

DOI: <https://doi.org/10.56936/18290825-2.v18.2024-82>**PATHOPHYSIOLOGICAL CHARACTERISTICS OF HORMONAL ACTIVITY IN CHILDREN WITH ARTERIAL HYPERTENSION****REVENKO N. A.\*, KALADZE N. N., LAGUNOVA N.V., SIZOVA O.A., ITSKOVA E. A.**

Departments of Pediatrics with a course on Infectious diseases in children II medical, Medical Institute named after S.I. Georgievsky, V.I. Vernadsky Crimean Federal University, Faculty, Simferopol, Crimea

*Received 10.02.2024; Accepted for printing 30.04.2024***ABSTRACT**

*We have conducted a complex research of the hormonal status, as well as a thorough study of its possible impact on biorhythmological blood pressure of the 108 children suffering from arterial hypertension. The patients were divided into two groups: 50 children were diagnosed with labial arterial hypertension, while 58 children had stable essential arterial hypertension. The provided data indicates that arterial hypertension patients tend to have excessive amount of cortisol, especially the stable essential arterial hypertension group ( $p < 0.01$ ) in comparison to the healthy children. The adrenocorticotrophic hormone level of both groups was significantly lower ( $p < 0.001$ ) than the healthy group's level. The thorough study of adrenaline level indicates that arterial hypertension patients tend to have higher level of its secretion and makes up to  $5.1 \pm 0.14$  nmole/l ( $p < 0.001$ ), which is actually twice higher than children of control group ( $2.42 \pm 0.14$  nmole/l). Significant decrease of day fraction by 1.7 times ( $p < 0.01$ ), as well as the night one by 4.7 times ( $p < 0.001$ ) was detected. The melatonin indices of stable essential arterial hypertension group reflected the increase of the circadian disorder which occurred in minimum difference of hormone during the night and day shifts, excessive decrease of the night fraction by 5.2 times ( $p < 0.001$ ) and reliable increase of the day level ( $p < 0.05$ ). Serotonin indicated reversed dynamic by exceeding the control group indices by 2 times of the labial arterial hypertension group ( $p < 0.01$ ) and reliably increasing within the arterial hypertension stabilization up.*

*Thus, we may conclude that arterial hypertension children tend to have desynchronization of the endocrine system which causes the increase of cortisol, serotonin and adrenalin secretions, inhibition of adrenocorticotrophic hormone production, disorder of transformation of serotonin into melatonin and mismatch of day and night hormone level.*

**KEYWORDS:** arterial hypertension, hormonal dysfunction, infants, blood pressure, sympathoadrenal system**INTRODUCTION**

Hypertension is the leading cause of cardiovascular disease and premature death worldwide. Owing to widespread use of antihypertensive medications, global mean blood pressure (BP) has remained constant or decreased slightly over the past four decades. 31.1% of adults (1.39 billion) world-

wide had hypertension [Mills KT et al., 2020].

In fact, uncontrolled arterial hypertension (AH) requires an increase of budget expenses of public health services of EU countries, i.e. annual amount exceeds over 190 billion euro [Mancia G. et al., 2023]. It is beyond any doubt that the primary cause

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**ADDRESS FOR CORRESPONDENCE:**

Elena A. Itskova, Phd  
V.I. Vernadsky Crimean Federal University  
5/7 Lenin boulevard, Simferopol 295051, Russia  
Tel.: +79787578925  
E-mail: [itskova@mail.ru](mailto:itskova@mail.ru)