Original Article

Analysis Of Prevalence And Influence Of Unfavorable Factors In Development Of Congenital Heart Defects Among Children In Osh Region From 2019 To 2021 Years

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Abstract

Purpose of this work is to analyse the main risk factors for development of congenital heart disease in children of Osh region for period from 2019 to 2021 years.

Research materials and methods: to compile database, the results of the analysis of 950 medical records of pregnant women who gave birth to children with congenital heart defects (CHD) were used; 950 medical records of children with CHD aged from 0 to 15 years 11 months (ventricular / interatrial septal defect, atrioventricular canal, patent ductus arteriosus, transposition of great vessels, double vascular discharge from the right ventricle, severe CHD, Fallot's disease, Epstein's disease). All risk factors (medical, industrial, bad habits) presented in the documentation were recorded.

Results: obtained data indicate the presence of anemia, somatic pathology, toxicosis in the first half of pregnancy, unfavorable social factors were decisive in the formation of congenital heart disease. The majority of women (201 people) smoked, 192 people abused alcohol and 151 women took medications in the first half of pregnancy. In 91.60% of cases, women worked in hazardous industries, in 89.80% of cases, late registration with an antenatal clinic was detected, usually in 2-3 trimesters of pregnancy.

Output: in the formation of CHD, medical and non-medical risk factors (lifestyle, bad habits, social conditions, production factors) are important. A detailed study of the role of these risk factors in the development of congenital heart disease is of paramount importance for the organization of therapeutic and prophylactic measures aimed at their elimination.

Keywords: Congenital heart defects; risk factors; analysis; prevalence; influence; lifestyle; habits

INTRODUCTION

Identification and sufficient study of the main risk factors leading to the formation of malformations of the fetal cardiovascular system in the prenatal period is one of the priority areas for the development of pediatrics, in particular, neonatology [Zhang *et al,* 2017; Zhu *et al,* 2018; McCullough *et al,* 2019]. The most common congenital heart defects are ventricular septal defect, atrial septal defects, great vessel transposition, patent ductus arteriosus, and tetralogy of Fallot [McCullough *et al,* 2019; Bhardwaj *et al,* 2015]. The mechanisms of abnormal cardiac morphogenesis are associated with disruption of the normal embryological process during the first 8 weeks of pregnancy [Bhardwaj *et al,* 2015]. The process of heart development is a highly regulated process that requires a complex interaction between genetic and environmental factors [MacGrogan *et al,* 2018; Cowan and Ware, 2015]. The reasons leading to formation of congenital heart defects (CHDs) are quite numerous, but they can be combined into the following groups: hereditary (endogenous: chromosomal, gene mutations), exogenous and multifactorial [Dianatpour *et al,* 2019; Liu *et al,* 2018].

Of particular importance among exogenous causes is given to social and hygienic factors such as: parents' age, the presence of bad habits, work in hazardous industries, unfavourable living conditions). A detailed study of each of these factors is of great importance, since pathology of the cardiovascular system, which develops as a result of CHD formation in children, has a negative impact on function of other vital organs and systems.

Analysis of clinical manifestations in children showed main signs of heart damage due to heart failure symptoms varying by myocardium lesions. At the same time, the nature and severity of these signs depends on nosological and age related factors in sick children [Matkasymova *et al*, 2021].

Not so far statistical analyses were performed on analysis of physiological childbirth, obstetric service and genitourinary system disorders in adult and children in Osh region [Abdirasulova *et al*, 2022; Maamatova *et al*, 2022]. Children immunological condition features up to 3 years old age with iron deficiency anemia in the Nookat district of the Osh region were analysed [Turdubaev, 2020].

In this article, research aim is analysis of main risk factors in the development of CHD in children in Osh region for period from 2019 to 2021 years.

EXPERIMENTAL

This retrospective clinical study was conducted at the Osh Interregional Children's Clinical Hospital. To compile the database, results obtained after analysis of 950 medical records of pregnant women who gave birth to children with CHD; 950 medical records of children with congenital heart disease aged from 0 to 15 years 11 months (ventricular / atrial septal defect, atrioventricular canal, open ductus arteriosus, transposition of the great vessels, double outlet vessels from the right ventricle, severe congenital heart disease, Fallot's disease, Epstein's disease). The following documents were used as primary documentation form No. 003/E pr. MZ Krot 16.06.2001 No. 213. All risk factors (medical, industrial, bad habits) presented in the documentation were recorded.

RESULTS AND DISCUSSION

Comparative characteristics of the main risk factors identified in women in the Osh region who gave birth to children in the period from 2019 to 2021 years presented in Table 1.

