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FREQUENCY OF CONGENITAL HEART DISEASE AMONG CHILDREN FROM BIRTH TO 12 YEARS AGE

Abstract: Objective: To find out frequency of congenital heart defects among children up to 12 years of age.

Study design and Duration: This is a cross sectional study of observational type started in January 2018 and completed in August 2018 comprising on total duration of 8 months.

Setting: Study was conducted at a tertiary care teaching hospital “National Institute of Cardiovascular Disease” in a Karachi a city of Pakistan.

Patients and Methods: Total 60 children were included in this study having ages from birth up to 12 years. Some of these cases were followed on OPD basis and others were admitted in the study institution. A performa was designed containing all relevant questions such as age, presenting complaint, history of congenital heart disease in siblings or family, way of birth elective or emergency cesarean, spontaneous birth and history of any maternal infection before birth of child. Proper history was taken about the heart disease of children from their parents and proper examination of cases were done and all important points of history and examination were written down. ECG, echocardiography and rest of the necessary investigations were done within in the hospital and its expenses were not put on the parents. Consent was taken from parents of children for including children in study and also from ethical committee of the hospital. P-value less than 0.05 was considered significant and above this insignificant. Data was analyzed on SPSS version 2014 and frequencies and percentages were calculated. Results were presented via tables and graphs.

Results: In this study 60 children were included of various age groups from birth to 12 years age. There were 40% cases having age up to 3 years, 23.3% between 4-6 years, 20% between 7-9 years and 16.7% between 10-12 years of age. Presenting complaints include respiratory distress in most of the cases (55%), cyanosis in 11.7% cases, anorexia in 15% cases, edema in 3.3%, clubbing of fingers in 6.7% and syncope was in 8.3% cases. Various congenital heart defects reported were ASD in 33.3%, PDA in 21.7%, VSD in 18.3%, Myxomatous valve in 15%, congenital heart disease in 5%, double outlet right ventricle seen in 3.3%, transposition of great arteries in 5% cases, Atrio ventricular septal defects in 6.7% cases, tetralogy of fallots in 3.3%, persistent superior vena cava in 3.3% and cardiomyopathy was seen in only one case.

Conclusion: Atrial septal defect is a most common congenital heart defect and respiratory distress is most common presenting complaint in children with CHD. There are many risk factors of this abnormality out of which common are maternal infections during pregnancy and use of drugs during first trimester.

Key words: heart defects, congenital, ASD, VSD.

Language: English

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Introduction

Birth defects and congenital anomalies are common in underdeveloped and developing countries. Among these anomalies congenital heart disease is most common.¹ Risk factors of these abnormalities include inheritance, cousin's marriages, alcoholism, drug abuse, any infection of mother during pregnancy and some anticancer and other medications during pregnancy cause birth defects. Radiation exposure is another very important risk factor.² When there is any birth defect in a child then it is highly chance of birth defects in next siblings. Birth defects can be diagnosed during pregnancy by ultrasound, diagnostic amniocentesis and chorionic villus sampling etc. Now a days there are many latest investigations to diagnose any congenital abnormality during initial pregnancy and hence parents can decide to keep pregnancy continue or terminate it. Major factors determining development of congenital anomalies are related to mother and few are related to fetus. These abnormalities include heart defects, syndactyly, polydactyly, cleft lip, cleft palate, renal agenesis, down's syndrome, meningocele, meningomyelocele and anencephaly etc. Congenital heart disease include atrial septal defect, ventricular septal defect, transposition of great vessels, patent ductus arteriosus, myxomatous valve, pulmonary stenosis, persistent left superior vena cava, atrio ventricular septal defects and cardiomyopathy etc. Fetus with congenital abnormality is difficult to born spontaneously due to its structural defect so most of the time cesarean section is needed. In our study 58.3% were born spontaneously while 41.7% were born via cesarean section or via vacuum assisted delivery. According to a study done in Pakistan rate of congenital heart disease is 4 per 1000 live births.³ Same prevalence is found in India as well. Some other underdeveloped countries have higher prevalence while in developed countries like UK, America and Australia etc this rate is low. Public awareness about risk factors of congenital abnormalities and taking measures to diagnose it in initial pregnancy and to avoid in next pregnancies can reduce its rate.⁴ Doctors with Skills of diagnosing this abnormality are required in BHU, RHC, THQ and DHQ level in peripheral areas where its rate is high due to insufficient health services in remote areas.⁵

Patients and Methods

This is an observational study conducted in a tertiary care hospital Shahida Islam Teaching Hospital located in Bahawalpur a city of Pakistan. This study was completed in a duration of eight months. Total 60 children were included in this study having ages from birth up to 12 years. Some of these cases were followed on OPD basis and others were

admitted in the study institution. A performa was designed containing all relevant questions such as age, presenting complaint, history of congenital heart disease in siblings or family, way of birth elective or emergency cesarean, spontaneous birth and history of any maternal infection before birth of child. Which parents did not give consent; their children were not included in the study. Proper history was taken about the heart disease of children from their parents and proper examination of cases were done and all important points of history and examination were written down. History of occupation, radiation exposure and malignancy or chemotherapy from mothers was taken from mothers. ECG, echocardiography and rest of the necessary investigations were done within the hospital and its expenses were not put on the parents. Consent was taken from parents of children for including children in study and also from ethical committee of the hospital. P-value less than 0.05 was considered significant and above this insignificant. Data was analyzed on SPSS version 2014 and frequencies and percentages were calculated. Results were presented via tables and graphs. Babies with other congenital abnormalities were also screened. History about mode of delivery and any maternal infection was also taken and documented.

