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ТООЛОРДОГУ ӨНӨКӨТ ОБСТРУКТИВДҮҮ ӨПКӨ ООРУЛАРЫНДА БӨЙРӨКТҮН ЭРТЕ БУЗУЛУШУН ИЗИЛДӨӨ

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ИЗУЧЕНИЕ РАННЕГО ПОВРЕЖДЕНИЯ ПОЧЕК ПРИ ХРОНИЧЕСКОЙ ОБСТРУКТИВНОЙ БОЛЕЗНИ ЛЁГКИХ В УСЛОВИЯХ НИЗКОГОРЬЯ

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STUDY OF EARLY KIDNEY DAMAGE IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN LOW MOUNTAINS

Бөйрөк тутумунун биргелешкен патологиясы башка органдардын жана системалардын ар кандай ооруларга алып келиши мүмкүн экендиги белгилүү. Бул сунуш өпкөнүн өнөкөт обструктивдүү оорулары (ӨӨОО) бар пациент-терде тобокелдик факторлорун аныктоо үчүн кошумча жана деталдуу методдорду талап кылат, ошондой эле бөйрөк зыянынын алгачкы белгилерин аныктайт. Бул келе-чекте алдын алуучу чараларды кылдат жана туура дары-дармектер менен бирдикте камсыз кылат. Бул өз кезегинде бейтаптардын ушул топторунун жашоо сапатына оң таасирин тийгизет, ошондой эле бөйрөк алмаштыруучу терапиянын башталышын кечеңдетет. Бул иш-чара өнө-көт бөйрөк ооруларынын (өБО) өнүгүүсүнүн тобокелдик факторлорунун үзгүлтүксүздүгүн талдоого, ошондой эле Кыргыз Республикасынын Токмок шаарынын бийик тоолуу шарттарында ӨӨОО менен ооруган адамдарда микроаль-буминуриянын (МАУ) жыштыгын жана чоңдугун эрте аныктоого арналган. Биз ар кандай оордуктагы СОӨГ ме-нен ооруган 82 бейтапты, ошондой эле төмөн тоолордогу 10 ден-соолугу чың адамдарды (Токмок шаары) карап чык-тык. Окуучулардын орточо жашы, тиешелүүлүгүнө жара-ша 60,53 + 15,48 жашты түзгөн. Бул пациенттерде чогул-ганда ӨӨОО ге мүнөздүү белгилер эске алынган, ошондой эле тышкы дем алуунун функциясын баалоо жана бөйрөк-түн МАУга алгачкы белгилеринин жыштыгы жана чоңдугу изилденген. өБО дин өнүгүү коркунучу факторлорун эске алуу менен, биз пациенттердин курагы, дене салмагынын индекси (ДСИ), тамеки чеккен адамдын индекси (ТЧИ), та-меки чеккендердин жыштыгын эсептөө үчүн колдонулган негизги көрсөткүч, ошондой эле төрөлгөндөрдүн салмагы-на карата анамнезис сыяктуу параметрлерди аныктадык. ӨӨОО менен оорулгандарда МАУнын эрте жана олуттуу көбөйүшү жана өБОдин өнүгүшүнүн тобокелдик фактор-лорунун тенденциясы байкалууда. Бул өз кезегинде брон-хиалдык тоскоолдуктун деңгээли менен байланыштуу. Изилдөө жүргүзүп жана ушул натыйжаларды алгандан кийин, биздин оюбузча, андан аркы деталдуу изилдөө зарыл. Суроого так жооп алуу үчүн. Бул сунушту эске алганда, суроо туулат, МАУ жөн гана ӨӨОО деги бөйрөк зыянынын белгиси же ошого карабастан, бул байланыштуу патоло-гиянын өзүнүн болжолдуу мааниси бар. Ошондой эле ӨӨОО менен ооруган бейтаптардагы өБО дин өнүгүшүнүн тобокелдик факторлоруна көңүл буруу керек, анткени бул көрсөткүчтөр бөйрөк тутумунун жана дем алуу органда-рынын кесепетинен абалды начарлатып, татаалдашты-рууга алып келет.

