data emphasize the need for mastering the methodology of the Ozaki procedure, implementation in cardiac surgery, subject to the indications and contraindications for this type of operation.

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THE ROLE AND EFFICACY OF LASER ABLATION IN THE CONDUCT OF PHLEBECTOMY OF INCOMPETENT PERFORATING VEINS

MPHTI 76.29.30

Aliyev M. S.

Azerbaijan State Institute of Medical Improvement named after A. Aliyeva, Baku, Azerbaijan

ABOUT THE AUTHORS

Aliyev M.S. - assistant professor of the Azerbaijan State Institute of Medical Improvement named after A. Aliyev

Abstract

The aim of the study was to determine and evaluate the effectiveness of endovenous laser ablation (EVLA) during phlebectomy of perforant veins (PV).

Materials and methods. 53 patients (men - 9, women - 44) with varicose veins of the lower extremities were hospitalized on the basis of Kaspar clinic and private UNI clinic. The duration of varicose disease ranged from 1 to 47 years and averaged 21.2 ± 10.9 years. Clinical examination was carried out according to the generally accepted method for these patients. The study included the results of examination and treatment of 53 patients in the period from 2016-2019 with varicose veins of the lower extremities. The patients were divided into 2 groups. The main group included 31 patients who underwent endovascular laser ablation of the main saphenous veins. The control group consisted of 22 cases of varicose disease in which traditional phlebectomy was used.

Results. Successful transcutaneous access to the PV and placement of a laser light guide in it was carried out in 30 patients. One patient was recorded extravasation with the formation of hematoma during the puncture, in connection with which there was no repeated puncture of PV in the framework of this procedure. It should be noted that the failure in the implementation of EVLA was on the 3rd patient, which we cause with the initial stage of mastering the EVLA PV technique and the relatively small diameter and length of the PV. The procedure was well tolerated by all patients. The average diameter of the treated PV was 3.7 mm (3 to 4.8 mm), and the length was 3.6 cm (2.4 to 6.8 cm). Qualitative ablation of PV was observed in 41 patients, which was confirmed by duplex sonography. Repeated intervention was required in 1 patient after an unsuccessful attempt to puncture the PV.

Conclusions. EVLA is a safe, effective and less traumatic method of eliminating failed PV, performed on an outpatient basis.

Keywords

Laser ablation, varicosity, phlebectomy

Перфорантты көктамырлар алып тастаудағы абляцияның ролі мен тиімділігі

Алиев М.С.

Азербайджанский Государственный Институт Усовершенствования Врачей им. А. Алиева, Баку, Азербайджан

АВТОРЛАР ТУРАЛЫ

Алиев М.С. – А. Алиев атындағы Азербайжан мемлекеттік дәрігерлердің білімін жетілдіру институтының доценті

Аңдатпа

Зерттеудің мақсаты: Перфорантты көктамырлардың (ПК) флебэктомиясы кезіндегі эндовеноздық лазерлі абляцияның (ЭВЛА) тиімділігін бағалау және анықтау.

Материалдар және әдістер: Каспар клиникасына және UNI жеке-меншік клиникасына аяқ көктамырларының варикозды кеңеюі бар 53 науқас (9 – ер адам, 44 - әйел) жатқызылды. Варикозды аурулардың ұзақтығы 1 жылдан 47 жылға дейін созылды және орташа есеппен $21,2 \pm 10,9$ жылды құрайды. Бұл науқастарды клиникалық тексеру жалпыға ортақ әдістеме бойынша жүргізілді. Зерттеуде 2016-2019 жылдар аралығындағы аяқ көктамырларының варикозды кеңеюі бар 53 науқастың тексерілу және емдеу нәтижелері қоса ұсынылды. Науқастар 2 топқа бөлінді. Негізді топты негізгі теріасты көктамырларына эндовазальдық лазерлі абляция жасалған 31 науқас құрады. Бақылау тобын дәстүрлі флебэктомия қолданылған варикозды аурулары бар 22 жағдаят құрады.

Нәтижелері: 30 науқастың ПК-на теріаралық қолжетімділік және оған лазерлі сәулежел енгізу сәтті түрде жүзеге асырылды. Пункция кезінде бір науқаста гематома пайда болып, экстравазация анықталды. Сондықтан осы емшараның аясында қайталама ПК пункциясы жүргізілген жоқ. Ескерте кететін жайт, ЭВЛА-ны орындау кезіндегі сәтсіздік 3-ші науқаста байқалды, біз мұны ПК-ның ЭВЛА техникасын игеруінің бастапқы кезеңімен және ПК-ның диаметрі мен ұзындығының қысқа болуымен байланыстырамыз. Емшараны барлық науқастар жақсы өткерді. Өңделген ПК-ның орташа диаметрі 3,7 мм-ны (3-4,8 мм), ал ұзындығы 3,6 см-ны (2,4-6,8 см) құрады. 41 науқастан ПК-ның сапалы абляциясы бақыланды. Бұл дуплекстік сонография арқылы дәлелденді. ПК пункциясының сәтсіз орындалуынан кейін 1 науқасқа қайталама араласу қажет болды.

Қорытынды: ЭВЛА – амбулаториялық жағдайларда орындалатын қауіпсіз, тиімді және ПК-ны жоюдағы жарақаты аз әдіс.

Түйін сөздер

лазерлік абляция, флебэктомия, варикоз

Роль и эффективность применения лазерной абляции при проведении флебэктомии перфорантных вен

ОБ АВТОРАХ

Алиев М.С. –
Доцент АГИУВ им. А. Алиева

Алиев М.С.

Азербайджанский Государственный Институт Усовершенствования Врачей им. А. Алиева,
Баку, Азербайджан

Аннотация

Целью исследования являлось определение и оценка эффективности эндовенозной лазерной абляции (ЭВЛА) при флебэктомии перфорантных вен (ПВ).

Материалы и методы. 53 пациента (мужчины - 9, женщины - 44) с варикозным расширением вен нижних конечностей были госпитализированы в клинику Kasrag и частную клинику UNI. Длительность варикозной болезни варьировала от 1 года до 47 лет и в среднем составила $21,2 \pm 10,9$ года. Клиническое обследование проводилось по общепринятой для этих больных методике. В исследование включены результаты обследования и лечения 53 больных в период с 2016 по 2019 год с варикозным расширением вен нижних конечностей. Пациенты были разделены на 2 группы. Основную группу составили 31 пациент, которому была выполнена эндовасальная лазерная абляция основных подкожных вен. Контрольную группу составили 22 случая варикозной болезни, у которых применялась традиционная флебэктомия.

Результаты. Успешный чрескожный доступ к ПВ и размещение в нем лазерного световода был осуществлен у 30 пациентов. У одного больного была зафиксирована экстравазация с образованием гематомы во время пункции, в связи с чем повторная пункция ПВ в рамках данной процедуры не проводилась. Следует отметить, что неудача в выполнении ЭВЛА была отмечена у 3-го пациента, что мы связываем с начальным этапом освоения техники ЭВЛА ПВ и относительно небольшим диаметром и длиной ПВ. Процедура была хорошо переносима всеми пациентами. Средний диаметр обработанного ПВ составлял 3,7 мм (от 3 до 4,8 мм), а длина - 3,6 см (от 2,4 до 6,8 см). Качественная абляция ПВ наблюдалась у 41 пациента, что было подтверждено дуплексной сонографией. Повторное вмешательство потребовалось у 1 пациента после неудачной попытки пункции ПВ.

Выводы. ЭВЛА - это безопасный, эффективный и менее травматичный метод устранения ПВ, выполняемый в амбулаторных условиях.

