A study in a tertiary care hospital examined at the profile and risk factors for congenital cardiac abnormalities.

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Abstract

Congenital Heart Defects (CHDs) are an important cause of mortality and morbidity in children representing a major global health burden. It is thus important to determine their prevalence and spectrum and identify risk factors associated with the development of heart defects. A case-control study was conducted from February 2014 to August 2015 at the Pediatrics and Cardiology Center, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India. All patients referred with complaints of CHD or clinical examination was further evaluated with echocardiography. For echocardiography, patients with CHD were included as cases and patients with normal echocardiography were included as controls. A healthy control was also included. Therefore, 400 cases and 400 controls were identified. Preterm infants with patent ductus arteriosus and foramen ovale and preterm infants with acquired heart disease were excluded. We further investigated risk factors in cases and controls.

Keywords: Age, Congenital heart disease.

Introduction

Congenital Heart Defect (CHD) is the most common defect of all birth defects and represents a major global health problem. Heart defects account for 28% of all major birth defects the global prevalence of CHD has been estimated at 8–10 per 1,000 live births, but the prevalence varies widely by region. They mostly occur in new-borns, infants and children. In our country, it is not uncommon to see adults with uncorrected CAD. The reported prevalence of CHD in our country appears to have increased dramatically in the last few decades, although this is due to the diagnosis. It is most likely due to improvements in procedures, especially echocardiography. As many home births in India are performed by unskilled health professionals, there are not many studies related to different CAD profiles and risk factors [1].

CHD is a fairly common group of illnesses, but they are largely uncontrolled in our country. It accounts for the majority of the country's neonatal and infant mortality. The burden of CHD in India is probably higher than in any other country in the world due to the fact that more children are born in India than anywhere else. Low socioeconomic status and low availability of echocardiography escape detection. Uttar Pradesh is India's most populous state. With an Infant Mortality Rate (IMR) it makes her the fifth most populous country in the world after China, India, the United States and Indonesia, may increase. This study was conducted to explore the profile and associated risk factors of CHD patients in western Uttar Pradesh, so that preventative measures can be taken to prevent CHD during pregnancy [2].

Cases and controls were compared for various risk factors for developing heart disease. Univariate analysis found that paternal age, obstetric history, prenatal febrile illness, and older mother increased her risk of CHD, while multivitamin use decreased risk. Parental consanguinity, drug use, and maternal diabetes were not significantly associated with heart disease. All risk factors found to be significant in univariate analysis were further subjected to multivariate logistic regression analysis. Older parental age, maternal febrile illness during pregnancy, history of abortion/stillbirth, and lack of dietary multivitamins and folic acid were found to be significantly associated with the development of heart defects in offspring [3].

Our study found that maternal age groups 20–30 and 30 years and older had a higher risk of CHD in their offspring than the <20 years group. Compared with the age group of mothers under 20, the probability of CAD for the age group of mothers aged 20-30 was 2.509, and the probability of CAD for the group of mothers aged 30 and over was 2.868. Miller's study found that the prevalence of CHD increases when the mother's age exceeds her 35 years. Maternal aging is associated with several genetic abnormalities. The association with Down syndrome, which has a high incidence of CHD, is also well documented. Taking multivitamins and folic acid in early pregnancy was found to have a protective role against CAD.

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Mothers who took multivitamins and folic acid in early pregnancy had a lower risk of CHD [4].

Hungarian randomized study. Both the Atlanta and Atlanta population-based studies showed similar associations, with mothers taking multivitamins or folic acid supplements during the first trimester of pregnancy with a 60% and 25% risk of CHD in their offspring, respectively. This is important because folic acid supplementation may help prevent both neural tube defects and CAD. In our study, the number of mothers diagnosed with gestational diabetes was small. The reason may be insufficient prenatal detection and follow-up of the majority of mothers who lead to undiagnosed diabetes. Presentational diabetes is strongly associated with the development of heart disease. Diabetes screening remains a neglected area, with most mothers never or only once screened [5].

Conclusion

The profiles of various CHDs in our study were largely similar to existing literature. Although many of the CHDs were discovered in infancy, many were missed and presented late due to lack of education and delayed referral. We found significant associations between the incidence of coronary artery disease and aging of parents, poor obstetric history, and febrile illness during pregnancy, and folic acid-restricted diet. Prenatal care and counselling for expectant mothers should be a priority. This includes multivitamin and folic acid supplementation, diabetes screening, and, if possible, a detailed fatal heart examination in mothers who have never given birth or who have a febrile illness during the first trimester of pregnancy. Caution drug use should be avoided and all drug use during pregnancy should be properly documented to assess teratogenicity effects.

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