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Functional Cardiopathy Syndrome In Modern Adolescents

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ABSTRACT

96 adolescents with functional cardiopathy were inspected. All children underwent clinical, laboratory, and instrumental examination. In all patients, the initial autonomic tone was assessed using a questionnaire, and autonomic reactivity was assessed using cardiac rhythmography. It was found that dysfunction of the autonomic nervous system is involved in the pathogenesis of functional cardiopathy, which determines the clinical symptoms in these patients, and autonomic disorders in the group of female adolescents are more significant than in male adolescents. Cardiorhythmography quite accurately reveals the imbalance of the body's adaptive resources for physical and mental stress, in this regard, it can be used to determine risk groups for the formation of cardiovascular pathology.

KEYWORDS

Functional cardiopathy, adolescents, cardiorhythmography.

INTRODUCTION

One of the most common complaints in children and adolescents is heart pain. In the development of this syndrome, the main role is played by the violation of the autonomic innervation of the cardiovascular system. It is

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also interconnected with the psycho-emotional characteristics of adolescents (3,4).

In this regard, there are questions of identifying functional changes in the heart and blood vessels in childhood and adolescence at the stage of "transitional" or "borderline" states, when the manifestation of the disease in the so-called classical form is not yet observed.

Thus, all this requires a comprehensive study and understanding of the role of ADS from the position of new achievements of modern medicine, since functional changes in the heart and blood vessels in adolescence are quite common and unpredictable in the manifestation and course of clinical symptoms, as well as disease outcomes in young people.

The study aimed to study the features of functional indicators of cardiac activity in adolescents with ADS of both sexes.

LITERATURE REVIEW

The object of the study was 243 adolescents 12-18 years old, in whom the dysfunction of the autonomic nervous system was confirmed clinically and laboratory-instrumental. The subjects were on outpatient treatment in the Teenage Center of the city of Tashkent (Table 1).

Table 1. Distribution of the surveyed by sex and age.

Surveyed	Girls	boys	Total
N	156	87	243
%	64,2%	35,8%	100,0%
Average age, years	15,3±2,6	14,0±2,2	14,7±3,1

The average age of the clinical manifestation of ADS in girls was 12.2 ± 1.8 years, in boys - 13.5 ± 2.1 years.

Among the surveyed adolescents with ADS, there were 1.8 times fewer boys than girls. This is probably due to less pronounced physical and hormonal changes in the pubertal period of the development of boys, which contributed to a less pronounced manifestation of this pathology.

The physical development of children was assessed according to the following indicators: basic anthropometric indicators (height, body weight, chest circumference). Anamnestic data (genealogical, obstetric history, life history, elucidation of possible causes of ADS) were also analyzed. The initial vegetative tone (IVT) in the subjects was determined using the table A.M. Wayne et al. [1981] adapted for children. The table shows clinical, electrophysiological, and laboratory data. To assess autonomic reactivity (AR), cardiointervalography (C) was studied, which was recorded in both horizontal and vertical positions. (1,2).

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Statistical processing of the obtained indicators was carried out by the method of variation analysis. The mean values (M), their mean error (± m), the differences between the mean values were determined, the matching criterion (x2), and the probability value (p).

The relationship between the studied parameters was determined using the linear correlation coefficient (± r). The results were assessed as statistically significant at p <0.05. To assess the direct correlation, the following definitions were looked at: up to ± 0.3 - small; from ± 0.3 to ± 0.7 - average; ± 0.7 to 1.0 large.

THE MAIN FINDINGS AND RESULTS

Based on the results of the questionnaire survey, we found that 243 adolescents (58.9%) out of 412 children who were examined at the Adolescent Center had a syndrome of autonomic dysfunction (ADS). At the same time, 50.9% of urban adolescents and 47.1% of adolescents who came from rural areas, 66.4% of girls and 32.8% of boys (p <0.001).

По According to our data, in the puberty period, the prevalence of ADS was high up to 17 years old, and then this indicator decreased by the age of 18 (Fig. 1). This can be explained by the end of puberty, in which the body is in a state of continuous growth and development, physiological features of this age are characterized by pronounced instability of endocrine, autonomic regulation of somatic functions.