Ключевые слова
лазерная абляция,
флебэктомия, варикоз

Relevance of the problem

The Choice of method of treatment of patients with varicose disease of the lower extremities today remains one of the most pressing problems of modern surgery, due primarily to the extreme prevalence of this disease. According to [2,3 11]. varicose veins of the lower extremities occur in 26-38% of women and 10-20% of men of working age [4]. According to other data, varicose disease affects from 20 to 50% of the population of industrialized countries [2, 11]. In addition, varicose veins of the lower extremities is the most common pathology of peripheral vessels, there is also a steady tendency to increase the incidence and rejuvenation of the patient population [9, 10]. According to the literature, in recent years there has been an increase in the incidence of persons of the most working age and an increase in the number of complicated forms of the disease, leading to persistent disability [1, 8, 11].

Steadily progressive and long-term course of the disease, the tendency to frequent complications, cosmetic defect significantly reduce the "quality of life" of patients. The relevance of this the problem is also due to the tendency to frequent recurrence of the disease, large financial costs for the treatment of this category of patients [3, 7, 9].

Due to the variety of clinical manifestations of varicose disease and features of the structure of the venous system of the lower extremities, the treatment of this pathology is not standardized. Therefore, the search for new and improvement of exist-

ing methods of treatment of patients with varicose disease continues [2,4,6.] Despite the large number of works devoted to the treatment of patients with varicose disease and the introduction of progressive minimally invasive methods of treatment, there are still many issues that require in-depth research. Of great importance is the study of long-term results of treatment in patients with varicose veins of the lower extremities, who underwent various variants of Stripping, endovasal laser and radiofrequency obliteration, as well as miniflebectomy and sclerotherapy in the tributary form of varicose disease. The question of expediency of endovasal laser and radiofrequency obliteration in patients with the diameter of the main saphenous veins more than 13-14 mm has not been finally resolved. In the domestic and foreign medical literature, there are many scientific papers in which it is reported that the results of these minimally invasive methods of treatment are quite comparable with the results obtained after the application of phlebectomy [6, 7, 8,9]. However, there are studies, the authors of which believe that the use of endovasal interventions with a large diameter of the main saphenous veins is impractical due to the increasing likelihood of complications and recurrence of the disease. [1,3. 5. 6]. Thus, many problems of treatment of patients with varicose disease of the lower extremities, remain still unsolved. It is necessary to develop and put into practice modern approaches to the treatment of patients with this pathology, which was the basis for this study. The aim of the study was to determine and evalu-



Figure 1.
Diode laser 1470-nm

ate the effectiveness of endovenous laser ablation (EVLA) during phlebectomy of perforant veins (PV).

Materials and methods

53 patients (men - 9, women - 44) with varicose veins of the lower extremities were hospitalized on the basis of Kaspar clinic and private UNI clinic. The duration of varicose disease ranged from 1 to 47 years and averaged 21.2 ± 10.9 years. Clinical examination was carried out according to the generally accepted method for these patients. The study included the results of examination and treatment of 53 patients in the period from 2016-2019 with varicose veins of the lower extremities. The patients were divided into 2 groups. The main group included 31 patients who underwent endovascular laser ablation of the main saphenous veins. The control group consisted of 22 cases of varicose disease in which traditional phlebectomy was used.

The age of patients of the main group ranged from 16 to 58 years (on average 35.7 ± 8.57 years). The vast majority of them were aged 31-50 years, i.e. belonged to the most socially active part of the population. The time from the onset of the disease to hospital treatmentⁿ ranged from 2 to 25 years and averaged 10 ± 5 years. In the considered group of patients there were only 2 menⁿ (%). All other patients were women, which once again allows us to emphasize the importance of compliance with cosmetic and aesthetic requirements when performing interventions on the venous system in varicose dis-

ease. Varicose disease of the left lower limb was detected in 37 patients (69.8%), the right - in 14 (26.4%), both - in 2 (3.8%)

All patients underwent endovenous laser ablation (EVLA) with a 1470 nm diode laser, after which they were observed for 12 months (1 day, 1 week, 1,3,6,12 months). Patients with ankle-shoulder index below 0.7, unable to move actively, history of deep vein thrombosis, pregnant women were excluded from the study. All patients were subjected to a thorough physical examination, a duplex examination of the veins of both lower limbs, a detailed questionnaire with the collection of anamnesis. Color duplex ultrasonography (SonoscapeS6 and SonoscapeS8, China) by 8 MHz transmitter was performed in a vertical position in order to identify the source of venous reflux, mark the skin in the PV projection and measure the diameter and length of the epifascial segment. The indication for the elimination of PV was objectively registered with the help of ultrasound pathological venous reflux on them. Even when detecting the failure of PV, the peculiarities of the course of the disease in a particular patient, the localization of the perforant and its characteristics were taken into account. Specific criteria for the feasibility of EVLA perforant considered the following:

- the diameter of the perforant is more than 3.5 mm with a reflux duration of more than 0.5 s, regardless of the presence or absence of any trophic changes in the area of its basin (Fig. 1, 2);

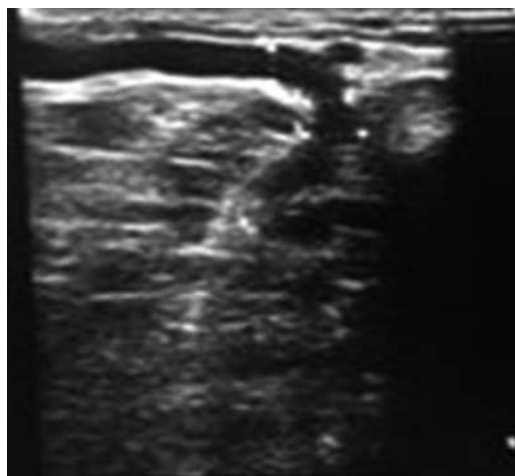
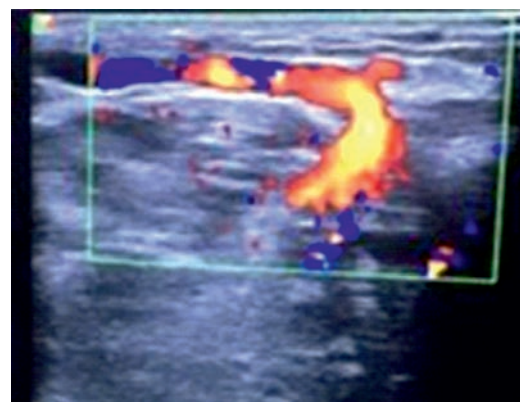


Figure 2.
Lower leg PV (reflux more than 0.5 s)

Figure 3.

PV Shin (d=3.77 mm) - perforants diameter less than 3.5 mm with a duration of reflux on them more than 0.5 s, localized in the zone of trophic disorders (classes C4-C6).



The procedure was carried out in a special operating room with precautions when working with lasers. Vein puncture was performed with a venous catheter 18G. a radial laser light guide "slim" (BIOLITEC, Germany) was inserted into the catheter, the distal end of which was installed at the point of transition to the infra fascial part of the PV (Fig. 3).

Perivenous tumescent anesthesia was performed under sonographic control. The amount of anesthetic solution was 50-100 ml, which was used as a standard Klein solution consisting of saline (1000 ml), 1% lidocaine (100 ml) and 8.4% sodium bicarbonate solution (10 ml). The laser energy was launched in a continuous mode (Biolitec, Germany), traction movements of the light guide were made manually "forward-backward" with gradual extraction of the fiber. The average energy consumption on PV was 310 j (from 150 to 550 j). The effectiveness of treatment was determined by the reduction and / or disappearance of symptoms, as well as a decrease in the diameter of the PV and the absence of hemodynamics in the occluded lumen during duplex examination. A visually analog scale (VAS) and a disease-specific CIVIQ questionnaire (4) were used for complaints and subjective symptoms. When monitoring the dynamics of chronic venous edema, a measuring tape was used. In trophic disorders, the effectiveness of treatment was evidenced by a decrease in inflammatory phenomena and the area of indurative cellulite, as well as signs of venous ulcer epithelization. Sonography of obliterated veins after 6 or 12 months revealed complete absorption or a thin fibrous layer without any signs of blood flow. Recanalization of PV, determined by ultrasound preservation of blood flow with no clinical improvement was assessed as a complete lack of treatment result.

