

Pattern of congenital heart disease at Ibn-Seena Teaching Hospital- Mosul/Iraq

Bashar Shakir Mustafa
Pediatric department/ Ibn-Seena Teaching Hospital
Clinical pharmacy department/Mosul university

Abstract

The vast majority of congenital heart disease (CHD) have no known cause, congenital heart defects are the most commonly occurring birth defect, which happen during the first crucial eight weeks of the baby's development. CHD range from simple to complex problems, some can be watched by the child's physicians and managed with medication and others will require surgery. Early recognition has great implications on prognosis. **Objectives:** To study age, gender distribution and frequency of congenital heart disease in children referred to echocardiography in Ibn-Seena Teaching Hospital.

Method: This is a retrospective descriptive study on all patients with the suspected diagnosis of congenital heart disease referred for echocardiography over a period of two years from February 2008 to February 2010. Patients from day one of life till 14 years were included. The study was conducted in the pediatric cardiology clinic in Ibn-Seena Teaching Hospital.

Result: A total of (676) children were included. There were 359 males (53.1%) and 317 females (46.8%) with a ratio of 1.13:1. About Eighty five percent (84.9%) of the children had a cyanotic cardiac lesions, Ventricular septal defect followed by atrial septal defect, pulmonary valve stenosis and patent ductus arteriosus, were the most common A cyanotic congenital heart lesions. Fifteen (15.09%) of them had cyanotic cardiac lesions, Tetralogy of Fallot (TOF) followed by transposition of the great arteries were the commonest cyanotic congenital heart lesions. There was a males dominance in A.S, P.S, TOF and Atrioventricular septal defect (69.2%, 66.6%, 65.5% and 64.2% respectively). More females had PDA (66.1%).

Conclusion: The majority of patients with CHD detected have non-cyanotic CHD. VSD is the commonest non-cyanotic lesion and TOF cyanotic lesion. In order to avoid complications, early detection of congenital heart disease is of most importance for proper management 2D-echo with Doppler examination forms the gold standard for diagnosis

Keyword: congenital heart disease, echocardiography, ventricular septal defect.

Introduction

Congenital heart disease, in a definition proposed by Mitchell et al. (1), is "a gross structural abnormality of the heart or intrathoracic great vessels that is actually or potentially of functional

significance". This definition excludes functionless abnormalities of the great veins, such as persistent left superior cava (even though this might be important during surgery), It usually excludes congenital arrhythmias such as the long QT and the Wolf-Parkinson-White

syndromes, even if the disorders are based on abnormalities present at birth Lesions such as hypertrophic or dilated cardiomyopathy are usually not regarded as CHD(1). Lesions with subtle physical findings, such as atrial septal defects (ASDs), might not be detected until they appear in adult life (2,3)., some neonates with severe critical heart disease may die in the first few days after birth, and without cardiologic or autopsy diagnosis would not be correctly identified (4,5). On the other hand, the more intensive studies, for example, of all neonates in a nursery, will detect all forms of CHD (5). Despite improved medical care CHD, is one of the leading causes of neonatal mortality(6).CHD may present in different ages from birth to adolescence age group(2),most cases are asymptomatic and discovered during routine checkup (5),other presentation can range from cyanosis,clubbing of fingers to full congestive heart failure.

Abbreviations and Acronyms

AS	_ aortic stenosis
ASD	_ atrial septal defect
AVSD	_ atrioventricular septal defect
BAV	_ bicuspid aortic valve
CHD	_ congenital heart disease
Coarc	_ coarctation of the aorta
PDA	_ patent ductus arteriosus
PS	_ pulmonic stenosis
SV	_ single ventricle
VSD	_ ventricular septal defect

Patients and Methods

This is a retrospective chart review conducted in the Pediatric echocardiatic clinic from February 2008 to February 2010 in Ibn-Seena Teaching hospital in M0sul/ Iraq . All children with the confirmed diagnosis of congenital heart disease were included. Age ranged from day 1 till 14 years of age.

Clinical data were reviewed.

Consideration was given to total number of cases with CHD, age at the diagnosis ,sex distribution and the type of CHD,. Patients with syndromes were excluded, Premature babies were also excluded. Patients with acquired heart diseases such as rheumatic heart or mitral valve prolapse were also not included.

