

Development of a Prognostic Map of Development in Patients with Urological Diseases

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Abstract In medical practice, an electronic program has been developed by specialists, which has the ability to apply a predictive map of targeted assessment of urinary tract diseases on phones and computers, and it is possible to analyze the results obtained and prevent urological pathologies, self-control of patients, monitoring the condition of patients. At the same time, the threshold value of the final prognostic coefficient and risk groups of the origin of the pathological condition were determined.

Keywords Urological diseases, Prognostic map, Risk factors, Credit-module system, Educational process

1. Introduction

Currently, computational methods have been developed for the diagnosis and prognosis of a number of somatic diseases. But the method of predicting risk factors in urinary tract disorders has not been implemented [1,3].

It should be noted rightfully that in the Prevention of urinary tract diseases, the separation of risk factors for the development of external and internal secretory insufficiency by comparing different prognostic criteria in patients with urinary tract diseases was considered a very important approach [2].

For the purpose of compiling a forecasting table, comparable indicators were obtained for situations that are relatively important and make it possible to give predictions depending on the gradient of common risk factors. The degree of significance of the factors and their gradation were determined by applying relative risk indicators (R). This indicator in turn is expressed in each individual factor bias relative to the minimum (d) in terms of the degree of indicator intensity (s) of the maximum relationship ($r=c/d$).

If the factor does not have a sphere of influence, then this factor is calculated as equal to one. To what extent the R indicator is higher, the degree of significance of the risk factor in the origin of this pathological condition is thus higher [4,6].

The main essence of this method is that instead of the usual intensive indicators, a normalized intensive indicator (MIK) is used, and the calculation is possible using the following formula: $N=R/M$, in which: N is a normalized intensive indicator, R is an intensive indicator, M is a "normalizing indicator".

During the study, an average frequency of urinary tract diseases with external and internal secretory insufficiency is accepted according to all examination data (100 patients involved in scientific inspection) as a normalizing magnitude on this condition. For example, in patients with urinary tract diseases, the frequency of development of the state of renal failure (R) is 46.7, while the normative indicator with external secretory insufficiency is 54.5. This indicator was 51.0 among all those examined. This magnitude was taken as a "regulatory" indicator (m).

In the case of other risk factors related to urinary tract disorders, the NII was also calculated in this way. The resulting mic is the initial standard, with which it is possible to carry out an integrated assessment of the risk of developing kidney failure in patients with urinary tract diseases, as well as a set of factors [5].

2. Material and Methods

It is known that each factor has a different impact force on the development of kidney failure in patients with urinary tract diseases. Taking into account this principle, we took into account the relative risk indicators on each factor. Knowing the relative risk indicator of disease development (R) as well as the normalized intensive indicator (n), it is possible to determine the impact strength of each individually obtained risk factor, i.e. the prognostic coefficient (X), in relation to the development of a state of external kidney failure in SP.

This magnitude is determined as follows: $X=R \cdot N$, in which X is an integrated indicator of risk from the strength of influence of a particular factor (prognostic coefficient); N is a NII for the development of kidney failure in patients with urinary tract diseases; R is an indicator of relative risk.

3. Results

Considering the data in our sample, that is, the relative risk factor (R) is 1.17, NI1 – 0.916, NI2 – 1.069, then the integrated indicator of the impact force of each individual factor, that is, the prognostic coefficient, is expressed as follows:

if a patient with urinary tract diseases - $1.17 \cdot 0.916 = 1.072$;
if with external secretory insufficiency $1.17 \cdot 1.069 = 1.25$.

The prognostic matrix includes all the identified risk factors for predicting the development of exocrine insufficiency, the value and gradation of the integrated index from the influence of the individual factor (X), the relative risk index (R) for each factor and their sum for the set of factors (RN), while the normalizing magnitude - includes the average indicator (N) of the frequency of diseases of the

urinary tract with exocrine insufficiency according to all examination data.

The possibility of determining the probable range of the risk value of the set of factors obtained outside the prognostic table was used. This process was carried out in the following way: in the prognostic table, the minimum value of the prognostic coefficient for each risk factor is determined and their sum is performed. This magnitude is interpreted as the initial risk value of this disease.