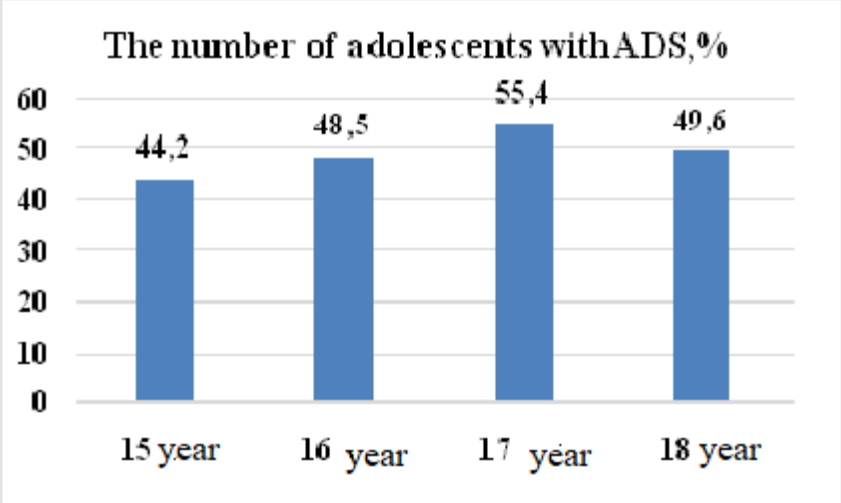

Figure 1. Age characteristics of the examined adolescents.

From the anamnestic data, the most significant predictors in the formation of ADS should be noted: pathology in the perinatal period (67.8%), craniocerebral trauma (27.9%), surgical interventions for various reasons, when general anesthesia was performed (15.7%). The main factors in the development of ADS in adolescent children should be attributed to

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hyperdynamic; according to our data, 25.5% of adolescent children with ADS do not play sports.

Regardless of the clinical form, all examined adolescents with ADS had complaints that are characteristic of the "general maladjustment syndrome" or "asthenic syndrome". These include: rapid fatigability (25.2%), disturbed sleep quality (20.5%), decreased current academic performance (39.4%), memory impairment (47.3%), meter sensitivity (29.5%) . According to some authors, such adolescents had a significant decrease in working capacity and a decrease in oxygen consumption, this indicator turned out to be genetically determined (3,5).

96 (39.5%) adolescents with ADS had complaints of pain of varying severity and localization. Thus, pain in the region of the heart (cardialgia) was observed in 49 (51.0%), headaches (cephalalgia) occurred in 69 (71.9%), abdominal pain (abdominalgia) was determined in 59 (61.4%), pain in the muscles of the back and limbs (fibromyalgia) was observed in 29 (30.2%). Algic symptoms were more common in various combinations than in isolation. In 43 (44.8%) adolescents, the pain symptom was of one localization (monoplegia), the rest had a combination of several algic symptoms (polymyalgia), so the presence of two algic symptoms in combination was noted in 56 (28.2%) adolescents, a combination of three symptoms - in 28 (29.2%) and a combination of all four algic symptoms - in 33 (34.4%). All groups were dominated by female adolescents.

We studied in more detail a group with, the so-called functional cardiopathy syndrome (FC). Girls complained 3.3 times more often than boys (76.5% and 23.5%, respectively), urban adolescents 1.7 times more often than district ones (62.7% and 37.3%, respectively). The study revealed that the pain did not radiate, was stabbing in 84.7% of cases, less often had an aching, pressing character, was localized in the apex of the heart - is 94.8% of adolescents, were often provoked by a stressful situation (75.8%), also by workloads (50.9%), or a combination of all these factors.

The subjects noted either weak (9.8%) or moderate-intensity of cardialgia (72.5%), a feeling of discomfort in the area of the heart (17.6%). According to the survey, pain in the region of the heart disappeared on its own, sometimes after taking sedatives. In addition to pain in the heart, adolescents often noted such symptoms of ASD as weakness, dizziness, palpitations, a feeling of cardiac arrest, fainting.

From the anamnesis, it was found that 82.6% of adolescents with FC were born from mothers with an unfavorable course of pregnancy of Herods, which could contribute to the occurrence of cardiovascular changes of a functional nature: Heredity - 62.8% of adolescents in this group are burdened by cardiovascular diseases.