Results

A total of (676) children were included. There were 359 males (53.1%) and 317 females (46.8%) with a ratio of 1.13:1. Five hundred and seventy four children(84.9%) had Acyanotic cardiac lesions as shown in figure (1). Cyanotic cardiac defect were seen in 102 patients (15.09%).Ventricular septal defect followed by atrial septal defect, pulmonary valve stenosis , patent ductus arteriosus, and combind V.S.D.and A.S.D. were the most common acyanotic congenital heart lesions 34.17%, 23.52%, 10.65%, 10.5%,4.14% respectively. Whereas Tetralogy of Fallot (9.02%) followed by transposition of the great arteries (2.51%), complex heart defect(2.36%) and tricuspid atresia (1.18%) were the commonest cyanotic congenital heart lesions as shown in Table 1.

Female dominance of PDA (66.1%) was seen whereas a males dominance in AS,PS, ,TOF and AVC at 69.2,66.6%,65.5% and 64.2% respectively.

Discussion

Congenital heart diseases are an important group of diseases that cause great morbidity & mortality in children(7). The aim of this study was to show the pattern Of CHD in Nineveh province and how its differ from other medical centers and also this reflect our experience in diagnosis and follow up and compare it to others. It is generally accepted that the improvement of diagnosis, attention or awareness

among general pediatricians and early referral to pediatric cardiologists has resulted in an increase of reported prevalence of CHD (6),(7).

The present study indicates that CHD is still an important pediatric cardiac problem in Iraq need more attention for early diagnosis and early management to prevent secondary complication.

To the best of our knowledge there are no other local studies and reports about cases of CHD at Al - Nineveh govern ate. Total of (676) patients with CHD engaged in this study were males and females represent (53.1%) and (46.8%) respectively with male to female ratio of 1.13:1. there was no significant difference in sex ratio corresponding with equal frequency observed in other study (8).

Patients diagnosed with Acyanotic CHD represented (84.9%) and the remaining were cyanotic. This correlated near well with international studies. It is inevitable that some cases would have escaped detection and referral which mainly includes neonates, born at home or who die without medical attention.

VSD is found to be the most common Acyanotic CHD (34.71%) in this study. This is similar to what reported in others studies except that shown in prince Hashem Hospital that found higher than other studies as shown in Table 2. (9),(10). Worldwide, VSD is the most common acyanotic CHD accounting for 25-30% of all CHD (9). This may be explained by the difference in genetic makeup and ethnicity.

ASD ranked second in frequency accounting for 23.5% this is higher proportion to Other studies this is due to the proportion of atrioventricular canal included within ASD, were other studies have shown comparable results. See Table 2. Table 2- Comparative study of lesions with other studies.

PDA was seen in 10.5% of cases. This is near comparable to other studies except seen to be lower than that reported in Saudi Arabia . The difference can be explained by the exclusion of all premature babies in our study.

AS its show lower limit to other studies this may accuse to difficult in diagnosis or experience skill, on other hand PS show higher proportion to other studies but come in comparable to that seen in Saudi Arabia. Among the cyanotic lesions Tetralogy of Fallot was the commonest cyanotic congenital heart anomaly followed by transposition of the great arteries being 9.02% and 2.5% respectively. This is comparable to worldwide incidences (5-7%)(9),(10), (11).

There was a males dominance in AS, P.S,AVC and TOF heart defects (70% ,67%,66.6% and 66.6% respectively). This Male predominance in pulmonary stenosis is similar to that found in Alexandria, Egypt (12), also consistent with other studies in the UK and Saudi Arabia that have shown male predominance in aortic valve diseases (9), (13). There was a female predominance in PDA (65.9%) in our study This is consistent with that reported by Kenna in Liverpool(13).

The multifactorial etiology of CHD involves the chromosomal abnormality, maternal diabetes, smoking, teratogenic drug and maternal infection during early pregnancy(11, 14). These most likely can explain the difference in reported incidences in different countries.

CHD has a multifactorial nature of inheritance(14). This emphasizes the importance of genetic counseling to patients with family history of congenital heart diseases(14-15).

