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Characteristics of Children Heart Rhythm Regulation with Acute Respiratory Diseases

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Abstract : Currently, approaches to assess cardiointervalography are based on the calculation of data variance intervals RR. However, they do not allow the evaluation of features related to a period of the cardiac cycle, so how electromechanical phenomena during cardiac subphase are characterized by differently directed changes. Therefore, we have proposed a method of subphase analysis of the cardiac cycle, developed in the department of hominal physiology Novosibirsk State Medical University to identify the features of the dispersion subphase of the cardiac cycle. In the present paper we have examined the 5-minute intervals cardiointervalography (CIG) to isolate RR-, QT-, ST-ranges in healthy children and children with acute respiratory diseases (ARD) in comparison. It is known that primary school-aged children suffer at ARD 5-7 times per year. Consequently, it is one of the most relevant problems in pediatrics. It is known that the spectral indices and indices of temporal analysis of heart rate variability are highly sensitive to the degree of intoxication during immunological process. We believe that the use of subphase analysis of heart rate will allow more thoroughly evaluate responsiveness of the child organism during the course of ARD. The study involved 60 primary school-aged children (30 boys and 30 girls). In order to assess heart rhythm regulation, the record CIG was used on the "VNS-Micro" device of Neurosoft Company (Ivanovo) for 5 minutes in the supine position and 5 minutes during active orthostatic test. Subphase analysis of variance QT-interval and ST-segment was performed on the "KardioBOS" software Biokvant Company (Novosibirsk). In assessing the CIG in the supine position and in during orthostasis of children with acute respiratory diseases only RR-intervals are observed typical trend of general biological reactions through pressosensitive compensation mechanisms to lower blood pressure, but compared with healthy children the severity of the changes is different, of sick children are more pronounced indicators of heart rate regulation. But analysis CIG RR-intervals and analysis subphase ST-segment have yielded conflicting trends, which may be explained by the different nature of the intra- and extracardiac influences on regulatory mechanisms that implement the various phases of the cardiac cycle.

Keywords : acute respiratory diseases, cardiointervalography, subphase analysis, cardiac cycle
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