Results and discussion

Successful transcutaneous access to the PV and placement of a laser light guide in it was carried out in 30 patients. One patient was recorded extravasation with the formation of hematoma during the puncture, in connection with which there was no repeated puncture of PV in the framework of this procedure. It should be noted that the failure in the implementation of EVLA was on the 3rd patient, which we cause with the initial stage of mastering the EVLA PV technique and the relatively small diameter and length of the PV. The procedure was well tolerated by all patients. The average diameter of the treated PV was 3.7 mm (3 to 4.8 mm), and the length was 3.6 cm (2.4 to 6.8 cm). Qualitative ablation of PV was observed in 41 patients, which was confirmed by duplex sonography (Fig.4). Repeated intervention was required in 1 patient after an unsuccessful attempt to puncture the PV. The average energy consumption per PV was 310 joules.

Pain in the postoperative period was observed in 9 patients (21.43%), of which 5 operated received flurbiprofentiocholchicoside, as an analgesic, 1 tablet 2 times/day orally for 4 days, and the remaining 4-for 1 week. Ecchymosis was observed in 19 patients (45.24%), which disappeared within 1-3 weeks. Induration was observed in 11 patients (26.19%), which also disappeared within 2-3 weeks. 28 patients (66.67%) complained of paresthesia, which did not occur in complaints of operated patients after 3-6 months (average 3.4 months). It should be noted that none of the patients with induration, ecchymosis and paresthesia were prescribed any drugs to accelerate the

Table 1.
Frequency of detection of postoperative complications

Complication	Major group (n=31)	Control Group (n=22)
Hematomas on the hip	2(6.5)	5(22,7)
Paresthesia, numbness	3(9,7)	7(31,8)
Lymphorrhoea	-	1(4,5)
Infection of p/o wounds	-	-
Superficial thrombophlebitis*	4(12,9)	8(36.4)
Deep vein thrombosis	-	-

* within 1 month after operation

elimination of these side effects of EVLA. In the postoperative period there were no such complications as superficial burns, DVT and arteriovenous fistulas (table. 1).

It should be noted that in contrast to the classical surgical treatment of PV failure, minimally invasive treatments are aimed at reducing the risk and cost of surgery, which is convincingly evidenced by the results of EVLA.

EVLA PV using a diode laser with a wavelength of 1470 nm is clinically safe, acceptable and well tolerated by patients method with excellent cosmetic results and allows the operated almost immediately return to their normal daily activities. Adequate tumescent anesthesia is an important component of EVLA for emptying the vein lumen, as the blood absorbs the energy transferred to the vein wall. As a result, vein occlusion occurs due to thrombosis, the resolution of which in the future leads to recanalization. We used a continuous mode of laser energy supply using a traction technique in the range of 1 cm with extraction at 0.5 cm after supplying a portion of energy in 50-60 j.

Conclusions

EVLA is a safe, effective and less traumatic method of eliminating failed PV, performed on an outpatient basis. The correct calculation of energy and indications on an individual basis allows

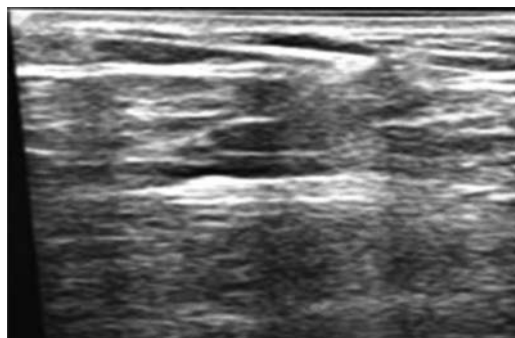


Figure 4.
The light guide "slim" is installed in the PV of the Shin.

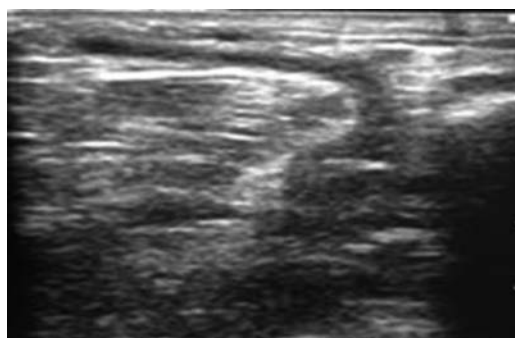


Figure 5.
PV Shin 1 month after EVLO

us to consider this minimally invasive technique as a successful method of eliminating reflux in PV for the treatment of VB and recurrence of VB and can replace traditional surgical treatment. EVLA is a reliable, safe and effective method of eliminating pathological reflux in the PV of the thigh and lower leg in both WB and RVB.

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ABOUT THE AUTHORS

Kvashnin A.V. -

National Scientific Center of Surgery named after A.N. Syzganov, cardiac surgeon, candidate of medical sciences, Ph.D.

Sagatov I.Y. -

National Scientific Center of Surgery named after AN. Syzganov, Head of the management scientific department, Doctor of medical sciences

Dosmailov N.S. -

National Scientific Center of Surgery named after A.N. Syzganov, cardiac surgeon

Momynov B.M. -

National Scientific Center of Surgery named after A.N. Syzganov, resident.

Koshkinbaev Zh.B. -

National Scientific Center of Surgery named after A.N. Syzganov, pediatrician

REMOVAL OF THE OCCLUDER IN A PATIENT WITH ATRIAL SEPTAL DEFECT. CASE FROM PRACTICE

Kvashnin A.V., Sagatov I.Y., Dosmailov N.S., Momynov B.M., Koshkinbaev Zh.B.

JSC "National scientific center of surgery named after A.N. Syzganov", Almaty, Kazakhstan

Abstract

The article presents the case of installing the occluder into the atrial septal defect, after which becomes frequent the attacks of ventricular premature beats and paroxysmal tachycardia, which cannot be stopped by drug therapy and radiofrequency ablation. The problem was solved by surgical treatment - removal of the occluder and closure of the atrial septal defect with a patch from the autopericardium. The surgical method for certain locations of the atrial septal defect is fundamental in the treatment of this pathology. This clinical case demonstrates the ability to perform such operations with a good result.

Keywords

occluder, radiofrequency ablation, atrial septal defect, surgical treatment

АВТОРЛАР ТУРАЛЫ

Квашнин А.В. -

А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы, кардиохирург, медицина ғылымдарының кандидаты

Сағатов І.Е. -

А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы, ҒЗЖ менеджмент бөлімінің басшысы, медицина ғылымдарының докторы

Досмаилов Н.С. -

А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы, кардиохирург

Момынов Б.М. -

А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы, резидент

Көшкінбаев Ж.Б. -

А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы, бала дәрігері

Түйін сөздер

окклюдер, радиожилікті абляция, жүрекше аралық қалқа қауы, оталық емдеу

Жүрекше аралық қалқа қауы бар науқастан окклюдерді алып тастау. Тәжірибеден алынған оқиға

Квашнин А.В., Сағатов І.Е., Досмаилов Н.С., Момынов Б.М., Көшкінбаев Ж.Б.

