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ORIGINAL ARTICLE

IMPACT OF SCHOOL HEALTH PROGRAM –A RETROSPECTIVE ANALYSIS OF PEDIATRIC ECHO'S DONE IN A TERTIARY SET-UP

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ABSTRACT

This study was conducted to find out the efficacy of the school health program in picking up heart diseases and hence providing benefit to the patients. The patients were screened on the basis of degree of murmur and any abnormal ECG and X-ray findings and then subjected to echocardiography. Total no of patients screened were 18721 of which 100 were detected to have heart murmur. The incidence of heart disease found in our setup is 0.42% over six month's duration. 57.5% of patients were <5 yrs followed by 38.7% in 5-15 yrs age group. VSD (22.86%), ASD (21.4%) were the most commonly diagnosed acyanotic congenital heart diseases and TOF (5.7%) was the commonest cyanotic CHD. Pericardial Effusion (60%) was the commonest acquired heart disease.23.75% of these were referred to higher centre for further management and 37% of patients with a school health card have availed these facilities for free. 62.6% patients from the community were referred through school health for heart disease.

Key words: School health program, Heart disease

INTRODUCTION

Heart diseases may be symptomatic or asymptomatic in children. Cardiac murmurs can be easily picked up and hence the presence of a CHD can be diagnosed early. The incidence of CHD in general population is about 1% of live births. Congenital cardiac defects have a wide spectrum of severity in infants: about 2-3 in 1000 newborn infants will be symptomatic with disease in the 1st year of life. Diagnosis is usually established by 1st week of age in 40-50% of patients with CHD and by 1 month of age in 50-60%

Despite all advances in management and treatment, CHD remains the leading cause of death in children with congenital malformations. VSDs are 35-30% of all lesions followed by ASDs in 6-8%.Gender differences in the occurrence of specific cardiac lesions have been identified. Acquired heart lesions can present in varied forms like rheumatic heart disease, cardiomyopathy, infective endocarditis, pericardial effusions etc. Heart diseases may present with varied symptoms such as not feeding well, failure to thrive, murmur, breathlessness, cyanosis, etc. and hence can be diagnosed early[1].

Innocent heart murmurs or functional murmurs arise from cardiovascular structures in the absence of anatomic abnormalities[2]. They are common in children; more than 80% of children have innocent murmurs of one type or another sometime during childhood. A heart murmur heard within a few hours of birth usually indicates a stenotic lesion (AS/ PS), AV valve regurgitation or small Lt →Rt shunt (PDA / VSD). A murmur on a routine examination of a

healthy-looking child is more likely to be innocent. Patients with a murmur of grade 3/6 or more, systolic or diastolic murmur are more likely to have some anatomic lesion. Echocardiography is extremely useful, safe and non invasive test used for the diagnosis and management of heart diseases with the advantage of reproducibility of results, instant images and reliable level of accuracy[2].

School Health program is a program for school health service under National Rural Health Mission (NRHM) which has been necessitated and launched to provide effective health care to population throughout the country. The School Health Program intends to cover 12,88,750 Government and private aided schools covering around 22 Crore students all over India. Developing "Human Capital" of Nations, especially the social, intellectual, mental and physical abilities of children and adolescents is fundamental to the improvement of quality of life of the citizens. Children must be at the very heart of development – their well being, capabilities, knowledge and energy will determine the "Future of Nation". School health program is a single, largest time framed health program operating in the state of Gujarat since 1997. In 2009-2010, it was planned that, SHP will cover ≈1.4 crore children, i.e. ≈25 % population of Gujarat. SHP covers all 26 districts and 18568 villages (including 7 corporations) of the state[3].

Our hospital is a tertiary level referral centre. We receive the referred cases of SHP of Surat city. The cardiac patients are screened for the murmur, ECG changes and X-Ray findings and then if necessary subjected to ECHO.

MATERIAL AND METHODS

This is a retrospective analysis of 100 patients between the age group of 0 -18 years; carried out over a six months duration i.e. from January 2011 – June 2011. The total number of pediatric patients examined on indoor and outdoor basis was 18721. The cardiac patients were either referred from SHP or were picked up in routine clinical examination in OPD or IPD. The patients with an abnormal ECG / CXR &/or with a murmur of 3/6 (Nadas criteria) were subjected to ECHO.

The echocardiography machine (by Esaote) with colour Doppler, having two probes namely neonatal and pediatric was used. The ECHOs were done by trained staff and patient data was filled on a specific performa. The patient was also given one copy of the same for his record. For the children who required sedation, Trichlorophos syrup (Pedichloryl) was used in dose of 50 mg/kg, half hour before procedure. After the ECHO was over these patients were kept under observation till they are fully awake, after which they were allowed to go home. The Echo was done free of cost for patients with a school health card. Of the 100 patients whose Echo was done, 80 were abnormal and analysis of these 80 is given below.

RESULTS

Result of the ECHO findings of 100 children were shown in table 1. Out of these 100 children, 20 children were having normal ECHO (innocent murmurs) which were not analyzed further.

