

PREVALENCE AND CAUSES OF AUTONOMIC DYSFUNCTION SYNDROME IN PUBERTY CHILDREN

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Annotation. This scientific study is devoted to the study of autonomic dysfunction syndrome (AVD), which is most often formed in adolescents. **The results of the analysis** of outpatient records of children are presented, the frequency of occurrence is determined and risk factors for AVD in students of secondary specialized educational institutions are identified. **The purpose of the study:** to study the frequency of occurrence and identify risk factors for the development of autonomic dysfunction in puberty children. **Materials and methods:** In order to study the frequency of occurrence and identify risk factors for the development of autonomic dysfunction syndrome, 100 adolescents enrolled in secondary specialized educational institutions aged 12-17 years were examined. A prerequisite was the informed consent of the teenager or parents to participate in the study. The study was conducted in the form of a questionnaire and a survey algorithm was created. Questionnaire forms with the identified factors were filled out for all examined adolescents. **Results and discussions** According to the survey data, it was revealed that the greatest factors of the development of AVD in children aged 12-15 years are mental fatigue (50%), hormonal imbalance, pre- and puberty (44%), stress during pregnancy (41%), etc. Therefore, taking into account the established risk factors, it is possible to predict the development of AVD in children, especially with burdened obstetric pathologies and hereditary factors. **Conclusion.** The problem of AVD in children and adolescents is relevant not only for pediatricians and pediatric cardiologists, but also for doctors of other medical specialties: therapists, neurologists, psychotherapists and endocrinologists. The syndrome of autonomic dysfunction (AVD) and its manifestations in children still cause a large number of questions to which there are the same set of answers, and not always unambiguous.

Keywords: autonomic dysfunction syndrome, puberty, risk factors

Relevance. Autonomic dysfunction syndrome (AVD) is the most frequent somatic diagnoses made by general practitioners and district pediatricians to young people. Vegetative disorders are one of the most urgent problems of modern medicine, which is primarily due to their significant prevalence. According to epidemiological studies, the prevalence of autonomic dysfunction syndrome (AVD) is very significant and ranges from 12.1 to 82% in the population[1–5]. Such contradictory information about the frequency of this nosology can be explained by different views on the essence of the disease, as well as insufficiently homogeneous approaches of practitioners to the criteria of diagnosis and its terminology (very often the concepts of “neurocirculatory dystonia” and “autonomic dysfunction syndrome” are wrongly used as synonyms in practice). Adolescence is one of the critical stages in a person's life, characterized by the completion of the process of development of the organism and formation in psychological and social terms. Due to the anatomical and physiological features characteristic of this period, the body becomes the most vulnerable and unprotected to the effects of various environmental factors[6]. In the development of AVD in young people, a certain adaptive vulnerability of the hormonal adjustment period, which is an independent powerful stress factor, is of particular importance. At this time, physiological catecholaminergic and sympatheticotonic hyperactivity is observed in young people and the impact of any adverse factor leads to the appearance of various motor-vegetative-trophic disorders of the heart and blood vessels[7]. Until now, there is no accurate information about the prevalence of AVD in students of secondary specialized institutions. The modern educational environment imposes rather high requirements on students, often exceeding their psychophysiological capabilities, and can thus contribute to the emergence of functional disorders on the part of various organs and systems. Constant mental and physical overload in students of secondary special institutions, violations of work, rest, nutrition, as well as a new climatogeographic environment[1] may lead to disruption of the adaptation process, the development of various functional disorders and diseases that reduce the effectiveness of the educational process [3]. The identification of signs of such maladaptation at the early stages of the development of AVD can allow preventive measures to be initiated and timely correction of the disturbed state, and possibly prevent the transformation of AVD into

organic pathology. With this nosology, general practitioners, cardiologists, neurologists especially often have to meet. Among patients with therapeutic and cardiological profiles, according to the summary data of various authors, this pathology is detected in 30-50% of cases[7–9]. A number of authors believe that the syndrome of autonomic dysfunction is a generalizing term that includes all local segmental disorders and generalized manifestations of the suprasedgmental level and systemic disorders in the work of internal organs (cardiovascular, respiratory system, gastrointestinal tract, etc.). The very definition of AVD suggests that this disease is based on dysfunction of the autonomic nervous system. The autonomic system regulates the activity of internal organs and is functionally divided into 2 parts: sympathetic and parasympathetic. As a rule, sympathetic nerve endings enhance the activity of organs, and parasympathetic, on the contrary, weaken. Almost any factor that exceeds the functional capabilities of the autonomic nervous system by the strength of its impact can contribute to the development of AVD. Some authors write that stress plays a leading role in the etiology of autonomic dysfunctions. Other authors claim that the triggering mechanism of AVD is perinatal pathology in the form of an unfavorable course of pregnancy and childbirth, contributing to a violation of the maturation of the cellular structures of the suprasedgmental apparatus, natal injuries of the central nervous system and the cervical spine (hypertension-hydrocephalic syndrome, vertebral-basilar insufficiency). Psychoemotional stress in young people associated with a dysfunctional home environment, conflicts with teachers, mental and physical fatigue can lead to the development of AVD. In the formation of AVD, either the sympathetic (sympathicotonia) or the parasympathetic system (vago-tonia) will prevail. Based on this, patients have a wide variety of complaints. The main clinical feature of patients with AVD is the presence of numerous complaints, a variety of different symptoms and syndromes, which is due to the peculiarities of pathogenesis, involvement of hypothalamic structures in the process. It is known that at a pediatrician’s appointment, AVD accounts for 50-75% of the number of children with non-infectious pathology who applied. Female persons get sick 4 times more often than male persons.