Results

Total 85 cases were reported in the study institution with congenital anomalies out of which 60 had congenital heart disease. In this study 60 children were included of various age groups from birth to 12 years age. There were 24(40%) cases having age up to 3 years, 14(23.3%) between 4-6 years, 12(20%) between 7-9 years and 10(16.7%) between 10-12 years of age. Presenting complaints include respiratory distress in most of the cases 33(55%), cyanosis in 7(11.7%) cases, anorexia in 9(15%) cases, edema in 2(3.3%), clubbing of fingers in 4(6.7%) and syncope was in 5(8.3%) cases. Various congenital heart defects reported were ASD in 20(33.3%), PDA in 13(21.7%), VSD in 11(18.3%), Myxomatous valve in 9(15%), congenital heart disease in 3(5%), double outlet right ventricle seen in 2(3.3%), transposition of great arteries in 3(5%) cases, Atrio ventricular septal defects in 4(6.7%) cases, tetralogy of fallots in 2(3.3%), persistent superior vena cava in 2(3.3%) and cardiomyopathy was seen in only one case. Other anomalies reported were cleft lip and palate in 7(11.6%), Down's syndrome in 5(8.3%), polydactyly and syndactyly in 3(5%) cases. History of maternal infection during pregnancy was found in 5(8.3%) cases. Mode of delivery was spontaneous vaginal delivery in 35(58.3%), elective LSCS in 10(16.7%), emergency LSCS in 8(13.3%) and vacuum delivery in 7(11.7%).

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Table-1. Age distribution of cases in study group (N=60).

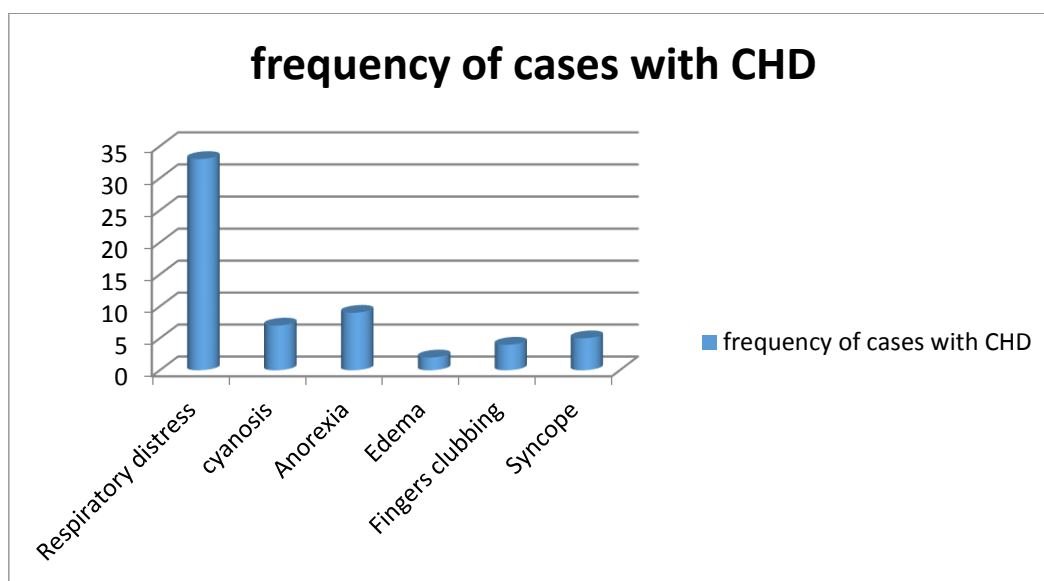
Age of cases (year)	Number of cases	%
Birth-3	24	40
4-6	14	23.3
7-9	12	20
10-12	10	16.7
Total	60	100

Table-2. Various types of congenital heart defects and their frequency among study group

Types of congenital heart disease	Number of cases (N)	%
Atrial Septal Defect (ASD)	20	33.3
Patent ductus arteriosus (PDA)	13	21.7
Ventricular septal defect (VSD)	11	18.3
Myxomatus valve	9	15
Complex congenital heart disease	3	5
Right ventricle double outlet	2	3.3
Tetralogy of Fallots	2	3.3
Persistent left superior vena cava	2	3.3
Hypertrophy cardiomyopathy	1	1.7
Transposition of great vessels	3	5
Atrio ventricular septal defect	4	6.7

