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DEVELOPMENT OF NEPHROPATHY IN HYPERTENSIVE PATIENTS WITH COVID-19

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Introduction. Essential Hypertension is one of the most common diseases in the world, it affects the heart, brain, kidney, eye fundus and other vital organs, and it is one of the important problems of the health system of all countries of the world. In their conclusions, the experts of the World Health Organization predict that by 2025, the number of patients with hypertonic disease (HD) will reach 1 billion 56 million people, making up about 30% of the population over 20 years old [1].

We would like to draw attention to the history of theories about the formation of this disease, which is so widespread and increasing in the world. Some of his opinions were also mentioned in the famous book "Medical Laws" by our great grandfather Abu Ali ibn Sina [1,3].

In the 30s-60s of the last century, famous Russian scientists G.F. Lang, A.L. Myasnikov and their students advanced the neurogenic theory of GK formation. According to him, chronic stress situations, external conditions and lifestyle are important in the occurrence of HD. In the 1960s, Yu.V. Postnov and S.N. Orlov's membrane theory that "disruption of calcium transport due to genetic deficiency in plasma membranes causes HD", in the 1970s A. Gatton put forward the idea that the increase in blood pressure is caused by water and salt exchange in the body and changes in the kidney. Also, S. In the 1960s, Aoki created a hereditary experimental model of arterial hypertension, Vi Vertes, H.R. Brenner, J.H. Laragh (1970-1980) created the renin theory of primary hypertension [15]. Currently, according to the mosaic theory, which is considered to be a supporter of most experts, in the formation of GC, neuro-endocrine control, endothelial dysfunction, remodeling of the heart and blood vessels, and other changes are simultaneously involved in the common pathophysiological basis [2,8,11]. The above-mentioned factors act together in a directed state and lead to an increase in blood pressure.

As mentioned above, in the near future, the number of people with HD will reach 1 billion 36 million people. According to the European Society of Hypertension and Cardiology (ESH/ESC) in 2013, the prevalence of HF affects 30-45% of the general population, and the incidence increases as the population ages [6,9,12].

In the 80s and 90s of the 20th century, the measures to prevent HD in European countries were improved and widely implemented on the basis of national programs, which led to its reduction. For example, in Belgium it decreased from 30.5% to 20% among women, from 41% to 26.7% among men, and a similar situation was observed in other western European countries [5]. In contrast to them, the number of people suffering from HD is increasing in the countries of the Asian region. In the People's Republic of China, this disease increased from 19.1% to 25.8% in women, from 20.2% to 28.6% in men, and in Singapore, an increase in the total number of patients from 22.5% to 26.6% was noted [7].

Coronavirus disease-2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has affected more than seven million people worldwide, contributing to 0.4 million

deaths as of June 2020. The fact that the virus uses angiotensin-converting enzyme (ACE)-2 as the cell entry receptor and that hypertension as well as cardiovascular disorders frequently coexist with COVID-19 have generated considerable discussion on the management of patients with hypertension. In addition, the COVID-19 pandemic necessitates the development of and adaptation to a "New Normal" lifestyle, which will have a profound impact not only on communicable diseases but also on noncommunicable diseases, including hypertension. Summarizing what is known and what requires further investigation in this field may help to address the challenges we face. In the present review, we critically evaluate the existing evidence for the epidemiological association between COVID-19 and hypertension. We also summarize the current knowledge regarding the pathophysiology of SARS-CoV-2 infection with an emphasis on ACE2, the cardiovascular system, and the kidney. Finally, we review evidence on the use of antihypertensive medication, namely, ACE inhibitors and angiotensin receptor blockers, in patients with COVID-19.

Purpose. Summarizing comparative analysis of the importance of podocyte dysfunction in the development of nephropathy in hypertensive patients with and without COVID-19

Results. The mean age of the population was 44.4 years (95% CI: 43.74-45.15) and patients with diabetic nephropathy were in average 13.8 years older than CKD patients. The male to female ratio was 1.2527 and there were no significant differences in sex proportion between the two examined pathologies ($p>0.05$). The observed prevalence of chronic kidney disease in the general population was 0.51% (95% CI: 0.48-0.53%) while the prevalence of diabetic nephropathy was 2.69% (95% CI: 2.51-2.89%). Patients with diabetic kidney disease were 10.7% more likely to be infected with SARS-CoV-2 compared to CKD patients, doubled their rate of COVID-19 pneumonia (107.9% more), doubled their rate of intubation (103.4% more), had a 52.6% higher ICU admission rate and had a 27.14% higher case-fatality rate ($p<0.05$ for each crude prevalence comparison). There were no differences between diseases in time from symptom onset to healthcare consult and time from admission to death, although a tendency of a shorter span in days was seen amongst patients with diabetic nephropathy ($p>0.05$).

Summary. After learning characteristics of podocytic disfunction of patients with COVID-19 and without this, disfunction was higher in patients with coronavirus.

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