The initial autonomic tone (according to A.M. Wein's table) in adolescents with FC syndrome was assessed as vagotonic in 43.1% of the subjects, sympathicotonic in 39.2% of the subjects, and the rest of the children as mixed. Among the sympathetic-tonic signs, the following symptoms occurred: restless sleep (50.9%), pallor of the skin (43.1%), white or pale pink dermographism (52.9%), palpitations (56;

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8%), tendency to lose weight with good appetite (37.3 %), vegetative paroxysms, sympathoadrenal type (7.8%), high blood pressure (23.5%), Of the vagotonic symptoms in the examined patients, redness (31.4%) or cyanosis of the extremities (33.3%), as well as hyperhidrosis of the palms and feet (37.2%), red, rising above the skin surface, were observed, dermographism (41.2%), poor tolerance of stuffy and crowded places of premises (54.9%), acne on the skin of the face (56.8%), often low blood pressure (33.3%), recurrent abdominal pain (58.8%).

According to the analysis of electrocardiograms, up to 70% of cases in adolescents are revealed various ECG - syndromes or their combinations without organic damage to the heart. The most common syndrome of early ventricular repolarization is detected (35.8%). This is due, according to the literature, to the imperfection of neurovegetative control of electrical activation of the heart. The second in frequency is conduction disturbances, namely, incomplete right bundle-branch block. Gis in 33 (27.5%) adolescent children, intraventricular conduction disorder in 11 (9.2%) children, intra-atrial conduction in 12 (10%) patients. In the occurrence of these changes, the asynchronism of the conduction of excitation in the right and left heart is important due to the discrepancy between the intensively growing contractile myocardium and the already formed conduction system of the heart in adolescence (5).

Moderate sinus arrhythmia was detected in 26 (53.1%) adolescent children, tachycardia - in 15 (30.6%) patients (of which 5 with tachyarrhythmia), in 16 (32.6%) adolescents bradycardia (of which 6 bradyarrhythmia), single extrasystoles. in 7 (14.3%) adolescents. The following combinations of ECG syndromes were also observed: extrasystole and early repolarization syndrome in two cases, PQ shortening, and early ventricular repolarization syndrome in 1 case. incomplete right bundle branch block and syndrome of early repolarization of the ventricles in 8 (16.3%) children, sinus arrhythmia, and syndrome of early repolarization of the ventricles in 5 (10.2%) children. Two-dimensional echocardiography was performed in 23 subjects with prolonged cardialgia to exclude organic pathology of the cardiovascular system and detect minor anomalies in the development of the heart. ECHO-KG revealed: significant - 4 (8.2%) and moderate mitral valve regurgitation (MVR) - 10 (20.4%), mitral valve prolapse (MVP) (0.2 - 0.3 cm.) - in 8 (16.3%) adolescents, the additional chord of the left ventricle - 12 (24.5%). All adolescents with FC had complaints of dizziness; in children with an additional notochord, complaints of headache and fainting also prevailed.

A comparative analysis of the indicators of cardiac rhythmography in adolescents with the cardiologic syndrome, depending on gender. In the group of girls, the prevalence of the influence of the sympathetic division of the ANS is more common than in the group of boys (41.6% and 17.6%, respectively). Significant differences in the response of the sympathetic division of the ANS to the load were revealed, so an adequate response was observed in 64.7% of adolescent boys and 27.2% of female adolescents, and an excessive response was observed in 5.9% of boys and 27.8% of girls. That

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suggests that autonomic disorders in the group of female adolescents are more significant than in male adolescents, this is also confirmed by the CIG data: in boys, asympathicotonic VR occurs in 17.5% of adolescents, and hyper sympathicotonia in 32.5%, in girls, asympathicotonic VR occurs in 10.7%, hyper sympathicotonia in 39.3%.

CONCLUSION

Thus, in the formation of functional cardiopathy in adolescents, a significant role is played by the dysfunction of the autonomic nervous system, which determines the variety of clinical symptoms in these patients. It should be noted that autonomic disorders in the group of female adolescents were more significant than in the group of male adolescents.

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