«А.Н. Сызганов атындағы Ұлттық ғылыми хирургия орталығы» АҚ, Алматы, Қазақстан

Аңдатпа

Мақалада жүрекше аралық қауға окклюдер орнатқаннан кейінгі жағдай қарастырылған: қарыншалық экстрасистолалар ұстамасы және ұстамалы тахикардия жиіленіп, дәрілік терапия және радиожилікті абляция арқылы тоқтату мүмкін емес. Бұл мәселенің шешімі оталық емдеу арқылы жүзеге асты – окклюдерді алып тастау және аутоперикардпен жамау арқылы жүрекше аралық қалқа қауын жою. Жүрекше аралық қалқа қауының белгілі бір жерін хирургиялық әдіспен емдеу – бұл патологияны емдеудегі негізгі әдіс. Осы клиникалық жағдай мұндай операцияларды сәтті жүргізіп, оң нәтижелерге жету мүмкін екенін көрсетеді.

ОБ АВТОРАХ

Квашнин А.В. –

Национальный научный центр хирургии им. А.Н. Сызганова, кардиохирург, кандидат медицинских наук

Сағатов И.Е. –

Национальный научный центр хирургии им. А.Н. Сызганова, руководитель отдела менеджмента НИР, доктор медицинских наук

Досмаилов Н.С. –

Национальный научный центр хирургии им. А.Н. Сызганова, кардиохирург

Момынов Б.С. –

Национальный научный центр хирургии им. А.Н. Сызганов, резидент

Көшкінбаев Ж.Б. –

Национальный научный центр хирургии им. А.Н. Сызганова, педиатр

Ключевые слова

окклюдер, радиочастотная абляция, дефект межпредсердной перегородки, оперативное лечение

Удаление окклюдера у больной с дефектом межпредсердной перегородки. Случай из практики

Квашнин А.В., Сағатов И.Е., Досмаилов Н.С., Момынов Б.М., Көшкінбаев Ж.Б.

АО «Национальный научный центр хирургии им. А.Н. Сызганова», Алматы, Казахстан

Аннотация

В статье представлен случай установки окклюдера в дефект межпредсердной перегородки, после которого участились приступы желудочковой экстрасистолии и пароксизмальной тахикардии, не купирующиеся лекарственной терапией и радиочастотной абляцией. Решение проблемы помогло оперативное лечение – удаление окклюдера и закрытие дефекта межпредсердной перегородки заплатой из аутоперикарда. Хирургический метод при определенных расположениях дефекта межпредсердной перегородки является основным в лечении данной патологии. Данный клинический случай демонстрирует возможность выполнения подобных операций с хорошим результатом.

Background

Atrial septal defect is related to congenital heart disease and, according to different authors, is 10–15%. The last decades have been actively implemented endovascular closure of this pathology by occluders. In order to avoid complications, such as deformation of the heart valves, closure of the coronary sinus, occluder dislocation, this manipulation requires a specific location of the defect with the nearby structures of the heart, its size [1-8]. Deviation from these requirements may lead to a malfunction of the heart valves, to the development of heart rhythm disorders. Surgical closure of the atrial septal defect allows to avoid these complications.

Clinical case

Patient B, 33 years old, was admitted to the cardiac surgery department of our center on 12.04.2018.

Complaints at admission to shortness of breath during exercise, interruptions in the work of the heart, attacks of tachycardia, fatigue, general weakness.

Anamnesis morbi: Congenital heart disease, atrial septal defect 1.6 x 1.9 cm in size diagnosed in 2013. In the same year, an endocardial endovascular closure of the defect was performed with occlude Occlutech No.24 in the cardiac surgery center. In the postoperative period, the patient noted an increase in tachycardia attacks, in the flesh until he lost consciousness, increased shortness of breath, weakness. The patient is diagnosed: "Heart rhythm disorder. Ventricular extrasystole IV b graduation on the Luna". In the cardiac surgery center of April 28, 2014, September 12, 2014, and of October 6, 2017, an electrophysiological study and radiofrequency ablation were performed. Unfortunately, there was no improvement in the state of health of the patient.

External evidence: performance status of the patient at admission is estimated as moderate severity, due to the underlying disease. The skin and visible mucous membranes of normal color. Vesicular breathing in the lungs. RR 18 per minute. With auscultation of the heart tones are muffled, clear. The rhythm is correct with heart rate = 94bpm., ABP - 130/80 mm Hg. The liver at the edge of the costal arch, painless on palpation. Edema on the lower limbs no.

Conducted laboratory studies within normal range.

ECG 12.04.2018: The normal position of the electrical axis of the heart. Sinus rhythm. HR 94 bpm. Partial blockade of the right bundle of His. Dystrophic changes in the myocardium.

Echocardiography 12.04.2018: Tricuspid valve - regurgitation of I degree. Left ventricle: EDD 5.1 cm, ESD 3.3 cm, EDV 126 ml, ESV 46 ml, SV 80 ml,

EF 62%. Atrial septum: occluder is usually located, there is no reset. Right atrium: 4.8x4.1 cm. Right ventricle: RVSP 32-35 mm Hg. TAPSE 2.4 cm.

The patient is diagnosed with: "Congenital heart disease. X-ray endovascular closure of atrial septal defect with occluder (2013). Radio frequency ablation (04.2014, 09.2014, 10.2017). Supraventricular tachycardia. Extrasystole. Relative tricuspid insufficiency. Pulmonary hypertension. II functional class by NYHA".

The severity of the patient is considered due to the inconsistency of the installed occluder (No. 24) and the size of the defect (1.6 x 1.9 cm).

20.04.2018 an operation was performed in conditions of cardiopulmonary bypass and pharmacocold cardioplegia – "Removal of the occluder of the atrial septal defect. Plastic atrial septal defect patch of autopericardium. Ligation of the left atrial appendage. Tricuspid valve annuloplasty by De Vega".

During the operation after opening the right atrium, it can be seen that the occluder partially overlaps the aperture of the coronary sinus (figure 1).

After removal of the occluder, a defect with a diameter of 1.6 x 1.9 cm was revealed with a lower membranous margin, which is excised (figure 2).

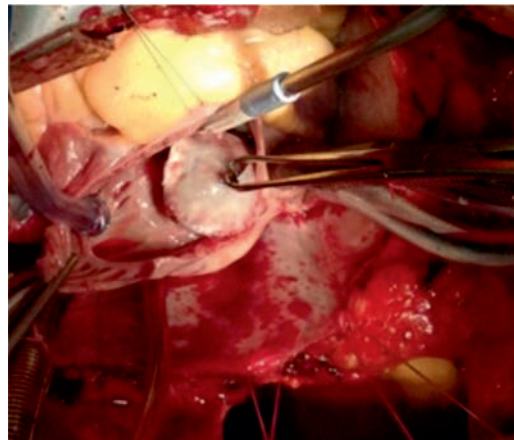


Figure 1.
The occluder partially overlaps the aperture of the coronary sinus

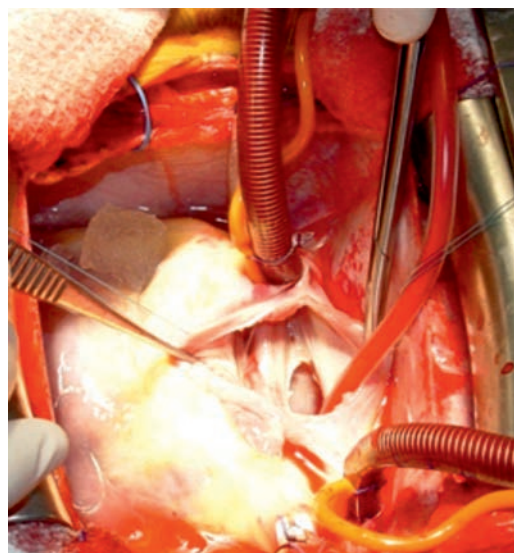
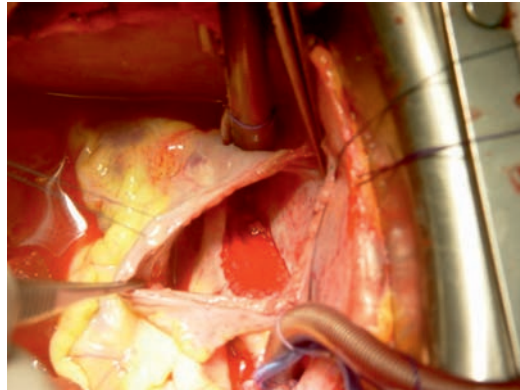


Figure 2.
ASD with a diameter of 1.6 x 1.9 cm was revealed with a lower membranous margin

Figure 3.
ASD is closed by a patch from an autopericardium



The defect is closed by a patch from an autopericardium, ligation of the left atrium appendage, an annuloplasty of the tricuspid valve according to de Vega is performed (figure 3).

