Original Research Article

A Cross Sectional Study on Prevalence and Pattern of Murmur and CHD in Children of District Shopian

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Abstract

Background: Congenital heart defects (CHD) are among the common congenital birth defects with an estimated incidence of 8–10/1000 live births which can be easily identified on occasions on routine checkup visits on auscultation and confirmed by echocardiography. With the advanced diagnostics and corrective therapies for CHDs, the percentage of individuals surviving to adulthood has increased over past few decades, it is imperative to identify the disease at the earliest.

Methods: This was a hospital-based outpatient study conducted in the pediatric OPD of the hospital in children aged 12 years or less with no previous known heart disease. Children were seen for any murmur or features of heart disease. A total of 14000 patients were attended with 100 having murmur and an echocardiogram was advised.

Results: Of the 14000 children seen in the OPD, 100 had a murmur on auscultation accounting for about 0.714% patientsi.e 7 per 1000 children. Of the 100 patients with murmur, 60 patients came back with an echocardiogram of which38 had an abnormal echo corresponding to 63.33% cases. Hence the murmur was present in approximately 7 per 1000 children and the incidence of heart lesions among those with murmur was 63.33% with VSD & ASD in combination as the most occurring lesion.

Conclusion: The prevalence of murmur in children was approximately 7 per 1000 and the sensitivity of auscultation in finding a heart disease was 63.33%. However, a large study over a greater period of time with a good follow up of the patients is recommended.

Keywords: Murmur, CHD, Echocardiogram, VSD, ASD, PDA.

Introduction

Congenital heart diseases (CHD) are the commonest congenital defects affecting approximately 1–2% of live births globally with an estimated incidence of 8–10/1000 live births. Regional differences do occur in prevalence and incidence due to many factors[1]. CHD is defined as a structural abnormality of the heart or intrathoracic great vessels that causes significant functional impairment[2]. If appropriate steps arenot taken, it can affect the quality of life of the individual and can potentially lead to a premature death. Murmur could be the first and sometimes the onlysign of a heart disease. A murmur

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can be innocent or pathologic in nature. Some of the neonatal and many pediatric murmurs do not have pathological importance, and they are considered as innocent[3]. Approximately 20% of CHD incidence can be attributed togenetic syndromes, teratogen exposure or maternal diabetes, the risk factors for the remaining 80% are uncertain. Improved medical and surgical care haschanged the quality of life of the children born with CHD especially in developed countries[4]. CHDs are classified into acyanotic and cyanotic defects according to the pathology. The acyanotic lesions includes septal cardiac defects like ASDs, VSDs andAV canal defects &left ventricular outflow obstructive lesions like aortic stenosis and coarctation of aorta with complexities. Cyanotic CHD include Tetralogy of Fallott, transposition of great arteries, total anomalous pulmonary venous returns, hypoplastic left heart syndrome, truncusarteriosus, and tricuspid atresia[5]. Presentations can range from poor suckling, cyanosis and shortness of breath to frank heart failure, however asymptomatic presentation is common and usually discovered accidentally on routine checkup visits[6]. Infants and children present with breathlessness, clubbing, cyanosis, murmur, syncope, history of squatting, heart failure, rhythm disorder, and failure to gain weight[7]. With the modern management of these patients, the percentage of individuals surviving to adulthood has increased over past few decades and are more likely to reproduce, leading to an increased incidence rate[8]. The burden of CHD in India is high owing to ahigh birth rate. Estimates show that around 180,000 children in India are born with congenital defects every yearandin only a very meager percentage the intervention is done, the number of young adults with CHD is steadily increasing[9]. Currentliterature available shows that an ECG and a chest X-ray can have a sensitivity as low as 10% in the identifying a CHD of well children with heart murmurs[10]. Hence an echocardiogram is better advised to confirm or refute a possible diagnosis of a congenital heart disease. Since there is no current study on CHDs in this region, we undertook this study to find the prevalence of murmur, and CHD incidence among these children with murmur on auscultation and finding the pattern of lesions in the children of district Shopian.

Aims and objectives: To make a cross sectional study on prevalence and pattern of murmur and Congenital Heart Disease in children of District Shopian.

Material and Methods

This was a hospital-based outpatient study conducted in the pediatric patients at district hospital Shopian between January 2022 and September 2022. A proper consent was taken from the guardians or the parents of the patients participating in the study whose confidentiality was maintained. A total of 14000 children were seen for any murmur or features suggestive of any heart diseasein the OPD. Most of the patients had come for reasons other than the cardiac disease like fever, respiratory tract infection including otitis media, gastroenteritis, UTI, etc. Of the 14000 patients attended only 100 patients had murmur on auscultation and an echocardiogram was advised which was done by a pediatric cardiologist. Only 60 patients returned with the report and rest 40 didn't follow up at all and hence were the actual subjects of the research.Data was tabulated and analyzed using SPSS Version 20. Frequency and percentages were used for qualitative analysis.