The purpose of the study: to study the frequency of occurrence and identify risk factors for the development of autonomic dysfunction in puberty children.

Materials and methods: In order to study the frequency of occurrence and identify risk factors for the development of autonomic dysfunction syndrome, 100 adolescents enrolled in secondary specialized educational institutions aged 12-17 years were examined. A prerequisite was the informed consent of the teenager or parents to participate in the study. The study was conducted in the form of a questionnaire and a survey algorithm was created. Questionnaire forms with the identified factors were filled out for all examined adolescents.

Results and discussions: Based on the identified risk factors for the development of AVD, a table1 has been compiled. The analysis of data on the place of residence revealed the frequent treatment of urban children than those living in rural conditions. There were 41 girls and 59 boys in the study group.

Table-1

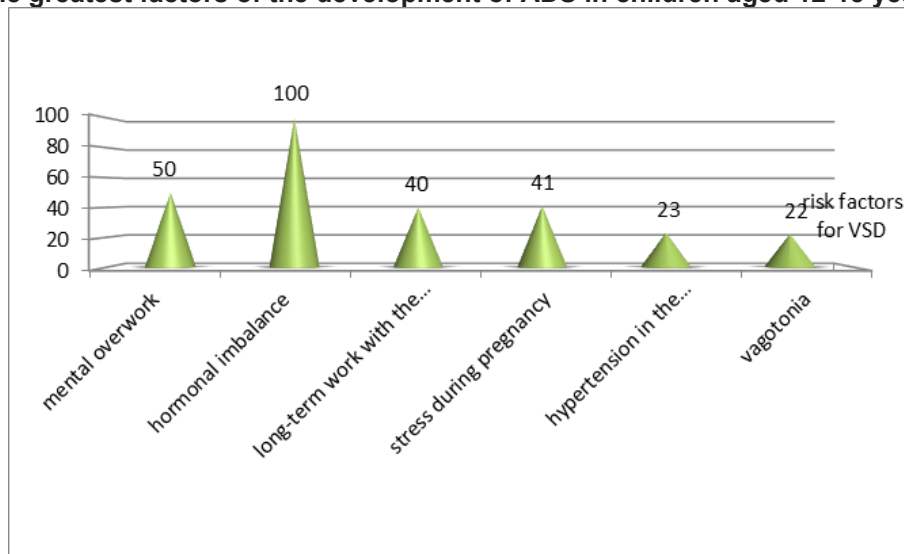
Risk factors for the development of AVD.

№	Factors	Frequency (n-100)				
		girls	Boys	Total %	village	city
I.Pathology of the perinatal and intranatal period						
1.	Hypertension of pregnant women	23	33	56	24	32
2.	Hypoxic condition of the fetus	32	29	61	28	33
3.	Afsixia in childbirth	7	11	18	8	10
4.	Traumatic brain birth injuries	5	8	13	8	5
5.	Intrauterine infections	22	17	39	22	17
6.	Harmful habits of a pregnant woman (smoking, alcoholism, drug addiction)	14	9	23	5	18
7.	Stress during pregnancy	30	29	59	18	41
8.	Perinatal encephalopathy	34	33	67	33	34