Негизги сөздөр: *өнөкөт бөйрөк оорусу, өпкө өнөкөт обструктивдүү оору, урогениталдык системанын патоло-гиясы, микроальбуминурия, бөйрөк системасы.*

Известно, сопутствующая патология ренальной сис-темы, может приводить к взаимному отягощению различ-ных заболеваний со стороны других органов и систем. Дан-ное предложение требует, у больных с хронической об-структивной болезнью легких (ХОБЛ) проведения дополни-тельных и детальных методов как по выявлению факторов риска, а также выявления ранних маркёров почечного по-вреждения. Что тем самым обеспечит, адекватные про-филактические мероприятия в совокупности с более тща-тельной и корректной медикаментозной терапией в буду-щем. Что в свою очередь благоприятно отразится на каче-стве жизни данной когорты пациентов, а также отсро-чит сроки начала заместительной почечной терапии. Нас-тоящая работа посвящена анализу преемственности фак-торов риска развития хронической болезни почек (ХБП), а также раннему выявлению частоты и величины микроаль-буминурии (МАУ) у пациентов с ХОБЛ в условиях низкого-рья города Токмок Кыргызской Республики, на более ранних этапах ее проявления. Нами было обследовано 82 пациента с ХОБЛ различной степени тяжести, а также 10 здоровых

лиц в условиях низкогорья (г.Токмок). Средний возраст исследуемых составил соответственно 60,53+15,48 лет. В общей совокупности учитывались симптомы характерные для ХОБЛ, а также проводили оценку функции внешнего дыхания (ФВД) и у данных пациентов изучали частоту и величину раннего маркёра почечного повреждения МАУ. Учитывая факторы риска развития ХБП, нами определялись такие параметры как возраст пациентов, индекс массы тела (ИМТ), индекс курящего человека (ИКЧ) основной показатель, используемый для расчёта частоты табакокурения, а также анамнестические данные касательно веса при рождении. Показано раннее и значимое увеличение МАУ у пациентов с ХОБЛ, а также имеется тенденция факторов риска развития ХБП. Что в свою очередь коррелируют со степенью бронхиальной обструкции. Проведя исследование и получив данные результаты на наш взгляд необходимо дальнейшее детальное изучение. Для более точного ответа на поставленный вопрос. Учитывая данное предложение, возникает вопрос, МАУ является просто обычным маркером почечного повреждения при ХОБЛ или все-таки, имеет своё самостоятельное прогностическое значение при данной ассоциированной патологии. Также стоит заострить пристальное внимание на факторах риска развития ХБП у пациентов с ХОБЛ, так как данные показатели имеют прямую тенденцию к утяжелению состояния и развитию осложнений, как со стороны ренальной системы, так и респираторного тракта.

Ключевые слова: *хроническая болезнь почек, хроническая обструктивная болезнь легких, патология мочеполовой системы, микроальбуминурия, ренальная система.*

It is known that the concomitant pathology of the renal system can lead to a mutual burden of various diseases from other organs and systems. This proposal requires, in patients with chronic obstructive pulmonary disease (COPD), additional and detailed methods for both identifying risk factors and identifying early markers of kidney damage. This will ensure adequate preventive measures in conjunction with more thorough and correct drug therapy in the future. This, in turn, will favorably affect the quality of life of this cohort of patients, as well as delay the start of renal replacement therapy. The present work is devoted to the analysis of the continuity of risk factors for the development of chronic kidney disease (CKD), as well as the early detection of the frequency and magnitude of microalbuminuria (MAU) in patients with COPD in low-altitude conditions of the city of Tokmok, Kyrgyz Republic, at earlier stages of its manifestation. We examined 82 patients with COPD of varying severity, as well as 10 healthy individuals in low mountains (Tokmok city). The average age of the subjects was 60.53 + 15.48 years, respectively. In the aggregate, the symptoms characteristic of COPD were taken into account, as well as an assessment of the function of external respiration (HFD) and the frequency and magnitude of the early marker of renal damage to MAU were studied in these patients. Given the risk factors for the development of CKD, we determined such parameters as the age of the patients, body mass index (BMI), smoking person index (ICH), the main indicator used to calculate the frequency of smoking, as well as anamnesis for birth weight. An early and significant increase in MAU in patients with COPD is shown, and there is a tendency for risk factors for the development of CKD. Which in turn correlate with the degree of bronchial obstruction. After conducting the study and obtaining these results, in our opinion, further detailed study is necessary. For a more accurate answer to the question. Given this proposal, the question arises, MAU is simply a common marker of renal damage in COPD or, nevertheless, has its own prognostic value for this associated pathology. It is also worthwhile to pay close attention to risk factors for the development of CKD in patients with COPD, since these indicators have a direct tendency to aggravate the condition and develop complications, both on the part of the renal system and the respiratory tract.