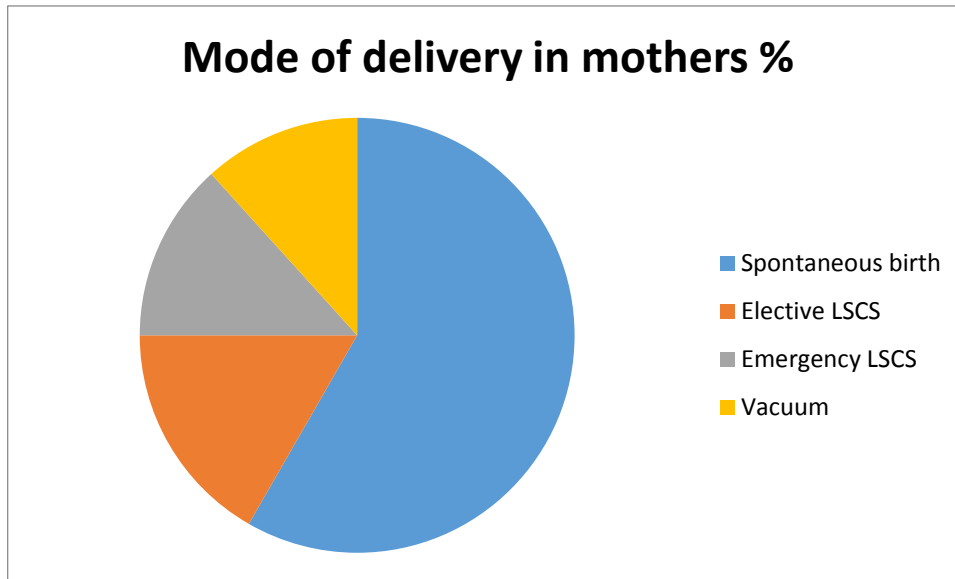
Table-3. Other congenital anomalies associated with CHD

Associated other anomalies	N	%
Down's syndrome	5	8.3
Polydactyly, syndactyly	3	5
Cleft lip/cleft palate	7	11.7
Renal agenesis	1	1.7



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Discussion

Congenital anomalies are common among children of underdeveloped countries associated with high morbidity and mortality rate.⁶ Birth defect in heart is the most common among other anomalies. Such babies have very less survival rate. Usually most of them die in early age and which survive they have lifelong morbidity.⁷ Risk factors of these abnormalities include inheritance, cousin's marriages, alcoholism, drug abuse, any infection of mother during pregnancy and some anticancer and other medications during pregnancy cause birth defects. Radiation exposure is another very important risk factor.^{8,9} When there is any birth defect in a child then it is highly chance of birth defects in next siblings. Birth defects can be diagnosed during pregnancy by ultrasound, diagnostic amniocentesis and chorionic villus sampling etc. Now a days there are many latest investigations to diagnose any congenital abnormality during initial pregnancy and hence parents can decide to keep pregnancy continue or terminate it. Major factors determining development of congenital anomalies are related to mother and few are related to fetus.¹⁰ This is an observational study conducted in a tertiary care hospital Shahida Islam Teaching Hospital located in Bahawalpur a city of Pakistan. This study was completed in a duration of eight months. Total 60 children were included in this study having ages from birth up to 12 years. Some of these cases were followed on OPD basis and others were admitted in the study institution. A performa was designed containing all relevant questions such as age, presenting complaint, history of congenital heart disease in siblings or family, way of birth elective or emergency cesarean, spontaneous birth and history of any maternal infection before birth of child. Which

parents did not give consent; their children were not included in the study. Presenting complaints include respiratory distress in most of the cases 33(55%), cyanosis in 7(11.7%) cases, anorexia in 9(15%) cases, edema in 2(3.3%), clubbing of fingers in 4(6.7%) and syncope was in 5(8.3%) cases. History of maternal infection during pregnancy was found in 5(8.3%) cases. Mode of delivery was spontaneous vaginal delivery in 35(58.3%), elective LSCS in 10(16.7%), emergency LSCS in 8(13.3%) and vacuum delivery in 7(11.7%). ECG, echocardiography and rest of the necessary investigations were done within in the hospital and its expenses were not put on the parents. Consent was taken from parents of children for including children in study and also from ethical committee of the hospital. P-value less than 0.05 was considered significant and above this insignificant. Major factors determining development of congenital anomalies are related to mother and few are related to fetus. These abnormalities include heart defects, syndactyly, polydactyly, cleft lip, cleft palate, renal agenesis, down's syndrome, meningocoele, meningocele and anencephaly etc. Congenital heart disease include atrial septal defect, ventricular septal defect, transposition of great vessels, patent ductus arteriosus, myxomatous valve, pulmonary stenosis, persistent left superior vena cava, atrioventricular septal defects and cardiomyopathy etc.¹¹⁻¹³ Fetus with congenital abnormality is difficult to born spontaneously due to its structural defect so most of the time cesarean section is needed. Neonates with CHD mostly have immature lungs and develop respiratory distress after birth and they need NICU care. So ventilator should be present in health center where such baby is being delivered.^{14,15}

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Conclusion

Congenital heart defects are most common among all birth defects. Such babies have less chances of survival with high morbidity and mortality rate. According to our study atrial septal

defect is most common congenital heart disease and usual presenting complaints are respiratory distress and cyanosis and anorexia. This is associated with other anomalies as well like cleft lip and palate and Down's syndrome.

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