



PREVALENCE AND RISK FACTORS FOR HEART DISEASE IN CHILDREN

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✓ *Resume*

Congenital heart defects can be defined as anatomical abnormalities of the heart or great vessels that occur during fetal development, regardless of age at presentation. Children with congenital heart disease are at higher risk for other cardiovascular diseases, suggesting that risk assessment for these diseases should be considered in these patients. The purpose of this article is to provide a review of the literature on major congenital heart defects.

Conclusion. Early and accurate detection of congenital heart defects is an important step in accurate follow-up of potentially problematic pregnancies. Knowledge of the diagnostic aspect of comorbidity, the timing and type of treatment is of vital importance for the patient and for the physician.

Keywords: congenital heart defects, children, risk factors

РАСПРОСТРАНЕННОСТЬ И ФАКТОРЫ РИСКА СЕРДЕЧНЫХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ

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✓ *Резюме*

Врожденные пороки сердца могут быть определены как анатомические аномалии сердца или магистральных сосудов, возникающие во время внутриутробного развития, независимо от возраста на момент проявления. Дети с врожденными пороками сердца подвержены более высокому риску других сердечно-сосудистых заболеваний, и это говорит о том, что у этих пациентов следует рассмотреть возможность оценки риска этих заболеваний. Цель данной статьи — представить обзор литературы по основным врожденным порокам сердца.

Заключение. Раннее и точное выявление врожденных пороков сердца является важным шагом в точном последующем наблюдении за потенциально проблемной беременностью. Знание диагностического аспекта сопутствующей патологии, время и тип лечения имеет жизненно важное значение для самого пациента и для врача.

Ключевые слова: врожденные пороки сердца, дети, факторы риска

БОЛАЛАРДА ЮРАК КАСАЛЛИКЛАРИНИНГ ТАРҚАЛИШИ ВА ХАВФ ОМИЛЛАРИ

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Тугма юрак нуқсонлари клиник намён бўлиши вақтидан қатъий назар, ҳомила ривожланишида юрак ёки йирик томирларнинг анатомик аномалиялари натижасида келиб чиқади. Тугма юрак нуқсони бўлган болаларда бошқа юрак-қон томир касалликларининг ривожланиши даражаси юқори бўлиб, бу беморларда ушбу касалликлар пайдо бўлиши хавфини баҳолашни тақозо қилади. Шундан келиб чиқиб, қўйилган асосий мақсад - тугма юрак нуқсонлари бўйича чет эл ва маҳаллий илмий адабиётларни таҳлил қилишидир.

Хулоса. Тугма юрак нуқсонларини эрта ва тўғри аниқлаш муаммоли ҳомиладорликни қузатиб бориш учун муҳим қадамдир. Касалликни таъхислаш усуллари, даволаш вақти ва турини билиш бемор ва шифокор учун муҳим аҳамиятга эга.

Калит сўзлар: тугма юрак нуқсонлари, болалар, хавф омиллари

Relevance

A basic understanding of cardiac embryology, genetics, anatomy, and physiology helps with the initial evaluation, continuation of treatment, and timing of referral for children with congenital and acquired heart defects. Understanding the prevalence and risk factors for heart defects allows us to understand the possible sources of impaired development in children and how these defects can lead to clinically significant heart defects.

Congenital heart disease (CHD), one of the most common malformations in children, remains the leading cause of death in the younger age population. The review provides world statistics on the prevalence and mortality in CHD, and also considers the reasons for the variability of epidemiological data. The association of CHD with defects of other organs and systems is discussed. The role of various risk factors in the formation of CHD in the fetus is shown.

Congenital heart disease (CHD) is one of the most important problems in practical healthcare, especially in neonatology and Pediatrics. Currently, congenital heart defects remain the leading positions in terms of prevalence compared to other congenital malformations in children, which, according to various estimates, range from 18% to one third of all cases in the structure of congenital malformations [14].

The first definition of congenital heart disease (CHD) was given back in 1971. According to S.C. Mitchell, "CHD is a structural anomaly of the heart or intrathoracic parts of the great vessels, which actually or potentially leads to functional impairment". Currently, congenital heart diseases occupy a leading position in terms of prevalence in comparison with other malformations in children and remain the leading cause of their death. Moreover, a further increase in the prevalence of CHD is predicted. In part, this may be due to the improvement of diagnostic techniques associated with an increase in the qualifications of ultrasound diagnostic specialists and an improvement in imaging techniques [12].

Over the past century, the prevalence of CHD in children has varied significantly and ranged from 4 to 50 cases per 1000 live births. Such variability is explained by the difference in the criteria for their evaluation. Thus, the prevalence of pathology increases when taking into account children with small congenital heart diseases (for example, with a bicuspid aortic valve, small open ductus arteriosus, PDA). The incidence of moderate and severe CHD among children in the United States is about 6 cases per 1000 live births, increasing to 19/1000 when children with bicuspid aortic valve are included and up to 75/1000 when considering punctate muscular ventricular septal defects (VSD) [1].

In the 20th century, a large multicenter retrospective study was conducted in the United States to assess the prevalence of CHD in children with Down syndrome. When examining 1469 such children, CHD were identified in 44% of cases. The structure of the CHD was represented by the following malformations: atrioventricular canal (39%), secondary ASD (42%), VSD (43%), and tetralogy of Fallot (6%). Similar data were obtained in 2016: 50% of all children with Down syndrome had CHD. The structure of the CHD was also represented by the atrioventricular canal (50%), VSD (26.6%), ASD (10%), PDA (6.6%), Fallot's tetrad (6.6%) [2].

