

## Pediatric Cardiac Anamnesis: Prevention of Additional Diagnostic Tests

### Abstract

Pediatrics is defined as the science of a healthy and sick child from birth to end of adolescence. Diseases of the cardiovascular system are the leading causes of mortality in adults, with frequent onset in childhood. The cardiologic examination starts with anamnesis in a pleasant atmosphere, refined space, enough time and patience, detailed measurements, and preferably a noncrying child. Anamnesis, regardless of the development of diagnostic procedures, still constitutes the basis of every clinical examination. The basic characteristics of pediatric cardiac anamnesis are comprehensiveness, that is, details, clarity, concurrency, and chronology. Proper and conscientiously taken anamnesis with a thorough clinical examination of a sick child is a solid protection against dehumanizing the relationship between a physician and patient. Pediatric cardiac anamnesis can be variable, completely negative, but very rich. Anamnesis should, first of all, clarify whether only a child is sick or it is perceived like that be his or her environment. Preschool and school-age children are normally attending anamnesis. High-quality, comprehensive medical history can keep the patient at one level of health care, with a strict focus primarily on the diagnostic processes, reduce crowds in specialist and subspecialist institutions, and make economic savings. A large number of patients in specialist and subspecialist clinics can be reduced by proper screening and by developing primary health-care system (from the local health-care center). Taking patient's medical history with thoroughness has a strong educative character for young doctors at the beginning of their careers.

**Keywords:** *Cardiology, pediatrics, prevention*

### Introduction

Pediatrics is defined as the science of a healthy and sick child from birth to end of adolescence. Diseases associated with the cardiovascular system are the leading causes of mortality in adults, with frequent onset in early childhood.

The cardiologic examination starts with anamnesis in a pleasant atmosphere, refined space, enough time and patience, detailed measurements, and preferably a noncrying child. The clinical cardiology examination uses a default inspection, palpation, percussion, and arterial blood pressure measurement. The introduction to the physical examination is a true measurement and comparison on the percentile curve of the body height and weight, although it would be advisable to measure both the head and thorax circumference.<sup>[1,2]</sup> Although additional diagnostic methods can be used in the treatment of the patient, their use is often questionable and not useful, mainly due to poor patient treatment at the initial

physical examination step in taking anamnestic data.

To provide a review of the significance and characteristics of pediatric cardiac anamnesis and to point out the significance of anamnesis in the differential diagnosis of pathological conditions, as well as to reduce the number of additional unnecessary specialist and subspecialist services.

### Pediatric Cardiac Anamnesis

The basic characteristics of pediatric cardiac anamnesis are comprehensiveness, or details, clarity, concurrency, and chronology.<sup>[3]</sup> Proper and conscientiously taking an anamnesis with a thorough clinical examination of a sick child is a solid prevention against dehumanizing the relationship between a physician and patient. Pediatric cardiac anamnesis can be variable, completely negative, but very rich [Table 1].<sup>[3-5]</sup> Anamnesis should, first of all, clarify whether a child is ill or it is considered as such by his or her environment. Preschool and school-age children are normally attending anamnesis.

Izet Masic<sup>1</sup>,  
Zijo Begic<sup>2</sup>,  
Nabil Naser<sup>3</sup>,  
Edin Begic<sup>4</sup>

<sup>1</sup>Department of Science Editing, AMNuBiH, Sarajevo, Bosnia and Herzegovina, <sup>2</sup>Department of Cardiology, Pediatric Clinic, CCU Sarajevo, Sarajevo, Bosnia and Herzegovina, <sup>3</sup>Department of Cardiology, Polyclinic Dr. Nabil, Sarajevo, Bosnia and Herzegovina, <sup>4</sup>Department of Pharmacology, Faculty of Medicine, Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina

**Address for correspondence:**  
Prof. Izet Masic,  
Department of Science Editing,  
AMNuBiH, Sarajevo, Bosnia  
and Herzegovina.  
E-mail: [izet.masic@gmail.com](mailto:izet.masic@gmail.com)

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**Table 1: Pediatric cardiac anamnesis**

Type of anamnesis	Necessary information
Prenatal and gestational anamnesis	Factors related to the mother
	Mother's illness
	Mother's infections
	Taking medicines
	Mother's habits
	Antenatal diagnostics
	Noninvasive and invasive methods
	Fetal echocardiography
	Factors pertaining to the perinatal period
	Course of the delivery
Postnatal anamnesis	Gestational age, birth weight
	Apgar score
	Heart murmur
	Cyanosis, tachypnea, the general aspect
	Signs of cardiac insufficiency (dyspnea, cyanosis, edema)
	Signs of lung involvement and reduced brain blood supply (frequent respiratory tract infections, cough, stinging, unconsciousness, hypoxic states, cramps)
	Signs of slower development and growth with low tolerance to effort
	Murmurs
	Palpitations, chest pain, joint pain
	Neurological symptoms
Family anamnesis	Diseases of another organ system
	Other symptoms
	Pediatric and cardiac examinations, medications, diagnostics
	Hereditary diseases
	The presence of congenital heart anomalies in the family
	Anamnestic data on rheumatic fever anamnesis or existence of acquired heart anomalies in the family