Key words: *chronic kidney disease, chronic obstructive pulmonary disease, urogenital system pathology, microalbuminuria, renal system.*

At present, chronic obstructive pulmonary disease (COPD) is a very urgent problem in modern health care. The frequency of this nasoological unit tends to steady progression, which in turn leads to further serious complications from other organs and systems. Conducted epidemiological studies prove this fact that COPD is characterized more by systemic manifestations, thereby increasing the risk of developing cardiovascular disease by two or even three times. In the aggregate, COPD takes an honorable fourth place among the main causes of the development of chronic heart failure (CHF) in the Russian Federation [1-3].

One of the known factors is that the renal system is a target organ in both CHF and COPD, but against this background, aspects related to nephrology in pathology of the pulmonary system have been studied significantly, little.

Given all sorts of pathological mechanisms that directly underlie changes in the cardiovascular system and the progression of chronic kidney disease (CKD) in COPD, they are significant. Thus, these processes include inflammation of a systemic nature, processes of hypoxemia, activation of the sympathetic nervous system, as well as the renin-angiotensin-aldosterone system (RAAS), endothelial dysfunction, oxidative stress, and also quite prolonged endogenous intoxication [4, 5].

To perform earlier diagnosis of CKD in patients at risk of developing it, who may initially lack protein in the general urine test, a marker for early detection of microalbuminuria (MAU) is tested [6-8].

To date, chronic obstructive syndrome can be considered as a disease of the respiratory system with systemic manifestations [9-11]. Conducting an analysis of the available literature at the same time, we did not come across works devoted to a detailed study of the primary lesion

from the renal system in patients with COPD in low-mountain areas.

It is also worth touching on such a rather important aspect in the significance of risk factors in the development of renal dysfunction in people suffering from COPD. Having studied literary sources, only a small number of works have been found that display risk factors for the development of CKD in patients with COPD. These risk factors include smoking, age, increased body mass index (BMI), and others. These factors can aggravate the prognosis of the disease and lead to a worsening of the disease in the future [12-14]. Thus, in our opinion, risk factors for the development of CKD in patients with COPD in low mountains should be studied.

The aim of our study is to study risk factors and the initial earlier manifestations of kidney damage in patients with pathology of the respiratory system, in particular COPD.

Materials and research methods: In the low mountains of the city of Tokmok Kyrgyzstan, 82 patients with COPD with varying severity were examined. The average age of those was 60.53 ± 15.48 years. The presence of COPD and a severity score were determined according to the Global Initiative for Chronic Obstructive Lung Disease criteria (GOLD, 2011).

The subjects were analyzed by indicators of the function of external respiration (HFD), such as the volume of forced expiration in 1 second (FEV 1%), the volume of forced expiration in 1 second / forced vital capacity of the lungs (FEV 1 / FVC%) Tiffno index, the moment was evaluated volume expiratory flow rate at 25, 50, 75%, l / s (MOS25 l / s, MOS50 l / s, MOS75 l / s). According to the results of the study, all the subjects examined by us are divided into three groups, taking into account their severity of bronchial obstruction. Thus, 27 patients with mild COPD severity constituted the first group, 32 patients with moderate severity of chronic obstructive syndrome were waxed into the second group, and 23 patients with severe chronic obstruction were assigned to the third group.

All patients were simultaneously comparable among themselves in terms of gender, age, and the duration of the disease itself was also taken into account. For the implementation of comparative parameters, a control group (CG) was taken, which included absolutely 10 healthy individuals.

Given the risk factors for the development of CKD, we determined such parameters as the age of the patients, the smoking person index (ICH), the main indicator used to calculate the frequency of smoking, body mass index (BMI), which was calculated using a specific formula, as well as anamnesis data regarding birth weight. Since it is known that low birth weight can also be a risk factor for the development of CKD in the future.

To identify the nature of the early damage from the renal system, an analysis was performed using the micro-albuphan Albu test (Erbalachema), where parameters such as the frequency and magnitude of MAU were determined.

Reliability in the aspect of differences and accounting of the compared indicators was determined according to statistical criteria using a standard software package such as STATISTICA 6.0 and SPSS Statistics. Thus, the processing of the obtained statistical data was carried out; they were considered reliable at $p < 0.05$.

Results and its discussion. Having performed the spirometry procedure for evaluating external respiration, we obtained the following results. So, the FEV1 parameter in patients of the first study group was $86.29 \pm 10.74\%$, this was significantly different from similar parameters in individuals of both the second study group and the third group, respectively ($71.95 \pm 18.35\%$ and $40.65 \pm 12.90\%$, where $p < 0.05$).