The postoperative period proceeded according to the severity of the operation.

At the time of discharge, the patient's condition is satisfactory. Conscious, adequate. The skin is a normal color. Vesicular breathing in the lungs, no wheezing. Heart sounds are clear, sonorous. ABP 120/70 mm Hg., HR - 80 bpm., the rhythm is

correct. The abdomen is soft, painless, there is no swelling in the lower limbs. Postoperative wound heals by primary intention.

ECG 24.04.2018: Sinus rhythm. HR 80 bpm. The normal position of the electrical axis of the heart. Partial blockade of the right bundle of His. Dystrophic changes in the myocardium.

Echocardiography 05.02.2018.: EDD-4,8 cm, ESD-3,1cm, EDV -110 ml, ESV-37 ml, EF-65%. IAS: patch sewn tightly, no reset. RVSP-23 mm Hg. TV: no regurgitation. TAPSE-1.5 cm.

On the 10th day, the patient in satisfactory condition was discharged home.

Conclusion

Consequently, endovascular closure of septal defects with occluders, without taking into account the anatomical features of the patient's heart, can lead to disruption of the heart valves, to the development of cardiac arrhythmias. Surgical closure of the atrial septal defect allows to avoid these complications, as well as to correct the associated pathology, such as tricuspid valve insufficiency.

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УЧАСТИЕ В XVIII INTERNATIONAL EUROASIAN CONGRESS OF SURGERY AND HEPATO-GASTROENTEROLOGY 11-14 СЕНТЯБРЯ 2019 ГОДА, БАКУ, АЗЕРБАЙЖАН

Во время конференции сделано 6 докладов из нашего Центра, 4 из них по НТП:

1. **Prof. Vaimakhanov B.B.** Liver transplantation from a living related donor;
2. **Prof. Vaimakhanov B.B.** Results of operations for renal transplantation;
3. **Isamatov B., Vaimakhanov B., Medeubekov U.** Prognosis of the morbidity and mortality of hepatocellular carcinoma in the Republic of Kazakhstan;
4. **Isamatov B., Vaimakhanov B., Medeubekov U.** Comparative analysis of the results of multi-phase computed tomography and surgical treatment of hepatocellular carcinoma;
5. **Sagatov I.** Early postoperative period in patients with radical correction atrioventricular channel;
6. **Muradov M.** Technique of elimination of congenital and acquired ptosis.

В трёх секциях модераторами были профессора Сейсембаев М.А., Медеубеков У.Ш. и Мурадов М.И. В сборнике конференции опубликовано всего 9 тезисов из нашего Центра, из них 7 по НТП.



К 70-ЛЕТНЕМУ ЮБИЛЕЮ ПРОФЕССОРА СУЛТАНАЛИЕВА ТОКАНА АНАРБЕКОВИЧА

Султаналиев Т.А. родился 10 августа 1949 года в посёлке Политотдел Каскеленского района Алматинской области в казахской семье. В 1972 году окончил лечебный факультет Алматинского государственного медицинского института. С 1973 по 1976 годы работал хирургом-ординатором, затем заведующим отделением хирургии магистральных сосудов в Центральной городской клинической больнице г. Алматы. С 1976 по 1979 годы учился в целевой аспирантуре в Институте сердечно-сосудистой хирургии им. А. Бакулева и защитил кандидатскую диссертацию по хирургии.

С 1979 года – ассистент кафедры хирургии, в 1982 году – доцент кафедры Алматинского государственного института усовершенствования врачей. В 1986 году поступил в докторантуру в Институт хирургии им. А. Вишневого АМН СССР после которой успешно защитил докторскую диссертацию под руководством академика Покровского Г.О. 1989 – 2001 годы – заведующий кафедрой хирургии Алматинского государственного института усовершенствования врачей. 2001 – 2007 годы – ректор Алматинского государственного института усовершенствования врачей. С 2007 по 2009 годы – директор Национального научного центра хирургии им. А.Н. Сызганова. В 2009 году занимал должность генерального директора АО «Республиканский научный центр неотложной медицинской помощи» (РНЦНМП). В 2010 году был председателем Совета директоров РНЦНМП. 2011 год – председатель Совета директоров Национального центра нейрохирургии. 2012 – 2014 годы – главный хирург АО РНЦНМП. С 2014 года – главный хирург Национального научного центра



онкологии и трансплантологии. С 2019 года - главный хирург Национального научного онкологического центра.

Опубликовано свыше 392 научных работ, 5 монографии, 4 методических рекомендации и пособий, учебник по хирургии «Госпиталдық хирургия» Под руководством защищены 9 докторских и 15 кандидатских диссертаций. 5 авторских свидетельства СССР на изобретение, 41 патентов в Республики Казахстан. Участвовал в работе Международных Конгрессов по хирургии (Краков 1989 г., Мюнхен 1996 г., Флоренция 1997 г., Вена 1999 г., Рим 2002 г., Москва 2003 г., Париж 2004 г., ЮАР 2005 г., Шотландия-Эдинбург 2006 г., Египет-

Хургада 2007 г.).

Награды и признание: Почётная грамота Президента РК (2002 г.). Благодарственное письмо Президента РК, Отличник здравоохранения, Медаль и «Золотой скальпель» в области хирургии (международной общественной организации; 2008), Звание «Алтын дәрігер» (2009 г.) Ассоциации врачей и провизоров Казахстана, Медаль – Ерен еңбегі үшін 2013 г., Почетный профессор Западно-Казахстанского, Семипалатинского Государственного Медицинского университета, Лауреат национальной премии «Народный любимец» (2018 г.),

Свой славный юбилей профессор Султаналиев Токан Анарбекович встречает в окружении своих близких родственников, а также верных своих учеников и друзей из ближнего и дальнего зарубежья.

Желаем Токан Анарбековичу человеческого и творческого долголетия.

**Коллектив Национального научного центра хирургии им. А.Н. Сызганова
и Редакция журнала «Вестник Хирургии Казахстана»**

ПРОФЕССОР ТОКСАНБАЕВ АШИМ ТОКСАНБАЕВИЧ (К 80-ЛЕТИЮ СО ДНЯ РОЖДЕНИЯ)

Токсанбаев Ашим Токсанбаевич родился 12 сентября 1939 года в Шалдерском районе Южно-Казахстанской области. В 1956 году закончил среднюю школу имени Победы Кировского района Южно-Казахстанской области. В 1958 году поступил на лечебный факультет Алматинского Государственного медицинского института и закончил его в 1964 году. После окончания медицинского института работал врачом хирургом районной больницы. В 1965 году прошёл по конкурсу на должность младшего научного сотрудника в КазНИИ онкологии и радиологии и стал заниматься научно-практической деятельностью под руководством ведущих учёных онкологов и радиологов Республики Казахстан, академика НАН РК, профессора С.Б. Балмуханова и профессора С.Н. Нугманова. Под руководством профессора М.Т. Таукенова и к.м.н. А.С. Ермоленко в 1971 году успешно защитил кандидатскую диссертацию на тему «Уретеростомия при раке мочевого пузыря».