Table 1: Echocardiography findings (n=100)

Echo finding	Children (%)
Normal	20 (20)
Abnormal	80 (80)
Congenital defects	70 (87.5)
a) Acyanotic Heart disease	62 (88.6)
b) Cyanotic Heart disease	08 (11.4)
Acquired defects	10 (12.5)

Age and gender distribution of the children with abnormal ECHO findings were shown in table 2 and table 3.

Table 2: Age distribution of patients (n=80)

Age of patients	No. of Children (%)
0 -1mth	10 (12.5)
1mth – 1 yr	12 (15)
1 – 5 yrs	24 (30)
5 -10 yrs	14 (17.5)
10 – 15 yrs	17 (21.2)
>15 yrs	03 (3.75)

Table 3: Gender distribution (n=80)

Gender distribution	No. of Children (%)
Male	41 (51.25)
Female	39 (48.75)

Higher rate of CHD is noted in males (51.25%) and in age group of 1-5 years (30%)

Table 4: Types of Congenital Heart Diseases diagnosed (n=70)

	Children (%)
Acyanotic Heart Disease (n=62)	
Ventricular Septal Defect (VSD)	16 (22.86)
Atrial Septal Defect (ASD)	15 (21.4)
Patent Ductus Arteriosus (PDA)	07 (10)
Patent Foramen Ovale (PFO)	08 (11.4)
Pulmonary Stenosis (PS)	03 (4.2)
Coarctation Of Aorta (COA)	02 (2.8)
Endocardial Cushion Defect (ECD)	01 (1.4)
Cyanotic Heart Diseases (n=8))	
Tetralogy Of Fallot (TOF)	4 (5.71)
Tricuspid Atresia (TA)	1 (1.4)
Double Outlet Right Ventricle +ECD+PS	1 (1.4)

Out of 80 children with abnormal ECHO, 87.5% had congenital defects, of which 88.6% were acyanotic. Among acyanotic CHD (n=62), majority had VSD(22.86%) followed by ASD (21.4%) and PFO (11.4%). Out of the 11.4% of cyanotic CHD, 4 (5.7%) were found to be TOF. Total 47 (58.75%) patients had multiple lesions and 33 (41.25%) had a single lesion.

Table 5: Types of Acquired lesions diagnosed.

Acquired defects	Children (%) (n=10)
Pericardial effusion	6 (60)
Cardiomyopathy	2 (20)
Rheumatic heart disease	2 (20)

Table 5 shows distribution of children with diagnosed acquired lesions. Pericardial effusion (60%) was the most common diagnosis of the Acquired Heart disease.

Table 6: Presence of school health card

School health card	Children (%) (n=100)
Yes	37 (37)
No	50 (50)
Don't know	13 (13)

23.75% were referred to higher centre for surgical intervention and further management. The patients with a school health card were referred to U.N.Mehta Cardiology Institute, Ahmedabad, where they were operated free of cost, as and when needed.

37% of the patients had come with a school health card and were able to avail these facilities for free.

DISCUSSION

As per the Mohfw- Gujarat data, in the year 2009-2010 almost 1,31,27,064 children were examined; of these 15,99,194 received spot treatment and 82,470 children were referred for further management. An estimated 4176 children received cardiac care, 544 received kidney care and 182 received cancer/malignancy care specialist services all over Gujarat.

Table 7: Comparison of Current study with other studies

	Mad.Sani et al[4]	Kapoor et al[5]	Ashraf et al[6]	This study
Total pts (n)	122	281	221	80
<1 yr	33.6%	--	--	27.5%
<5 yrs	69%	--	--	57.5%
VSD (%)	45.9	21.3	31.2	22.86
ASD (%)	12.3	18.9	11.3	21.4
PDA (%)	--	14.6	16.3	10.0
TOF (%)	26.2	4.6	7.8	5.71

A total of 111 children had come to our institute with school health cards covering all types of diseases, within this time frame, and 69 of these were subjected to Echo from the OPD. This shows that heart diseases are still the most commonly diagnosed anomaly in children.

In our study the incidence of CHD is 0.37% and prevalence is 3.7, which is similar to that seen in the Ashraf study. The abnormal echo's in <1yr is 27.5% and <5yrs is 57.5% in our study which is almost similar to that found in Mah.Sani et al study. VSD (22.86%) was most commonly diagnosed in our study, as is seen in all the other three studies. VSD was followed by ASD and then PDA, which is same as all the other studies. TOF was found to be 5.71% which is comparable to the Kapoor Study and other Indian studies.

CONCLUSION

The incidence of heart disease found in our setup is 0.37% (80/18721) over a time span of six months. The pick-up rate of heart murmur and referral is 62.6% (69/111) in the community. A good number of the patients (23.75%) were referred to higher centre for further intervention and management, and around 31% could be managed medically early in the course of the disease.

KEY MESSAGE

School health program is very effective in picking up the cardiac murmurs and in turn the patients with some cardiac anomaly, improving the overall lifestyle of the patient because of early detection and management. It is also cost effective for the patients.

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