Short Communication

Distribution and Characteristics of the Heart Disease in Pediatric Age Group in Southern Iran

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Background: The spectrum of heart diseases among pediatric age group may be different between communities and, in this connection there is no documented report from Iran.
Patients and Methods: We studied cardiac problems among Iranian pediatric age group referred to the pediatric cardiology and cardiac surgery out-patient clinic, in a tertiary center for possibility of heart disease.
Results: Of 2341 patients, aged from 1 day to 16 years referred, during 2001 and 2003, to the above center, 1817 (77.6%) patients had cardiac diseases. The most common reason for referrals was abnormal heart sounds on routine physical examination (49%). Congenital heart diseases (CHD) were the most frequent cardiac problems (76.1%), followed by mitral valve prolaps (8.3%) and rheumatic cardiac involvement including sub-clinical findings (7.9%). Other significant disturbances were associated chromosomal abnormalities, genetic disorders, and electrical and conduction problems.
Conclusion: Although rheumatic carditis has very low incidence compared with congenital heart diseases (nearly 1/10), it is still a significant problem in this region and a planning for its better prevention is essential.

Keywords: Congenital Heart Disease, Rheumatic Cardiac Involvement, Mitral Valve Problem, Prevalence

Introduction

The cardiac problem of pediatric age group is very different from adult, and may vary among world communities. Therefore assessment of the state of heart disease in this age group will define the incidence or prevalence of illness and could warrant special planning for prevention, diagnostic and management of heart disease in each population. Objective of this study was to determine the spectrum and characteristics of pediatric cardiac problem in Southern Iran.

Patients and Methods

This retrospective study was done on 2341 patients referred to pediatric cardiology clinic, in a tertiary center between 2001and 2003. They were examined physically at least once and had a minimum of one echocardiography. The relevant patients information included the date of physical examination, electrocardiography (ECG), chest roentgenogram, (if available), echocardiography, and cardiac catheterization or surgery if indicated.

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Results

Of 2341 patients referred for cardiovascular evaluation, 1817 (77.7%) had cardiac problems and the rest with innocent (functional) murmur, and non organic chest pain or other non cardiac diagnosis were excluded from the study. Patients aged from 1 day to 16 years, with male to female ratio of 1.3/1.The most common cause of referral (Table 1) was abnormal heart findings (mostly murmur).

Table 1. Chacrtristics of patients referred to pediatric cardiology clinic

Chacrtristics	Frequency	Percent
Heart murmur	890	49
Cyanosis and anoxic spell	325	17.9
Chest pain	167	9.2
Rheumatic fever	144	7.9
Palpilation	45	2.5
Abnormal heart sounds	43	2.4
Dysrhythmias	39	2.1
Dyspnea, tachypnea	27	1.5
Heart failure	25	1.4
Down's syndrome	22	1.2
Cardiomegaly (at CXR)	20	1.1
Positive family history	18	1
Faint and syncope	13	0.7
Seizure (convulsion)	13	0.7
Failure to thrive	11	0.6
Others	15	0.8

The most frequent heart disease was congenital in 1380 patients (76%) the results detailed in Table 2. Acyanotic CHD (ACHD) and cyanotic (CCHD) were 1081 (78.1%) and 229 (21.9%) respectively with ACHD/CCHD ratio 3.6/1, detailed prevalence of different sorts of CHD is summarized in Table 3.

Mitral valve prolaps (MVP) was the second most common cause in 150 patients (8.3%) with female to male ratio 3.4/1, and associated with regurgitation in 88 patients (58.7%).

Rheumatic fever(RF) and carditis, including subclinical valvular involvement (by color Doppler mapping) were the third most frequent cause in 144 patients (7.9%). Genetic predisposition and chromosomal abnormalities, mostly Down's syndrome was found in 45 patients (2.5%).

Electrical and conduction disturbances were also significant cardiac problems in 39 patients (2.1%). Cardiomyopathy and myocarditis diagnosed in 35 patients (1.9%) with an overall M/F ratio of 1.5/1, but 5/1 in hyperthrophic cardiomyopathy.

A total of 54 patients needed admission to pediatric cardiology ward, mostly (25 patients, 1.4%) due to congestive heart failure (CHF).

Discussion

To our knowledge there is no report on the prevalence or incidence of cardiac problems in developing countries including Iran. Ballaxe. E, and Zurante. I, found similar prevalence of CHD in Spanish, Mexican, and South American populations, without any report on the status of other heart diseases.[1] Chadha. et al. also found CHD in 4.2/1000 of population among 15 years-old children in Dehli,[2] with no mention

Table 2. Distribution of heart disease in 1817 children referred to pediatric clinic during 1997-2003

Heart disease	Frequency	Percent	M/F ratio
Congenital	1380	76.0	1.3/1
Acyanotic	1081	---	---
Cyanotic	299	---	---
Mitral valve prolapse	150	8.3	1/3.4
Rheumatic carditis (including subclinical)	144	7.9	1.2/1
Chorea	26	---	---
Electrical & conduction disturbances	39	2.1	1.2/1
Cardiomyopathy & myocarditis	35	1.9	1.5/1
Hyperthrophic CMP	5	---	5/1
Others	69	3.8	---

Table 3. Frequency of congenital heart disease among 1380 patients referred to pediatric cardiology clinic

Heart disease	Frequency	Percent
Ventricular septal defect	427	28.1
Tetralogy of fallot	201	13.2
Pulmonary stenosis	184	12.1
Atrial septal defect	147	9.7
Patent ductus arteriosus	139	9.1
Aortic stenosis	132	8.7
Transposition of great arteries	47	3.1
Coarctation of aorta	37	2.4
Tricuspid atresia	32	2.1
Pulmonary atresia	31	2
Eisenmenger syndrome	14	0.92
Total anomalous pulmonary vein connection	7	0.46
Ebstein anomaly of tricuspid	6	0.4
Truncus arteriosus	6	0.4
Aorto-pulmonary window	2	0.13
Interrupted aortic arch	2	0.13
Complex cyanotic anomalies	105	6.9
Others	22	1.4
Acyanotic	1081	78.3
Cyanotic	299	21.7

of other heart involvements. Sadig. M et al found a high incidence of infective endocarditis (3.2%) among children admitted to a tertiary pediatric cardiology referral center in Lebanon.[3] Rheumatic heart disease (RHD) was underlying cause in 3.9% and CHD involved 46% of their patients.

Bitar. et al. also reported CHD in 11.5/1000 live births in Lebanon with low prevalence of complex CHD.[4] Hewitson J, et al.[5] and Giamboerti A, et al.[6] underlined the alloca tion of financial budget and disastrous consequences of cardiac problem mostly CHD and especially cardiac surgery in the developing countries. Omokhodien SI, Lagunp IA, also reported CHF with preventable causes but with associated unacceptable high mortality.[7]

Gharib R,[8] Taherania AC, et al.[9] reported RF/RHD prevalence in Iran mostly Southern region. Also in the same report Gharagozloo RA, et al. revealed 51/100000 incidence of RF/RHD in Southern Iran.[10] Aryanpur kashani I, et al described the patient load with CHD.[11,12] Sadeghi E, reported cardiovascular disease in 3.6% of children among general in-patient population, and out-patients in Southern Iran with prevalence of CHD in 41.5%.[13]

In the present study we determined different types of cardiovascular involvements among pediatric age group referred to pediatric cardiology clinic for evaluation, and not based on random sampling of population. We found a high frequency of CHD (76%) partly similar to other findings. [13] Overall none of the foregoing studies pointed to other illnesses for comparison above.

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