Педагогическую деятельность начал с 1974 года, на кафедре урологии и оперативной нефрологии Алматинского государственного медицинского института, с должности ассистента кафедры, затем стал, профессором, заведующим кафедрой. С 1991 года доцент кафедры урологии АГМИ. В 1999 году под руководством основателя НИИ урологии МЗ РК, талантливого ученого, заслуженного деятеля науки, д.м.н., профессора Б.У. Джарбусынова успешно защищена докторская диссертация на тему «Ятрогенные мочеполовые свищи». В 2004 г. получил звание профессора, а в 2008 г. стал заведующим кафедрой урологии и оперативной нефрологии КазНМУ.

Профессор Ашим Токсанбаевич Токсанбаев является одним из создателей школы хирургов-урологов в Республике Казахстан, которые известны не только в Казахстане, но и далеко за его пределами. Являясь блестящим оперирующим урологом выполнил более 11000 операций на органах мочеполовой системы, включающие в себя реконструктивно-пластические операции и сложнейшие реконструктивные операции по поводу ятрогенных мочеполовых свищей. Профессор А.Т. Токсанбаев является пионером в лечении ятрогенных мочеполовых свищей в Казахстане.

Научная деятельность профессора А.Т. Токсанбаева посвящена актуальным проблемам урологии: современные проблемы диагностики и лечения онкоурологических заболеваний, действия желтого фосфора и его неорганических соединений



на мочеполовую систему, диагностика и лечение ятрогенных травм мочевой системы у женщин, разработка и внедрение срочной аденомэктомии по поводу доброкачественной гиперплазии предстательной железы в условиях экстренной урологии. По результатам проведенных исследований защищены четыре докторские и семь кандидатских диссертации: «Уретеростомия при раке мочевого пузыря», «Поражение органов мочеполовой системы под воздействием вредных факторов фосфорного производства» и «Этапная диагностика, клиника и профилактика заболеваний почек у рабочих фосфорного производства». Опубликовано более 140 печатных работ, из них 3 за рубежом, 5 учебно-методических рекомендаций, 2 монографии «Мочеполовые свищи» 1998 г и «Ятрогенные травмы мочеполовой системы у женщин»

2003 г, 5 патентов на изобретения, 6 научных пособий, внедрено в клинику 9 рационализаторских предложений. Изобретения посвящены актуальным вопросам реконструктивной урологии. Под руководством профессора Токсанбаева А.Т. защищена первая кандидатская диссертация по урологии на казахском языке. На протяжении многих лет он был членом диссертационного совета по защите кандидатских и докторских диссертаций при Научном Центре Урологии, членом Ученого совета лечебного факультета КазНМУ им С.Д. Асфендиярова, член Европейской Ассоциации урологов, почетный член Научного общества урологов Казахстана, и председатель секции «Урогинекология». Ашим Токсанбаевич консультант Республиканского научно-исследовательского Центра Охраны Здоровья матери и ребенка МЗ РК, консультировал все родильные дома г. Алматы. Для оказания специализированной помощи вылетал по сан. авиации во все областные центры РК. Под руководством профессора Токсанбаева А.Т. в 2009 г. проведена международная научно-практическая конференция «Современные проблемы диагностики и лечения онкоурологических заболеваний» и, в рамках конференции, проведен мастер-класс «Малоинвазивные эндоскопические вмешательства в урологии» с участием зарубежных профессоров (Винаров А.З., Григорьев Н.А., Газимиев М.А.) и главных урологов всех областей Казахстана, а также урологов г. Астаны и г. Алматы. В период работы профессора Токсанбаева А.Т. зав. кафедрой урологии и оперативной нефрологии КазНМУ кафедра добилась признания своей научно-исследовательской и учебно-методической работой не только в РК, но и странах СНГ.

Активная плодотворная деятельность профессора А.Т.Токсанбаева на благо становления и развития урологической науки Республики Казахстан отмечена наградами: «Серебряная медаль КазНМУ», нагрудным знаком МЗ РК «Отличник здравоохранения», нагрудным знаком МЗ РК «Денсаулық сақтау ісіне қосқан үлесі үшін, Почетной грамотой МОН РК «Тәуелсіз Қазақстанның рухани және оның гүлденуіне қосқан үлесі үшін».

За свою продолжительную научно-практическую, педагогическую деятельность, профессор А.Т. Токсанбаева создал школу и воспитал большую плеяду своих учеников: докторов медицинских наук Хамзина А.А., Жантелеева Л.А., кандидатов медицинских наук Танекеева Р.У., Лаврова Ю.В., Асубаева А.Г., Ташенова А.С.

Вся яркая и многогранная профессиональная деятельность профессора А.Т. Токсанбаева посвящена внедрению современных достижений в практическую урологию.

Семья Ашима Токсанбаевича также служит медицине: жена Ербекеева Клара Раискуловна- провизор, организатор здравоохранения, дочь Раушан- врач педиатр высшей категории, дочь –Шолпан, кандидат медицинских наук, врач акушер-гинеколог, внучки Зарина-финансист и Алтынай – студентка 4-го курса факультета Общей медицины КазНМУ им С.Д. Асфендиярова.

Уважаемый Ашим Токсанбаевич, в день Вашего юбилея примите пожелания доброго здоровья, счастья, благополучия, долгих лет жизни и процветания Вашей семье.

***Профессор Ибадильдин А.С.
Зав. курсом урологии КазНМУ им С.Д.Асфендиярова
д.м.н. Хамзин А.А***

К 60-ЛЕТИЮ ДОКТОРА МЕДИЦИНСКИХ НАУК ХАМЗИНА АДильЖАНА АКЖИГИТОВИЧА

Хамзин Адильжан Акжигитович родился 20 сентября 1959 года в поселке Боровое Акмолинской области. В 1976 году, после окончания средней школы, поступил в Карагандинский государственный медицинский институт на лечебный факультет. В последующем перевелся в Алматинский государственный медицинский институт, который окончил в 1982 году. После окончания института работал в Центральной Клинической Больнице города Алматы; позже занимал должность старшего научного сотрудника Научного Центра Хирургии им. А. Н. Сызганова. В 1991 году защитил кандидатскую диссертацию в г. Новосибирске, а в 1999 году избран Действительным членом Европейской ассоциации урологов.

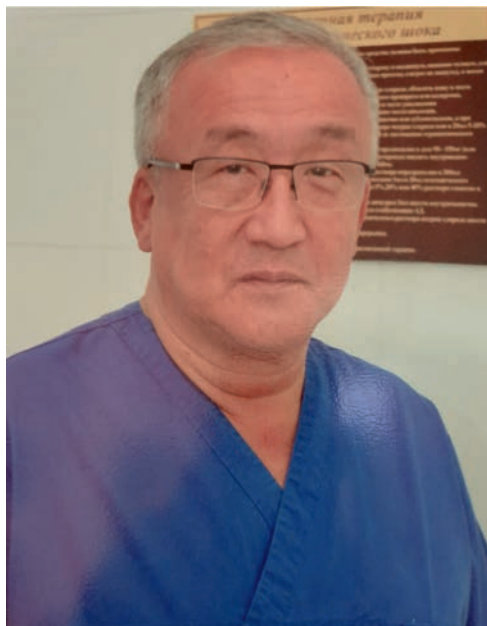
В 2000 году был назначен заместителем главного врача Республиканского Госпиталя для инвалидов Отечественной войны. На протяжении последующих лет успешно работал заведующим отделением платной урологии Научного Центра Урологии им. академика Б. У. Джарбусынова. В 2003 году аттестован на высшую категории как врач-уролог.