Conclusion

This study gives an overview of the pattern of congenital heart disease at Ibn-Seena teaching Hospital.

The majority of patients with congenital heart disease detected have non-cyanotic CHD. TOF is the commonest cyanotic lesion and VSD non-cyanotic lesion. In order to avoid complications early detection of congenital heart disease is of utmost importance for proper management.

2D-echo with Doppler examination forms the gold standard for diagnosis.

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Table 1. Relative distribution of Acyanotic and cyanotic CHD

Cardiac lesions	Number	Percentage
VSD	231	34.171
ASD	159	23.52
PS	72	10.65
PDA	71	10.5
VSD+ASD(COMBIND)	28	4.14
AS	13	1.923
TOF	61	9.02
TGA	17	2.51
COMPLEX DEFECT	16	2.36
TRICUSPID ATRESIA	8	1.18
TOTAL	676	100%

Figure (1): show distribution of acyanotic and cyanotic heart defects

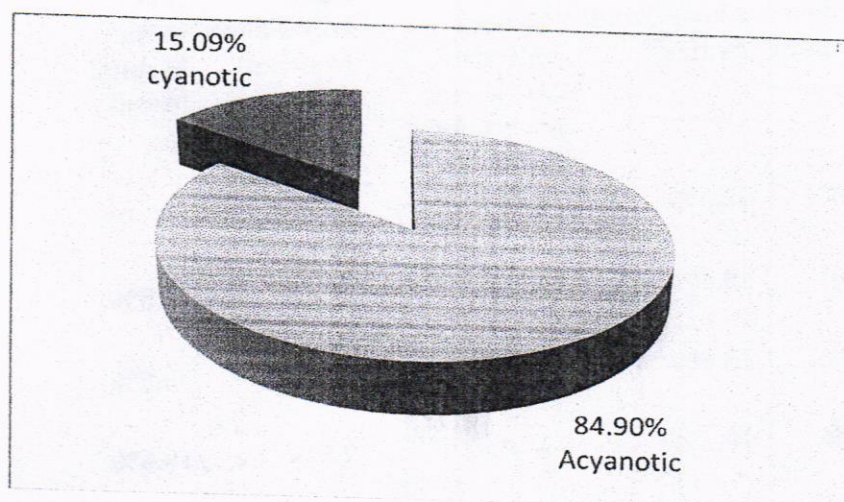


Table 2. Sex distribution of congenital heart disease

Type of CHD	No. of defect	Male	Female	Percent
VSD	231	118	113	51
ASD	159	79	80	50.3
PDA	71	24	47	66.1
AS	13	9	4	69.2
PS	72	48	24	66.6
AVC	28	18	10	64.2
TOF	61	40	21	65.5
TGA	17	8	9	52.9
Complex defect	16	8	8	50
Tricuspid Artesia	8	4	4	50

Table 3 Shows types of CHD

Types of CHD	Prince Hashem Hospital	Fuad Abbag(Saudi Arabia)	Alberta Hertiage pediatric cardiology programme (Canada)	Mary K.M.Shann (Taiwan)	Ibn-seena hospital Mosul
Ventricular Septal Defect	43.4%	32.5%	34.4%	39.3%	34.71%
Atrial septal defect	13.6%	10.4%	10.5%	5.3%	23.5%
Patent Ductus arteriosus	8.3%	15.8%	10.8%	9.8%	10.5%
Pulmonary valve stenosis	6.2%	10.1%	-----	2.5%	10.6%
Aortic valve stenosis	4.3%	2.7%	-----	-----	1.92%
Tetralogy of Fallot	9.5%	4.5%	10.2%	12.3%	9.02%
Transposition of great arteries	5.5%	1.5%	5.1%	5.3%	2.5%
Complex CHD	2.25%	2.7%	3.5%	5.0%	2.3%
Tricuspid Atresia	3.65%	1.5%	-----	-----	1.18%
Complete atrio-ventricular septal defect	3.6%	-----	4.4%	-----	4.2%(as part of ASD)
Coarctation of aorta	3.4%	3.3%	-----	1.1%	-----