



CHRONIC KIDNEY DISEASE: CURRENT STATE OF THE PROBLEM

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Abstract

Chronic kidney disease (CKD) is characterized by increasing prevalence and a negative contribution to cardiovascular and overall mortality. The global prevalence of CKD is 13.4%, and CKD C3-5 is 10.6%. The main causes of the development of CKD C5 are diabetes mellitus (DM, 46.9%), arterial hypertension (AH, 28.8%) and, to a lesser extent, glomerulonephritis (7.1%) and polycystic diseases (2.8%), while other reasons account for a total of 14.4%.

Keywords

diabetes mellitus, chronic kidney disease, glomerular filtration rate.

INTRODUCTION

Chronic kidney disease (CKD) is a healthcare challenge of the 21st century, as it is characterized by increasing prevalence and a negative impact on cardiovascular and overall mortality. The asymptomatic nature of CKD in most cases contributes to its late verification. Currently, there are approximately 850 million CKD patients worldwide [1]. According to a large epidemiological study in 2016, CKD was the 16th leading cause of death worldwide and is expected to move to 5th place by 2040 [2].

MATERIALS AND METHODS

CKD occupies one of the dominant positions in terms of cost among the healthcare sectors of the developed countries of the world. As an example, we can cite data from a study in Germany, according to which the average cost per patient with CKD C3 (stage 3) is €8,030, with CKD C4 (stage 4) – €9,760, with CKD C5D (5 stage, dialysis treatment) – €44,374 per year [3]. And these are only direct costs, excluding indirect costs for social security, logistics and other activities.

RESULTS AND DISCUSSION

According to the latest USRDS registry in 2017 in the United States, the main causes of development of CKD C5 were diabetes mellitus (DM; 58,377 cases, 46.9%), arterial hypertension (AH; 35,847 cases, 28.8%), glomerulonephritis (8800 cases, 7.1%), polycystic diseases (3481 cases, 2.8%), while other causes generally account for 14.4% [3].

Diabetes and hypertension are also the main risk factors for the development of CKD. Risk factors should also include obesity, hyperuricemia, dyslipidemia, anemia, infectious-toxic and septic processes, systemic connective tissue diseases, excessive consumption of table salt and animal protein, smoking, excessive consumption of alcohol and certain medications (for example, analgesics and non-steroidal anti-inflammatory drugs) and much more. Risk factors include socio-psychological factors (low financial status, low level of education, anxiety and depressive disorders, etc.). Universal risk factors are such non-modifiable factors as male sex and age, and for some diseases, race and ethnicity (for example, Mediterranean fever in Armenians, Greeks, Arabs).

Despite the ease of diagnosing CKD, one of the key problems of modern therapeutic and pediatric clinics is its low detection rate in the early stages, according to some data reaching 96.6% [4].

The main reasons for low detection could be presented as follows:

- Absence or paucity of clinical manifestations of CKD at stages 1-3A;
- Logistical and technical problems in terms of recording the level of albuminuria or albumin-creatinine index at the level of both primary health care and specialized medical care;
- Lack of alertness among primary care physicians regarding the importance of early diagnosis of CKD;
- Insufficient supply of outpatient clinic services with nephrologists in accordance with the procedures for providing specialized medical care in the “nephrology” profile;
- Low public awareness of the causes and risk factors, as well as early methods for diagnosing CKD.

CKD is understood as a kidney pathology lasting more than 3 months, manifested by albuminuria/proteinuria or a number of other clinical manifestations and/or a decrease in GFR. The concept of CKD is a supra-nosological unifying concept of various kidney diseases, designed to generalize and unify approaches to patient management while maintaining the features of diagnosis and treatment of each nosological unit separately. The levels of albuminuria and GFR are unified, and albuminuria can serve as a reliable method for detecting CKD at the earliest stages.

Patients with CKD have an increased risk of dementia, characterized by deficits in executive functions, memory and attention [3]. Moreover, the development of dementia begins in the early stages of CKD, and the risk of its formation gradually increases as CKD progresses [2]. The incidence of dementia in patients on hemodialysis is 8-37%, on peritoneal dialysis – 4-33%, in patients with a kidney transplant – 7-22% [4]. Brain imaging in patients with CKD has revealed white matter damage in the prefrontal cortex and in animal models in the subcortical monoaminergic and cholinergic systems, accompanied by widespread macro- and microvascular damage. At the same time, correction of cardiovascular risk factors (use of antihypertensive, antiplatelet drugs and statins) has a minor effect on the development of dementia associated with CKD, which suggests that the accumulation of uremic neurotoxins (asymmetric dimethylarginine, fibroblast growth factor-23 – FGF-23, hippuric acid, indoxyl sulfate, p-cresyl sulfate, methylglyoxal, etc.) may be more important than hemodynamic factors or lipid metabolism in the pathogenesis of dementia in CKD [4].

CONCLUSION

Given the high importance of identifying and effectively treating patients with CKD, it is necessary to concentrate efforts on the early detection of CKD, primarily in groups at high risk of its development. It is necessary to increase awareness of the population by creating and implementing primary prevention programs for CKD, as well as of patients, motivating them to long-term compliance with doctor’s recommendations, including as part of the implementation of a non-drug strategy to combat CKD. It is important to use the full range of methods of prevention and drug therapy for CKD, including blockers of the renin-angiotensin-aldosterone system, SGLT-2 and a number of other classes.

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