В 2006 году Адильжан Акжигитович был назначен главным внештатным урологом Северо-Казахстанской области и заведовал отделением урологии, а также был заместителем главного врача по хирургии областной больницы Северо-Казахстанской области. За эти годы он успешно обучил урологов оперативным методам лечения мочекаменной болезни и доброкачественной гиперплазии предстательной железы, тем самым улучшив оказание урологической помощи в регионе. В 2007 году принят членом Профессиональной Ассоциации андрологов России, а в 2008 году вновь подтвердил высшую категорию врача-уролога и аттестован на высшую категорию врача-андролога.

С мая 2009 года по сентябрь 2010 года работал заведующим уронефрологическим отделением ЦКБ УДПРК. В октябре 2010 года защитил докторскую диссертацию на тему: «Научно-методическое обоснование оптимизации медицинских и организационных технологий укрепления здоровья больных с эректильной дисфункцией».

Позже заведовал отделением урологии Алматинской Многопрофильной Клинической Больницы, где успешно внедрил различные виды оперативных вмешательств, была повышена хирургическая активность, сокращена продолжительность койко-дней, значительно снижена смертность.

В настоящее время Адильжан Акжигитович проводит урологические и андрологические операции на базе ГКП на ПХВ



«Городская Клиническая Больница №4» г. Алматы, продолжая внедрять новые методики и оперативные техники. Так, была успешно внедрена операция «Лазерная абляция лейкоплакии мочевого пузыря», в результате чего была оказана помощь более 150 женщинам с хроническим рецидивирующим циститом, осложненным лейкоплакией мочевого пузыря. Богатый клинический опыт Адильжана Акжигитовича позволяет ему успешно вести педагогическую деятельность, воспитывая сильных специалистов, подкованных как теоретически, так и практически.

Педагогическую деятельность Адильжан Акжигитович продолжил в 2010 году, когда стал исполнять обязанности доцента кафедры урологии Казахского Национального Медицинского Университета им. С. Д. Асфендиярова, с 2016 г. был заведующим курсом андрологии

кафедры непрерывного и послевузовского образования, в 2018 году возглавил курс урологии кафедры общей хирургии Казахстанско-Российского Медицинского Университета и за неполный академический год воспитал молодых ученых, которые заняли призовые места на международных конференциях, научные работы которых опубликованы в зарубежных изданиях, успешно внедрен проект по отработке хирургических навыков резидентов-урологов. Общий научно-педагогический стаж – более 12 лет.

На протяжении всей своей клинической и педагогической деятельности проходил стажировки в клиниках Германии, Швеции, Австралии, Сирии, Израиля, неоднократно участвовал в работе международных конференции Европейской ассоциаций урологов по актуальным вопросам урологии и андрологии в Италии, г.Милан, март 2008 г.; в Швеции, март 2009 г., Австрии, г. Вена, март 2011г., принимал участие в работе Международных конференции Всемирной ассоциаций урологов в Австралии, г. Перт, ноябрь 2000 г.; в Китае, г. Шанхай 2010 г.

Имеет более 100 научных публикаций, из которых 2 статьи в журналах с импакт-фактором, вошедшие в Национальную Библиотеку США (pubmed), 7 изобретений, является автором учебно-методического пособия «Диагностика, клиника и лечение гипогонадизма у мужчин» (2010), методических рекомендаций «Диагностика и этиопатогенетический риск развития эректильной дисфункции» (2011), книги «Андрология: современное состояние, перспективы развития в Казахстане» (2014), монографии «Экосфера репродукции человека» (2018), учебника

«Urology» (2019) для иностранных студентов. За заслуги перед отечественной медициной удостоен следующих наград: медаль «Шапағат», знаками «Қазақстан Республикасы деңсаулық сақтау ісінің үздігі», «Алтын Дәрігер».

Хотелось бы отдельно отметить, что помимо богатой научно-практической деятельности, Адильжан Акжигитович увлекается конным спортом, горными лыжами, совершил восхождение на базовый лагерь «Эверест» и гору вокруг Кайласа.

Глубокоуважаемый Адильжан Акжигитович, примите искренние пожелания долгих лет жизни, творческих успехов, долгой и продуктивной клинической и научной деятельности, а также крепкого здоровья, настоящего счастья, семейного благополучия и радости. Вы воспитали и продолжаете воспитывать множество специалистов, стоящих на страже здоровья казахстанцев, за что Вам огромная благодарность как от коллег, так и от пациентов.

***Заведующий кафедрой урологии, андрологии, репродукции, сексологии с курсом нефрологии и гемодиализа, профессор, д.м.н., член Европейской и Всемирной Ассоциации урологов и андрологов
Хусаинов Т.Э.***

***Профессор кафедры «Хирургических болезней №1»
Казахского Национального Медицинского Университета
им. С. Д. Асфендиярова, Ибадильдин А. С.***

ТРЕБОВАНИЯ ДЛЯ АВТОРОВ ЖУРНАЛА «ВЕСТНИК ХИРУРГИИ КАЗАХСТАНА»

Уважаемые авторы!

С 1 апреля 2018 года все статьи на публикацию принимаются на государственном или русском языках с обязательным переводом всей статьи на английский язык. Статьи без версии на английском языке будут отклонены.

Также учитывая требования Консультативной Комиссией (CSAB) Scopus об интернационализации авторов и аудиторией редколлегия журналов рекомендуют публиковать статьи в соавторстве с учеными дальнего и ближнего зарубежья.

В журнале публикуются научные статьи и заметки, экспресс-сообщения о результатах исследований в различных областях естественно-технических и общественных наук.

Решение о публикации принимается редакционной коллегией журнала после рецензирования, учитывая научную значимость и актуальность представленных материалов. Статьи, отклоненные редакционной коллегией, повторно не принимаются и не рассматриваются. Рукописи, оформленные не по правилам, возвращаются авторам без рассмотрения.

Рукопись направляется на отзыв члену редколлегии и одному из указанных рецензентов; в спорных случаях по усмотрению редколлегии привлекаются дополнительные рецензенты; на основании экспертных заключений редколлегия определяет дальнейшую судьбу рукописи: принятие к публикации в представленном виде, необходимость доработки или отклонение. В случае необходимости рукопись направляется авторам на доработку по замечаниям рецензентов и редакторов, после чего она повторно рецензируется, и редколлегия вновь решает вопрос о приемлемости рукописи для публикации. Переработанная рукопись должна быть возвращена в редакцию в течение месяца после получения авторами отзывов; в противном случае рукопись рассматривается как вновь поступившая. Рукопись, получившая недостаточно высокие оценки при рецензировании, отклоняется как не соответствующая уровню или профилю публикаций журнала.

Авторы несут ответственность за достоверность и значимость научных результатов и актуальность научного содержания работ. Не допускается **ПЛАГИАТ** – умышленно совершаемое физическим лицом незаконное использование чужого творческого труда, с доведением до других лиц ложных сведений о себе как о действительном авторе.

Редакция принимает на рассмотрение рукописи только на английском языке, присланные через официальный сайт журнала www.vhk.kz.

Материал статьи – абстракт на казахском, русском и английском языках, список литературы, рисунки, подписи к рисункам и таблицы, оформляется одним файлом; дополнительно каждый рисунок оформляется в виде отдельного файла. Если пересылаемый материал велик по объему, следует использовать программы для архивирования. Все страницы рукописи, в том числе таблицы, список литературы, рисунки и подписи к ним, следует пронумеровать.