Table 1: Comparative Characteristics Of The Main Risk Factors Identified In Women Of Osh Region Who Gave Birth To Children For The Period From 2019 To 2021 Years.

Risk factors in development of CHD	Absolut value	Percentage
Anaemia	1018	81.6%
Somatic disorders	886	71%
Toxicosis in the 1st half of pregnancy	920	73.7%
Toxicosis in the 2nd half of pregnancy	308	25%
Bad habit parents	215	17.2%
A burdened family history of malformations	168	13.5%
Adverse social factors	658	52.8%

Presented data indicate that the presence of anaemia, somatic pathology, toxicosis in the 1st half of pregnancy, unfavourable social factors were decisive in the formation of CHD. An analysis of the bad habits of pregnant women of this period is shown in Figure 1.

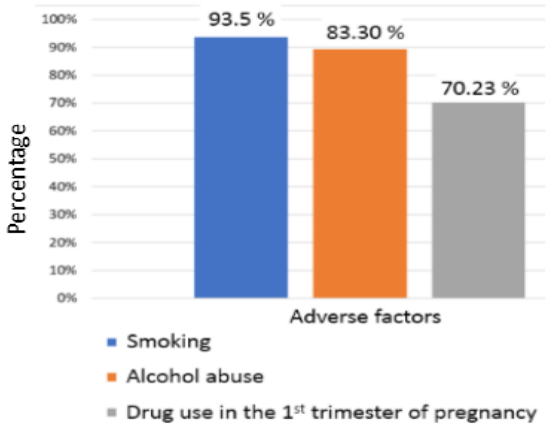

Figure 1: Comparative Characteristics of Bad Habits in Pregnant Women.

The data presented indicate that most of the women (201) smoked, 192 abused alcohol and 151 women took drugs in the first half of pregnancy. Comparative characteristics of main socio-hygienic factors obtained as a result of study the anamnesis of pregnant women are shown in Figure 2.

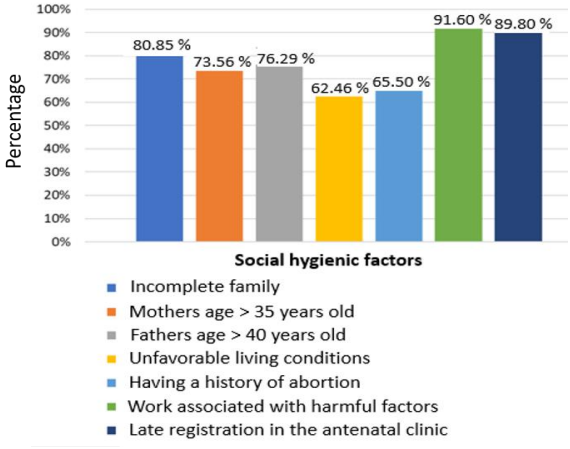

Figure 2: Comparative Characteristics Of The Main Socio-Hygienic Risk Factors.

Presented results indicate that in most cases 91.60% of women worked in hazardous industries. In 89.80% of cases, late registration in antenatal clinic was detected, usually in the 2nd to 3rd trimesters of pregnancy. This was accompanied by omission of screening for congenital anomalies by blood and ultrasound checks.

CHD are the most serious pathology in children in the first day of their life, since the physical development of child and the quality of child life depend on timely and correctly initiated treatment. An important role in the formation of CHD in utero is assigned to risk factors such as smoking, alcohol abuse, use of drugs in the 1st trimester of pregnancy, harmful production factors, and unfavourable living conditions. An analysis of the works of domestic and foreign authors indicates that there is a high incidence of risk factors in CHD [Materna *et al*, 2019; Duenas *et al*, 2019].

This fact was also confirmed in our study: the number of smokers were 201 people (93.50%), those who abused alcohol 192 people (89.30%). The work associated with harmful production factors was in the majority of studied cases (91.60%). Organization and implementation of measures to eliminate factors of adverse effects during pregnancy in the women body and fetus can contribute to a significant reduction in the birth rate of children with CHD.

CONCLUSION

At the end of research the following conclusions were made: 1) formation of CHD is depending on medical and non-medical risk factors including lifestyle, bad habits, social conditions, and production factor matters; 2) a detailed study of these risk factors role in the development of CHD is of paramount importance for organization of therapeutic and preventive measures aimed at their elimination. Study of registered CHDs dynamics among children in the Osh region from 2019 to 2021 considered their gender and age characteristics and is important for development of organizational measures for diagnosis and treatment as well as monitoring of CHD patients at earlier stage of disease [Matkasymova *et al*, 2021].

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