The main symptoms of cardiovascular diseases (CVD) involve cardiac insufficiency, signs of cardiac arrest, cyanosis, and syncope. The three basic symptoms of cardiac insufficiency in children are cyanosis, dyspnea, and edema, which ultimately, as well as the rest are not strictly specific to CVD. Anamnesis is always started with family history, i.e., issues related to the general health of a child's mother (diabetic cardiomyopathy, systemic lupus-congenital atrial obstruction, epilepsy, antiepileptic therapy, progesterone-estrogen therapy can reflect on the fetus). Also important is anamnesis pregnancy in relation to the possible teratogenic factor in the organogenesis phase, and

later in the fetal period, whether it is a physical, chemical, biological, medication factor, pregnancy bleeding, trauma, and similar. The most common biological factors affecting the fetus are viruses. In case of rubella, we noticed more frequent appearance of patent ductus arteriosus, pulmonary stenosis, as well as the effect of other viral infections such as herpes, cytomegaloviruses, AIDS, and Coxsackie B viruses. Mothers' habits in the form of smoking, drinking alcohol, or taking drugs are also cardiotropic. In the history of the neonatal period, important information are birth weight, Apgar score and heart rate verification. In the postnatal period, comparison with previous children is important, as well as tachypnea, pauses in feeding and skipping meals, changes in the color of the skin of the lips and the root of the nail, or sleep in the knee-chest position, as well as excessive sweating, which correlates with anomalies of the left-right shunt. During this period, the most common diagnostic problem is to determine the cause of heart disease and/or cyanosis (hypoxia). The anamnesis of the preschool child is primarily a response to the issue of growth and development (slowing growth and development, activity, intolerance to strain, recurrent hypoxemic seizures, cyanogenic anomalies, skin color). In adolescents and young adults, information about school, social moments, sports, shortness of breath, fatigue, headaches, precordial pain, or chest pain is telling us a lot [Table 2].<sup>[3-7]</sup> As already mentioned, three main symptoms of heart failure such as dyspnea, cyanosis, and swelling with recurrent respiratory tract infections, recurrent hypoxemic episodes, and cardiac syncope are very worrying symptoms and are not exclusively related to individual stages of growth and development. Seriousness and ultimately the lack of timing of the diagnosis are confirmed by the finding of secondary signs of hypoxia of the fingertips of the hands and feet (nails like hourglasses), gingival hyperplasia, expanded conjunctival lip, and nasal mucosa with congestion as well as the occiput, throat, and ocular background. The occurrence of cardiac arrhythmias with the localization of pulsation, ictus, hyperactivity of the pericardium, as well as the symptoms of the arteriovenous system are often observed in parents and even older children (palpitations, dizziness, loss of consciousness, convulsions, hemiparesis, paresthesia, spasms, pulmonary ulceration, itching, eczema, systemic elevation of body temperature, petechiae, etc.). The general appearance of the child, the position and mood of the child, the metabolism of the child, the somatic and psychological status retardation, the disparity between the upper and lower part of the body, as well as certain stigmata must be noticed in taking anamnesis or heteroanamnesis.

Changes of skin color, elasticity, body temperature, vein drawing, pulsations, nodes, xanthoma, bulged jugular veins, thyroid enlargement, telangiectasia, Osler nodes, Janeway lesions, splinter hemorrhage, and hyperhidrosis of nails are clinically significant signs that can be easily

**Table 2: Symptoms of heart diseases**

Life period	Symptoms
Neonatal and infantile period	The possibility of comparisons Gestational age, birth weight, Apgar test Heart murmur Pause in feeding Difficult feeding, slow increase in body weight Tachypnea, difficulty in breathing Increased sweating Change of the lips color and nail root (blush, blue) Sleep in a “knee-chest” position Stigmata or signs of genetic diseases
Period of a young child and preschool period	Increased sweating when drinking and sleeping Growth and developmental retardation (cardiovascular dystrophy) An increased tendency to respiratory infections Increased tendency to fatigue Reduced physical activity Change of skin color Intolerance to strain (fall asleep in the middle of playing) Avoiding peers
Period of schooling and adolescence	Fatigue Palpitations Dizziness and syncope Chest pain Headache Shortness of breath School, social moments, sport

noticed. When some change in the heart is diagnosed, it is very important, if it is a case of acquired anomaly of the heart, to take detailed anamnestic data that refer to the previous streptococcal infection, its treatment, and possibly any allergy to drugs, contrast, and food. In case of these anomalies, it is important to explain to parents the nature of the anomaly, its consequences, and also the purpose of diagnostics and therapy, including invasive diagnostics and its risk.<sup>[7,8]</sup> Anamnesis that is taken on the right way and a quality-based differential diagnosis based on anamnesis can significantly affect the cost of treatment as well as the overall health system savings. Comprehensive anamnesis

must be the first and unavoidable step in any treatment of a patient, as such can be of great significance in the treatment of the patient. Anamnesis can keep the patient at one level of health-care system, with a strict focus primarily on the diagnostic process and possibly the treatment. A large number of patients in specialist and subspecialist clinics can be reduced by proper screening and by developing primary health-care system (from the local health-care center). Making high-quality medical history, the primary focus has a strong educative character for young doctors at the beginning of their careers.

## Conclusions

Regardless of the development of diagnostic methods, which are the tools of each physician, the medical history of anamnesis is still the essence of each clinical examination and represents the basis of the medical activity itself. High-quality, comprehensive medical history can keep the patient at one level of health care, with a strict focus primarily on the diagnostic processes, reduce crowds in specialist and subspecialist institutions, and make economic savings.

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## Conflicts of interest

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