Представленные для опубликования материалы должны удовлетворять следующим требованиям:

1. Содержать результаты оригинальных научных исследований по актуальным проблемам в области физики, математики, механики, информатики, биологии, медицины, геологии, химии, экологии, общественных и гуманитарных наук, ранее не опубликованные и не предназначенные к публикации в других изданиях. Статья сопровождается разрешением на опубликование от учреждения, в котором выполнено исследование.
2. Размер статьи 7-10 страниц (статьи обзорного характера – 15-20 стр.), включая аннотацию в начале статьи перед основным текстом, которая должна отражать цель работы, метод или методологию проведения работы, результаты работы, область применения результатов, выводы (**аннотация** не менее **20** предложений (150×300 слов) - (на английском языке) через 1 компьютерный интервал), таблицы, рисунки, список литературы (через 1 компьютерный интервал, размер шрифта – 14), напечатанных в редакторе Word, шрифтом Times New Roman, поля – верхнее и нижнее – 2 см, левое – 3 см, правое – 1,5 см. Количество рисунков – 5-10.

Структура должна соответствовать международной формуле IMRAD, где I – introduction (вступление), M – Methods (методы), R – Results (исследование), A – и, D – conclusion+ discussion (заключение, обсуждение результатов и выводы).

Название • Отображает суть работы • Краткое • Без аббревиатур.

Необходимо официально закрепить название организации на английском и сокращение

Резюме • Структурировано • Без аббревиатур • Передает структуру статьи – Зачем (актуальность) – Какими методами? – Что получено – Как это изменило картину знаний. Именно его читают в первую очередь, только хорошее резюме может привлечь внимание!

Вступление • Актуальность работы • Какая задача поставлена • Почему

Методы • Перечисление • Если известные - дать ссылку • Если модифицировали – указать как • Описывать так что бы могли повторить • Статистика!

Результаты • Допускается не хронологическое, а логическое повествование • Основные, а не все что были сделаны •

Иллюстрируются минимально необходимыми сводными данными (исходные могут быть в дополнительных материалах)

Обсуждения • Не повторять результаты • Сопоставить полученные данные с имеющимися • Обсудить возможные причины и следствия

Функции списка литературы: • Аргументировать идею • Сопоставить с существующими аналогами • Обозначить место данного исследования • Избежать плагиата • Для журнала и ученого = признание • Часто указаны только собственные работы или очень старые (самоцитирование допускается только 10-15% от общего списка литературы) • Кочующие ошибки

Различайте • Ссылки • Список литературы • Библиография
Что могут цитировать • Книги, (монографии, главы) • Статьи научных журналов • Материалы конференций • Патенты • Диссертации • Неопубликованные данные • СМИ • Веб ресурсы (протоколы, веб странички) Источник должен быть надежным и легко доступным.

Статья начинается на английском языке. В начале, посередине страницы, идет название статьи прописными жирными буквами, название статьи должно быть коротким и емким, согласно проведенного анализа около 30-40 символов на английском языке.

Далее на следующей строчке – инициалы и фамилии авторов обычным жирным шрифтом, затем на следующей строчке – название организации(ий), в которой выполнена работа, город, страна, затем на новой строчке – адреса E-mail авторов. С красной строки идут ключевые слова (**Key words**), а на новой строчке – сама аннотация (**Abstract** – не менее **150** и более **300 слов**).

Далее, после отбивки одной строки, начинается на русском языке. В начале статьи вверху слева следует указать индекс **УДК, МРНТИ**.

Затем, посередине страницы, пишется: 1) название статьи; 2) авторы; 3) название организации; с красной строки – **Ключевые слова**, затем – **Аннотация** (оформление шрифтов, как на английском языке).

Отбиваем одну строку и начинается сама **статья**. Следом за статьей идет список **Литературы**. Ссылки на литературные источники даются цифрами в прямых скобках по мере упоминания (не менее 20).

Для каждой статьи обязателен DOI (Digital Object Identifier) - это цифровой идентификатор документа. DOI выполняет функцию гиперссылки, которая всегда помогает найти нужный документ, даже если сайт, где он находился ранее, был впоследствии изменен. Благодаря этому индексу поиск научной информации в Интернете стал проще и эффективнее. Каждое издание, журнал размещает на своих веб-страницах в интернете, как текущие, так и архивные номера, и материалы. Таким образом, в открытом доступе можно увидеть резюме, которые включают в себя название статьи, фамилию, имя, отчество автора, аннотацию и ключевые слова, место выполнения работы, а также выходные данные опубликованных статей (название журнала, год издания, том, номер, страница).

Список литературы оформляется следующим образом:
В ссылках на книги указывается ISBN (10- или 13-значный). Сокращаются названия только тех журналов, которые указаны: http://images.webofknowledge.com/WOK46/help/WOS/0-9_abrvjt.html.

Для всех ссылок на статьи, опубликованные в международных рецензируемых журналах следует указывать DOI (Digital Object Identifier). DOI указываются в PDF версии статьи и/или на основной интернет-странице статьи, также можно воспользоваться системой поиска CrossRef: <http://www.crossref.org/guestquery/>. Ниже приводятся примеры оформления ссылок:

Статья в международном журнале:

1. Campry TS, Anders T. (1987) SNAP receptors implicated in vesicle targeting and fusion, *Environ Pollut*, 43:195-207. DOI: 10.1016/0269-7491(87)90156-4 (in Eng)

Статья в русскоязычном журнале, не имеющая англоязычной версии:

2. Ivanova TV, Samoilova NF (2009) *Electrochemical Energetics [Elektrohimicheskaya energetika]* 9:188-189. (In Russian)

Книги:

Timrat TA (2008) *Soil pollution: origins, monitoring and remediation*, second edition. Springer, Germany. ISBN: 978-3-540-70777-6

Материалы конференции:

Monin S.A. (2012) Treatment techniques of oil-contaminated soil and water aquifers. *Proceedings of International Conference on Water Resources and Arid Environment*, Riyadh, Saudi Arabia. P.123.

Патенты:

Barin AB, Mukamedzhan NT (2000) A method for determination of 1,1-dimethylhydrazine and nitrosodimethylamine [Metodopredeleniya 1,1-dimetilgidrazina initrosodimetilamina]. Preliminary Patent of the Republic of Kazakhstan [Predvaritelnyi patent Respubliki Kazakhstan]. (In Russian)

Стандарты, ГОСТы:

RMG 61-2003. Indexes of accuracy, precision, validity of the methods of quantitative chemical analysis, methods of evaluation [GSI.Pokazatelitochnosti, pravilnosti, retsizionnosti metodik kolichestvennogo himicheskogo analiza. Metodyotsenki]. Moscow, Russia, 2003. (In Russian)

На сайте <http://www.translit.ru/> можно бесплатно воспользоваться программой транслитерации Русского текста в латиницу, используя различные системы. Программа очень простая, ее легко использовать для готовых ссылок. К примеру, выбрав вариант системы Библиотеки Конгресса США (LC), мы получаем изображение всех буквенных соответствий. Вставляем в специальное поле весь текст библиографии на русском языке и нажимаем кнопку «в транслит».

В конце статьи дается резюме на казахском языке. Оформляется аналогично русскому варианту. Посередине страницы пишется: 1) название статьи; 2) авторы; 3) название организации; с красной строки – **Өзекті сөздер**, после – **Аннотация**.

Последняя страница подписывается всеми авторами, ставится дата.

3. Статьи публикуются только на английском языке.

4. В случае переработки статьи по просьбе редакционной коллегии журнала датой поступления считается дата получения редакцией окончательного варианта. Если статья отклонена, редакция сохраняет за собой право не вести дискуссию по мотивам отклонения.