Birth defects, defined as abnormalities in body structure, function, or metabolism, affect 33 out of 1,000 US infants [11]. Congenital heart disease (CHD) accounts for the bulk of clinically significant birth defects and is an important component of childhood cardiovascular disease with an estimated prevalence of 6–9 CAD per 1,000 live births. During the first year of life, congenital heart defects are the leading cause of death from birth defects, with over 91,000 life years lost each year in the US.

Over the past half century there have been major advances in the scientific understanding of cardiovascular conditions in children and adolescents, and this progress has led to improved prevention and treatment of congenital and acquired heart disease. After this period of advancement, the current status of our understanding should be reviewed to provide a basis for future scientific efforts. [9]

The spectrum of acquired heart defects in children varies in different regions of the world, and there have been significant changes in the epidemiology of PPS in children in recent decades. In developed countries, Kawasaki disease has replaced rheumatic heart disease (RHD) as the most common CHD in children, while in resource-limited regions of the world, RHD dominates as the most common PHD (20,21). Preventive measures based mainly on penicillin. use and is associated with

economic and social development, very effective and almost eradicated RPM in developed countries. In Nigeria, three-year or four-decade reports indicated that “idiopathic cardiomegaly”, endomyocardial fibrosis (ECF), RPS, and infective pericarditis were the most common PPS among children [10].

Heart diseases are diseases that affect the structure and function of the heart. It could be acquired or congenital. Every year, about 15 million children die from heart disease. Heart disease in children entails a large financial burden. For example, in Western countries where the demand for children with heart disease is being met, it has been documented that almost 450 interventional or surgical procedures for heart disease are performed annually per 5 million inhabitants [14]. The opposite is true for developing countries in sub-Saharan Africa and in particular Nigeria, where there are 3-4 times higher birth rates and with a high burden of acquired heart diseases such as rheumatic heart disease, the need for cardiac intervention and cardiovascular services is much higher. [25-26]. The prevalence of various heart diseases in the 2021 Awoere T. Chinawa & Josephat M. Chinawa study, with 83.6% congenital heart disease and only 16.4% acquired heart disease. Acquired heart defects were cardiomyopathy (CMP) and rheumatic heart disease. [4]

A study covering more than ten years of activity at a major specialized echocardiography laboratory in Cameroon was conducted, reporting on the current model of PPP in children. found that RHD remains the most common PPS in children under 18 years of age, accounting for about 41% of PPS in the pediatric population, followed by pericardial disease, dilated cardiomyopathy, and endomyocardial fibrosis, respectively. Heart failure and clinical suspicion of RHD were the most common indications or reasons for referral for cardiac echography. Although based only on patients who have consulted a specialist. health care and therefore not representative of the prevalence of various PPS in the region within the population, however, our data provide insight into the modern era of echocardiography on the types of PPS common among children in this urban environment. Like Bode-Thomas et al. in Nigeria, more girls than boys have been found to have PPS [13].

Rheumatic heart disease (RHD), the most common cardiovascular disease in the world among people under 25 years of age, often results in significant potentially preventable morbidity and mortality. Acute rheumatic fever (ARF) can lead to clinical valvular disease, especially after clinical and/or subclinical relapses [7].

The study provided some very important information about current trends and patterns of heart disease in children. This is the first time that patterns of heart disease and related factors have been analyzed in this region. Among children with heart disease, 83.6% had congenital heart defects and only 16.4% had acquired heart defects [4].

Chelo and colleagues from Cameroon noted a prevalence of 73.8% and 25.8%, respectively, for congenital and acquired heart disease in a sample of 16,666 people, while Nadia et al. [5] noted a prevalence of 89.3% and 10.7%, respectively. Differences in prevalence may be due to study duration and sample size.

Ventricular septal defect was noted as the most common congenital disease in this study, with an upward trend of 34.4% compared to previous studies. In addition, Fallot's tetralogy occurs at a frequency of 11.6%, which is higher than the 9.2% found by Chinawa et al. in Enugu. This study found a similar increase in the incidence of other congenital heart defects compared to other studies. For example, the prevalence of PDA, ASD and AV channel defects obtained in this study was higher than in other studies [3].

This increase in trends in congenital heart disease can be attributed to the availability of equipment and manpower to diagnose heart disease. Awareness raising and health education are also contributing factors.

Rheumatic heart disease and cardiomyopathy (RCMP) are the most common acquired heart diseases identified in this study, with an increase in prevalence of 8.4% and 4.3%, respectively.

Rheumatic heart disease was observed in 6% of heart disease cases in a study in Mozambique and 5.1% in India. However, the prevalence in our study is higher compared to studies above. This upward trend can be explained by a regression in the campaign for hygiene, health promotion, early detection and treatment of tonsil infections, and environmental sanitation [6]. The most common type of cardiomyopathy (DCM) seen in this study is dilated cardiomyopathy (DCM). As can be seen from this study, there is also an increase in the prevalence of cardiomyopathy (CMP). Similarly, the incidence of CMP from 1998 to 2006 among Korean children was 0.28 per 100,000. In the USA it is 1.13 per 100,000, and in Australia it is 1.24 per 100,000 children [8].

Conclusion

Early and accurate detection of congenital heart defects is an important step in accurate follow-up of potentially problematic pregnancies. Knowledge of the diagnostic aspect of comorbidity, the timing and type of treatment is of vital importance for the patient and for the physician.

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Entered 09.03.2022