Simultaneously with an increase in the degree of broncho-obstructive syndrome, the indicators of the FEV1 / FVC index, as well as patency both at the level of small, as well as medium and large caliber bronchi, deteriorated. Indicators of HPF are shown in table. 1.

Table 1

HFD parameters depending on the severity of COPD

Parameters	The surveyed groups			
	KG(n= 10)	1-st.(n=27)	2-nd.(n=32)	3-rd.(n=23)
FEV1,%	$108,4 \pm 13,79*$	$86,29 \pm 10,74*$	$71,95 \pm 18,35*$	$40,65 \pm 12,90*$
FEV1 / FVC, (%)	$103,7 \pm 4,87*$	$94,95 \pm 13,97*$	$78,64 \pm 12,53*$	$61,69 \pm 15,23*$
MOS25, (l / s)	$79,80 \pm 17,45*$	$60,85 \pm 24,36*$	$41,22 \pm 17,95*$	$16,75 \pm 9,15*$
MOS50, (l / s)	$104,1 \pm 20,40*$	$59,47 \pm 20,73*$	$34,51 \pm 15,88*$	$15,10 \pm 11,56*$
MOS75, (l / s)	$98,00 \pm 8,64,*$	$58,93 \pm 23,27*$	$36,31 \pm 12,39*$	$16,9 \pm 7,16*$

Note: parameters have significance between groups, $p < 0.05$.

I would like to note an important point in the study regarding the development of risk factors for CKD in patients with COPD in low altitude settings. A correlation analysis was performed both in the general group of patients, taking into account their severity, and in HA.

Thus, on the basis of the results obtained, a definite conclusion can be drawn that, in low-mountain residents, in particular, the city of Tokmok, the signs of the

development of CKD risk factors in patients with COPD turned out to be the age of patients, this symptom took first place in the development of renal dysfunction.

So, in the 1st group with mild COPD, the average age was 53.04 ± 2.523, in patients with moderate to severe chronic obstructive syndrome, the average age was 60.53 ± 2.737, and in patients with severe COPD, the average age was 62, 00 ± 1,693. The data are displayed in table 2.

Table 2

Risk factors for the development of CKD in patients with COPD

	Patient group	N	Minimum	Maximum	M	±m
1.	**Age of patients**	27	31	80	53,04	±2,523[3]
	ICH	7	180	240	209,14	±10,751
	BMI	27	19,2	37,2	27,304	±0,8855
	Birth weight	27	2500	3800	2992,59	±74,903
2.	**Age of patients**	32	31	84	60,53	±2,737[1]
	ICH	11	132	240	175,64	±10,644[4]
	BMI	32	18,6	38,1	27,306	±0,9291
	Birth weight	32	2500	3800	2976,59	±66,826
3.	**Age of patients**	23	47	75	62,00	±1,693[2,3,]
	ICH	9	144	300	220,00	±16,852[4]
	BMI	23	17,1	35,9	25,978	±1,0693
	Birth weight	23	2800	3700	3141,30	±50,555
4.	**Age of patients**	10	38	60	50,90	±2,433
	ICH	5	120	264	170,40	±25,286[1,2,]
	BMI	10	24,7	32,9	29,010	±0,9435
	Birth weight	10	2300	3700	3210,00	±124,231

Note: the average age of the patients of the second group is significantly higher than the control group $p<0.05$[1].

The age of the patients of the third group was statistically significantly higher than the control group $p<0.05$[2]. Also, the average age of the patients of the third group is significantly higher than the first group, $p <0.05$[3]. Also, the ICH of patients of group 3 is significantly higher than group 2 $p <0.05$[4], such parameters as BMI and birth weight in the study did not have statistical significance.

The number of patients with CKD is increasing worldwide, which significantly reflects the nature of the pandemic. Mostly, I would like to note that an important

