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THE RELATIONSHIP BETWEEN SOME METABOLIC INDICATORS IN THE STUDY OF THE EPIDEMIOLOGY OF CHRONIC KIDNEY DISEASE

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ABSTRACT

An epidemiological study was conducted among 927 non-pregnant women aged 17 to 49 years, representing a representative sample of the unorganized population of the city of Tashkent. The study aimed to study the risk of developing chronic kidney disease. Cholesterol, triglycerides, bilirubin, ALT, AST, creatinine, urea, and glucose were studied as indicators of metabolism. Statistical processing of the obtained data included the study of correlations between the selected indicators. A statistically significant correlation was revealed between all indicators, including creatinine. This, in turn, indicates the risk of the formation of comorbid diseases, including chronic kidney disease.

KEYWORDS

Epidemiology, chronic kidney disease, risk factors, relationship, correlation.

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Introduction

Along with cardiovascular diseases and diabetes mellitus, chronic kidney disease (CKD) firmly occupies one of the main places in the structure of chronic non-communicable diseases. The term CKD replaced the old name - chronic renal failure. CKD is characterized by a wide prevalence [1] and significantly increases the mortality of patients [2,3]. To reduce the medical and social damage caused by CKD, many countries, including Uzbekistan, are working on early diagnosis, treatment and prevention of this pathology [4]. In particular, the role of various risk factors, including metabolic disorders, is being studied. [5,6]. Lipid metabolism disorders in patients with CKD have been established [7], as well as comorbidity with many diseases [8,9,10]. Based on the above, it should be concluded that in order to successfully reduce the damage from CKD, epidemiological studies should be conducted with the aim of early detection and prevention of risk factors for kidney disease. At the same time, it is necessary to assess the significance of each risk factor and clarify its role in the comorbidity of CKD. At the same time, it is important to study these indicators in women because the health of

the future generation largely depends on the health of women.

The purpose of the study: to study the relationship between certain metabolic parameters and creatinine among women of fertile age.

Material and methods

The study was conducted in a representative sample of the unorganized female population of the city of Tashkent. A total of 927 women aged 17 to 49 years were examined. At the time of the examination, the women selected for the study were not pregnant. Criteria for randomization of the study groups: all the examined women were comparable in age, gender, previous therapy and concomitant diseases. Exclusion criteria - the study did not include persons with exacerbations of chronic diseases of the gastrointestinal tract, severe diseases of the cardiovascular system and endocrine system (including angina pectoris FC IV, myocardial infarction, severe rhythm and conduction disorders, cerebral stroke, end-stage CKD and other serious diseases). Cholesterol, triglycerides, bilirubin, ALT, AST, creatinine, urea,

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and glucose were studied as metabolism indicators. Statistical processing of the obtained data was carried out using the MedCalc program (https://www.medcalc.org). Intensive and average values and average levels of quantitative variables were calculated, and a correlation analysis was carried out on these results (correlation coefficient - r). The statistical significance of the revealed differences was studied according to the generally accepted criteria of the indicators of the measure of communication: r>0.01≤0.29 - weak positive relationship, r>0.30≤0.69 - moderate positive relationship, r>0.70≤1.00 - strong positive relationship, r>-0.01≤-0.29 – weak negative relationship, r>-0.30≤-0.69 - moderate negative bond, $r > -0.70 \le -1.00$ is a strong negative bond.

Results and discussion

The data obtained indicate (Table. 1) that there is a positive relationship between all values of cholesterol, triglycerides, fasting glucose and creatinine. As expected, the strongest positive relationship was found between cholesterol and triglycerides. There was also a positive relationship between fasting glucose and lipids, but it was at a moderate level. Creatinine levels were even less correlated with lipid and glucose levels. Here, the connection turned out to be weak but reliable. It should be noted that the reliability of the relationship of all the indicators presented in Table 1 was statistically significant.

Table 1. Correlation coefficients between lipids, glucose and creatinine (r)

Показатели	Cholesterol	Triglycerides	Fasting glucose	Creatinine
Cholesterol	1	0,752 P<0,0001 n=927	0,514 P <0,0001 n=927	0,129 P=0,0001 n=927

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Triglycerides	0,752 P <0,0001 n=927	1	0,464 P <0,0001 n=927	0,114 P=0,0005 n=927
Fasting glucose	0,514 P <0,0001 n=927	0,464 P <0,0001 n=927	1	0,122 P=0,0002 n=927
Creatinine	0,129 P=0,0001 n=927	0,114 P=0,0005 n=927	0,122 P=0,0002 n=927	1

At first glance, the question may arise – why such a high degree of statistical significance? This is explained by a large number of observations (n=927) and is beyond doubt.

Further, correlations between liver samples, urea and creatinine were studied (Table 2). Here a strong positive relationship between ALT and AST was revealed, as well as a moderate positive

relationship between these indicators and bilirubin. The relationship of urea and creatinine with the considered indicators was weakly positive. The exception is the association of urea with bilirubin, where it was moderately positive. Note that all correlations between the indicators in Table 2, regardless of the value of the correlation coefficient (r), were highly reliable.

Table 2. Correlation coefficients between liver samples, urea and creatinine (r)

Indicators	AST	AST	Urea	Urea	Creatinine
AST	1	0,816 P<0,001 n=927	0,418 P<0,001 n=927	0,226 P<0,001 n=927	0,108 P=0,001 n=927
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ALT	0,816	1	0,409	0,225	0,106
	P<0,001 n=927	1	P<0,001 n=927	P<0,001 n=927	P=0,001 n=927
Bilirubin	0,418 P<0,001 n=927	0,409 P<0,001 n=927	1	0,343 P<0,001 n=927	0,125 P=0,001 n=927
Urea	0,226 P<0,001 n=927	0,225 P<0,001 n=927	0,343 P<0,001 n=927	1	0,217 P<0,001 n=927
Creatinine	0,108 P=0,001 n=927	0,106 P=0,001 n=927	0,125 P=0,001 n=927	0,217 P<0,001 n=927	1

Conclusions

- 1. Elevated triglyceride and glucose levels are among the main components of the metabolic syndrome. Therefore, a reliable correlation between their level and creatinine levels may indicate an increased risk of comorbid diseases associated with chronic kidney disease in women.
- 2. A statistically significant correlation between creatinine and urea levels with liver samples indicates a high probability of liver pathology in women with impaired renal filtration function.

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