For example, in the table above, the minimum value of the prognostic indices (X) for the integrated assessment of the risk of developing exocrine insufficiency was as follows for all factors:

$1,429 + 1,297 + 1,235 + 1,585 + 1,469 + 1,705 + 1,257 + 1,378 - 1,504 + 1,439 + 1,252 + 1,206 + 1,554 + 1,346 = 19,66$

Table 1. Prognostic map of complex assessment of external secretory insufficiency

Risk factors		%	МИК	R	X		
						мин	мак
Transferred, burning AIDS diseases	available	73,1	0,571	2,505	1,429	1,429	3,582
	not available	29,2	1,429		3,582		
Alcohol consumption	available	69,2	0,667	2,000	1,333	1,333	2,667
	not available	34,6	1,333		2,667		
Tobacco smoking	available	26,9	0,727	1,750	1,273	1,273	2,227
	not available	15,4	1,273		2,227		
Damage to the mob as a result of injury to the lumbar kidney socket	available	55,8	0,389	4,143	1,611	1,611	6,675
	not available	13,5	1,611		6,675		
Surgical procedure	available	34,6	0,500	3,000	1,500	1,500	4,500
	not available	11,5	1,500		4,500		
Taking drugs that aggressively affect the lumbar kidney socket	available	48,1	0,276	6,250	1,724	1,724	10,776
	not available	7,7	1,724		6,250		
Food poisoning	available	21,2	0,706	1,833	1,294	1,294	2,373
	not available	11,5	1,294		2,373		
Chemical poisoning	available	23,1	0,588	2,40	1,412	1,412	3,388
	not available	9,6	1,412		3,388		
Eating large amounts of food with synthetic additives	available	23,1	0,622	2,215	1,378	1,378	3,053
	not available	10,4	1,378		3,053		
Hereditary predisposition to GIT diseases	available	44,2	0,496	3,033	1,504	1,504	4,562
	not available	14,6	1,504		4,562		
Congenital developmental pathologies of the lumbar kidney socket	available	48,1	0,561	2,564	1,439	1,439	3,689
	not available	18,8	1,439		3,689		
Hormonal fluctuations and disorders	>4,19	55,8	1,252	1,673	2,094	1,252	2,094
	<4,19	33,3	0,748		1,252		
Starvation cases	>31,2	53,8	1,206	1,520	1,834	1,206	1,834
	<31,2	35,4	0,794		1,206		
Diet with foods with unbalanced content	>2,93	65,4	1,554	3,487	5,420	1,554	5,420
	<2,93	18,8	0,446		1,554		
Adherence to an unbalanced diet with extremely fatty and acute food	>3,73	94,2	1,346	2,056	2,766	1,346	2,766
	<3,73	45,8	0,654		1,346		

In this case, the minimum initial risk value is 19.66.

Then, in an analogous case, the sum of the maximum value of the prognostic indices for each factor is determined:

$$3,582+2,396+1,995+6,063+4,069+9,854+2,127+3,053+4,562+3,689+2,094+1,834+5,42+2,766=53,50$$

In this case, the risk range is between $19.7 \div 53.5$.

Table 2. Individual prediction of the risk of developing kidney failure below the range and the value of groups

Range	Sub-range values	Risk groups
Low probability	19,7-31,0	Positive prediction
Average probability	31,1-42,4	Demanding attention
High probability	42,5-53,5	Negative prediction

Based on the analysis of the above data, it became clear that the higher the integrated indicator of the risk of developing external kidney failure in patients with urinary tract diseases, the higher the probability of its development in the examined person is correspondingly higher, and it is the basis for including the examined person in the negative prediction group.

Depending on the results of the analysis, the risk range ($19.7-53.58$) and the sub-range were distinguished. Practically, the risk range was divided into three intervals: low ($19.7 \div 31.0$), medium ($31.1 \div 42.4$) and high ($42.5 \div 53.5$) risk probability for the development of kidney failure.

The credit system of education is manifested as a mechanism that compensates for the changing need of the labor market, as long as it provides a wide opportunity to train personnel with modern aspects, in particular, provides academic mobility for graduates of medical higher education institutions. The importance of the credit system is that academic programs are created in accordance with the requirements of the labor market.

50% of subjects in the curriculum are elective subjects and informational systems are introduced into the learning process. Also, the training and preparation of cadets for the labor market is approached individually, they are directed to Independent Education. The individualized and differentiated teaching system is based on the alternation of educational institutions, the mobility of educational and software documents, their adaptability to changing socio-economic conditions. In our opinion, in the implementation of the module - credit system, it is necessary to pay sufficient attention to the spiritual and educational development of students, taking into account the features associated with our national mentality and age. To do this, it is advisable to harmoniously carry out the educational and

educational process in medical higher education, to increase the social status of a scientist, teacher, that is, to achieve students' enthusiasm, following them. Only then, with the help of credit technology of training, the cultivation of highly spiritual, creative, non-standard thinking, rich in innovation and initiatives is achieved.

By partially or completely applying the components that are important during the application of the mobile application from new interactive methods, formed taking into account specific aspects in the training of their listeners, skill development will stimulate a deep acquisition of knowledge and skills in the educational process not only within the subject or subject, but also make it possible to coordinate, facilitate.

4. Conclusions

It can be said that the credit-module system, increasing the effectiveness of the educational process, directing students to independent research, contributes to ensuring the appropriate training of specialists in medical higher education institutions.

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