trend is caused, first of all, by absolutely not those mechanisms leading to pathological processes in which a patient may be under the supervision of a nephrologist, but because of the augmentation of the increase in the number of patients with a significant degree of cardiovascular pathology. Meanwhile, to a certain extent, the contribution of COPD, as a pathology having the result of systemic manifestation to the formation of CKD, has not been sufficiently developed and studied.
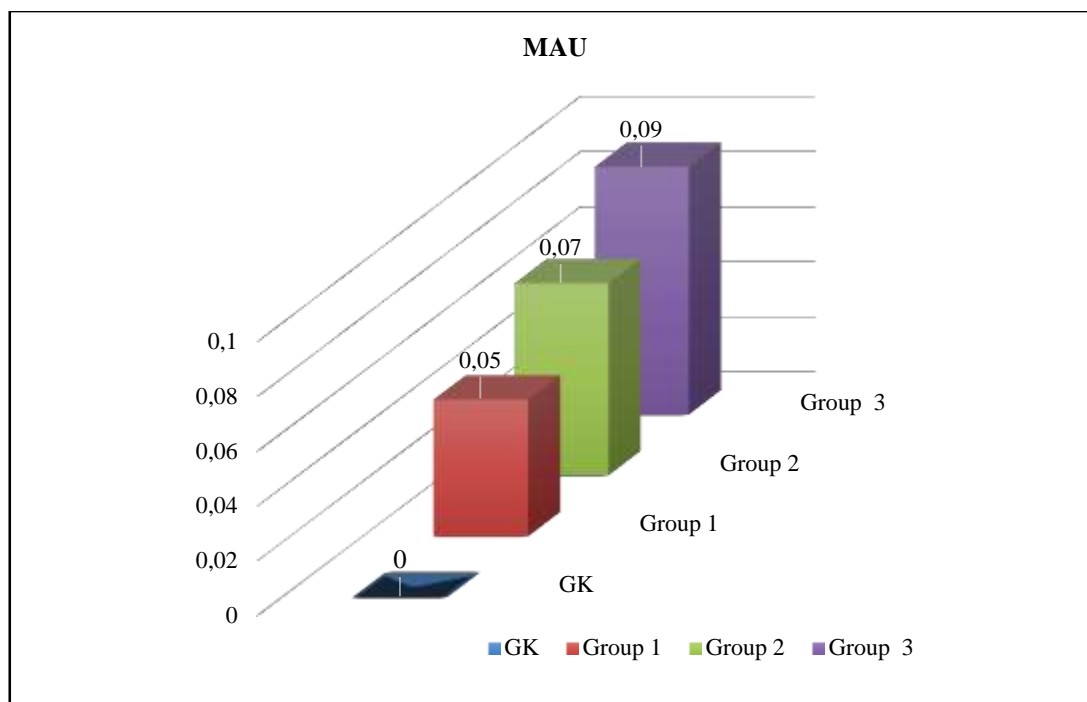
Fig. MAU parameters depending on the severity of COPD.

In patients with a history of diabetes mellitus (DM), metabolic syndrome (MS), hypertension (GB), as well as in patients with vascular atherosclerosis, the most susceptible marker of endothelial dysfunction is MAU [15, 16].

In patients with COPD using test strips to determine MAU, we have identified the following data that reflect signs of the presence of endothelial dysfunction.

It should be noted that the values of this parameter in patients with COPD having a mild severity of 0.05 ± 0.03 g / l, as we see, there was a tendency to increase in persons of the second group to 0.07 ± 0.04, and in the third to 0.09 ± 0.03 g / l. (fig.)

If we take into account every fourth patient with COPD, then each reveals a functional disorder on the part of the renal system. Thus, the risk of increasing if there is a combination with a pathological process in the circulatory system rises. Most likely, there is a possibility that this may be due to both a systemic consequence of COPD and the presence of respiratory and heart failure [11].

Consequently, the presence in the pathogenesis of common links of the mechanism, such as general systemic inflammation, dysfunction of the endothelial system form the mutually aggravating effect of COPD on the cardiovascular and in particular on the renal system.

This definition in world practice is referred to as the cardiorenal continuum. Finding out these changes at the stages of the earlier manifestation of the pathological process, which currently needs timely further and more detailed, and accordingly close study [17].

A study indicates that in all, in the aggregate of patients with chronic obstructive syndrome, MAU is detected. It is worth noting that with an increase in the severity of COPD, an increase in the level of albumin excretion reliably occurs.

Thus, a study to identify an early marker of renal damage to MAU can detect kidney damage at earlier stages of COPD. Therefore, evaluate the severity of the latter. There are also risk factors for developing CKD, such as the age-related aspect, and smoking.

Conclusion:

1. The identification at the early stages of statistically significant risk factors for the development of CKD, such as old age, smoking in patients with COPD is important, in the development of possible complications from other organs and systems in the future.

2. Taken together, all patients with chronic obstructive syndrome have MAU as one of the early signs of kidney damage.

3. The higher the severity of chronic obstructive syndrome, the higher the indicators of the early marker of renal damage of MAU.

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