9.	Neuro-reflex excitability	21	16	37	19	18
II. Psychoemotional disorders						
10.	Comfort in the family, school	8	11	19	6	13
11.	Hyperopieces	16	21	37	8	29
12.	Mental overwork	33	28	61	11	50
13.	Hyper - responsiveness	18	14	32	18	14
14.	Stress	36	22	58	26	32
15.	Alcohol abuse in the family (family members)	5	9	14	3	11
III. Chronic foci of inflammation						
16.	Sinusitis	17	17	34	14	20
17.	Otitis media	8	27	35	27	8
18.	Allergic conditions	18	14	32	22	10
19.	Dental decay	30	27	57	28	29
20.	Infections of the genitourinary system	3	14	17	11	6
21.	Diseases of the ventricular intestinal tract	14	11	25	20	5
IV. Excessive physical activity						
22.	Sports competitions	3	16	19	5	14
23.	Long-term work with the computer	11	29	40	12	28
24.	Long-term TV shows	14	11	25	15	10
Y. Hereditary constitutional predisposition						
25.	Vagotonia in the family	9	13	22	11	11
26.	Hypertension	12	11	23	7	16
27.	coronary heart disease	2	4	6	1	5
28.	Diabetes mellitus	1	7	8	5	3
29.	Glaucoma	1	-	1	1	-
30.	Bronchial asthma in the genus	6	9	15	6	9
31.	Thyroxicosis	12	9	21	8	13
32.	Stomach and duodenal ulcer	-	3	3	1	2
YI. Adverse environmental conditions		3	7	10	3	7
YII. Hormonal imbalance						
30	Pre and puberty p-d	41	59	100	56	44
31	Diseases of the endocrine glands	1	9	10	3	7
32	Fatness	14	11	25	11	14
33	Normosthenic	8	13	21	18	3
34	Hypersthenic	14	12	26	11	15
35	Asthenic	19	34	53	27	26

Figure-1

The greatest factors of the development of ADS in children aged 12-15 years

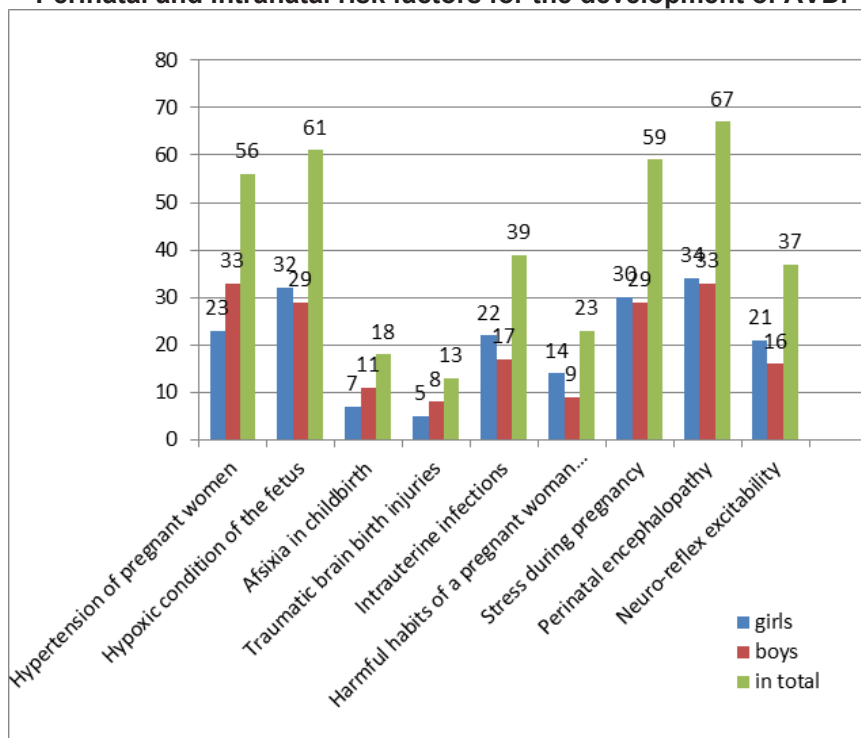


According to the survey data, it was revealed that the greatest factors of the development of AVD in children aged 12-15 years are mental fatigue (50%), hormonal imbalance, pre- and puberty (44%), stress during pregnancy (41%), etc.

Therefore, taking into account the established risk factors, it is possible to predict the development of AVD in children, especially with burdened obstetric pathologies and hereditary factors. It has been established that the trigger mechanism of SVD is perinatal pathology in the form of an unfavorable course of pregnancy (hypertension of pregnant women-56%, fetal hypoxia-61%) and childbirth, contributing to impaired maturation of cellular structures of the suprasegmental apparatus, natal injuries of the central nervous system and cervical spine (hypertension-hydrocephalus syndrome, vertebral-basilar insufficiency).

Figure-2

Perinatal and intranatal risk factors for the development of AVD.



Conclusion. The problem of AVD in children and adolescents is relevant not only for pediatricians and pediatric cardiologists, but also for doctors of other medical specialties: therapists, neurologists, psychotherapists and endocrinologists. The syndrome of autonomic dysfunction (AVD) and its manifestations in children still cause a large number of questions to which there are the same set of answers, and not always

unambiguous.

Thus, the presented results of the study indicate that this syndrome is one of the most frequent pathological conditions in children and adolescents, its prevalence among schoolchildren ranges from 40 to 60%. Starting from puberty, vegetative disorders occur in 25-80% of cases. The leading factors in the development of autonomic dysfunction include central nervous system damage in the perinatal period, hereditary predisposition, acute and chronic stress.

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