Inclusion & exclusion criteria.

Any child aged aged 12 years or lesswith no previous known heart disease was included and looked for any murmur or signs of heart disease.

Results

Of the 14000 children seen in the OPD only 100 had a mumur accounting for about 0.714% patients i.e 7 per 1000 children. Of these100 patients with murmur, only 60 patients came back with an echocardiogram.Of these 60, 38 had an abnormal echocardiogram corresponding to 63.33% cases of all murmurs. VSD & ASD together was the commonest lesion found in the children on echocardiogram accounting for a total of 31.6% of the cases followed by solitary ASD and PDA with 21% each, VSD & PDA, TR/MR, ASD & PDA, PFO and complex heart lesion with 5.3% each. The youngest child with a congenital heart lesion was a six day old neonate with ASD & PDA and the oldest child was just above 11 year old

girl with a PDA who was planned for an elective closure. The patternof Congenital Heart Disease and incidence of true heart lesions by echo in clinically felt murmurs on auscultation in the children can be summarized below in tables 1 & 2 respectively:

Tables 1. Murmurs.

Total Murmurs clinically	60	%age
Innocent Murmurs	22	36.67%
Pathological Murmurs	38	63.33%

Tables 2. Type & pattern of lesion found finally.

Type of lesion	No. of cases found	%age of cases of the individual CHDs	Total cases of clinical murmur	Total CHDs found on echo (%)	%age of cases of the individual CHDs
VSD & ASD	12	31.6%	60	38(63.33%)	31.6%
ASD	8	21%			21%
PDA	8	21%			21%
VSD & PDA	2	5.3%			5.3%
ASD & PDA	2	5.3%			5.3%
VSD, CoA, PDA, Arch hypopoasia	2	5.3%			5.3%
TR/MR	2	5.3%			5.3%
PFO	2	5.3%			5.3%
Total	38	100%			100%

Discussion

Congenital heart defects (CHD) are the most common congenital birth defects commonly found on routine checkup visits on auscultation as asymptomatic presentation is common. Improved medical and surgical care has transformed the prognosis for CHD especially if identified early. Not all murmurs are CHDs, some are innocent. To differentiate the pathological ones from the innocent ones, an echocardiogram is very important. There is not a single study conducted to find the pattern of the congenital heart defects at Shopian, hence it was imperative to conduct this study.

Our study found murmur in children accounting for about 0.714% patients i.e a prevalence of 7 per 1000 children which is consistent with studies conducted by Ainsworth[11] et al with 0.6% of babies having murmurs. Most of the murmurs were of grade 3 intensity. Only few had cardiomegalyon chest X-ray, none of the children was in CCF and rest all children had normal chest X-ray. Except for one child with a history of CHD in cousin, no child had a history of familial CHD. Thus given that murmurs are rare and with no overt symptoms or signs of disease, a murmur can be the only clue to an underlying congenital heart disease and hence it seems appropriate to advise an echo in such cases for a definitive diagnosis. The percentage abnormal echocardiogram in children who had clinical murmur was approximately 63.33% cases of all murmurs indicating that if a murmur is heard, there is a 63.33% chance of an underlying cardiac malformation as has been in different studies like one conducted by Ainsworth[11] et al 54% chance of being an underlying cardiac malformation in case of a murmur heardand 75% chance of an underlying cardiac disease if a murmur is heard in a studyconducted by Pillai[10] et al Rest 36.67% murmurs were innocent. In this study, VSD (VSD& ASD together) was the commonest lesion found at 31.6% as has been found in studies like one conducted by Kishore[7] et al with ventricular septal defect (VSD) constituting 31% of the total CHD cases and atrialseptal defect (ASD) as the second most common CHD comprising 23% of all CHD cases.

Recommendation: Since the percentage of abnormal echocardiogram in children who had clinical murmur was approximately 63.33% of all

murmurs indicating that if a murmur is heard, there is a 63.33% chance of an underlying cardiac malformation. Thus given that murmurs may be the only clue to an underlying congenital heart disease and it seems appropriate to advise an echocardiogram in such cases for a definitive diagnosis and to intervene accordingly at the earliest.

Limitations of the study:

1. The main limitation of the study was that a good number of the patients didn't follow back with the echo report even though we explained them the situation very well.
2. The other limitation of the study was that we couldn't find many more patients with murmur to undergo an echocardiogram although we saw a huge number of patients.

Conflict of interest: None declared.

Funding: None.

Ethical approval: The study was approved by the Institutional Ethics Committee.

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