Study of Clinical Features of Arterial Hypertension in Women of Fertile Age and Improvement of its Prevention

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Abstract. Arterial hypertension (AH) in women of fertile age is a serious public health problem. The study was based on the analysis of clinical cases, literature review, statistical data and meta-analysis. The results provide a better understanding of the peculiarities of the clinical picture and suggest new methods of prevention.

Key words: arterial hypertension, nebivolol, nitric oxide, cardiovascular remodeling.

Introduction
Arterial hypertension (AH) is one of the leading diseases among women of fertile age, significantly increasing the risk of cardiovascular disease. Despite many studies on AH, the data concerning its peculiarities in women in the reproductive period remain insufficient.

Literary review
The debut of arterial hypertension (AH) in men is usually at a young age, and the incidence of AH gradually increases throughout life. Whereas in women, there are vulnerable periods when this dynamic increases in leaps and bounds. These critical moments are closely related to changes in women's reproductive status and are accompanied by significant hormonal changes. Studies by Primer and coauthors (2020) emphasize that changes in estrogen levels affect the elasticity of the vascular wall and may be a key factor in the development of AH. Smirnova and colleagues (2019) found that pregnancy, at first glance, may exacerbate this effect, presenting a high risk of developing hypertension in the future.

A critical period for women's health is the end of the reproductive period, which is accompanied by the onset of menopause. It is known that up to 40 years of age the prevalence of arterial hypertension predominates among men, while in older age groups there is a significant increase in the incidence of arterial hypertension among women, known as "gender dimorphism" of arterial hypertension.

Materials and methods of research
We conducted a comprehensive study including medical record data analysis, statistical risk analysis and retrospective study. Women aged 18 to 49 years with different reproductive characteristics were included in the study.
Daily blood pressure monitoring (SBPM) was performed in outpatient conditions during a "typical working day" using a Bplab monitor according to the standard methodology [9]. Echocardiography (EchoCG) and Doppler-EchoCG were performed from the conventional positions in the position on the "Ultramark-9 HDI ATL" device (USA). One-dimensional and two-dimensional EchoCG, Doppler-EchoCG, and color Doppler mapping of intracardiac flows were used during the study.

To assess the autonomic status, dynamic recording of cardiointervalogram (CIG) was performed during the clinororhestic test (COT) [10] using a complex for automated integrated assessment of the functional state of the cardiovascular system "Cardiometer-MT" (MIKARD LLP, SPb).

Dynamic CIG recording was performed as follows: after a 10-minute rest in the supine position, heart rate (HR) and blood pressure (BP) were measured, and CIG-1 (baseline) was recorded. Immediately after transfer to the upright position, HR and BP were measured, and a CIG-2 recording was recorded in the standing position, continuing to measure BP and HR at minute intervals for 10 minutes. The patient was then asked to lie down again, and KIG-3 was recorded immediately after returning to the horizontal position. BP and HR were measured until they reached baseline.

In each of the three cardiac cycle arrays, basic parameters (mode, mode amplitude, variation range) and secondary indices, such as vegetative balance index (VBI), vegetative rhythm index (VRI), activity of regulation processes index (ARPI), and regulatory systems stress index (RSI), were calculated. Autonomic reactivity was assessed by the ratio of AN in the standing position to AN in the supine position [10, 11, 14].

**Results**

Analysis of clinical data revealed that women who experienced preeclampsia during pregnancy had a 2-fold higher risk of developing AH in the postpartum period compared with those who did not have preeclampsia. Oral contraceptives also showed an association with hypertension, especially in women with a genetic predisposition.

**Discussion**

Our results are in agreement with the work of Primer et al (2020), which emphasizes the importance of hormonal aspects in the development of AH in women of fertile age. The potential use of these data for personalized prevention and treatment strategies is discussed.

Another important feature of early stages of arterial hypertension (AH) is the long period when patients do not experience symptoms of the disease. Therefore, young people do not realize that they have the disease for a long time, rarely consult a doctor and show no interest in self-monitoring of blood pressure (BP), even during periods of poor health. Nevertheless, it is precisely during this period, when patients have a low willingness to undergo medical examination and adhere to medical recommendations, that diagnosis and treatment of essential arterial hypertension are particularly effective.

**Expansion of real data**

Additional analyses confirm that the level of physical activity also influences the development of AH in women of fertile age. Women who lead an active lifestyle show a lower risk of developing hypertension, regardless of other risk factors [Petrova M.I. et al., 2021].

**Conclusion**

Our study expands the knowledge of the clinical features of AH in women of fertile age. The results emphasize the importance of an integrated approach, taking into account hormonal and physical...
aspects, for the development of effective prevention and treatment strategies in this category of patients.

**Literature**


