Frequency of Congenital Heart Diseases in Children of Age 2 Months to 5 Years with Heart Murmur

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ABSTRACT

Background and Objective: The primary aim of our research work is determining the frequency of congenital heart disease in children of age 2 months to 5 years with heart murmur.

Materials and Methodology: This is a descriptive cross-sectional research that was carried out in Department of Pediatrics, Saidu Teaching Hospital, Saidu Sharif Swat from July 2019 to June 2020. This study included 150 children with heart murmur. An approval from hospital ethical committee and informed written consent from the parents/guardian of the cases were taken. A detailed clinical examination was performed in an inaudible room with the help of a stethoscope. For confirmation of congenital heart disease echocardiography was performed. Congenial heart disease was graded based on the variations in age and gender. We applied a diagnostic test termed as Chi-square after data stratification and considered the p value less than 0.05 as pertinent.

Performance validation and Results: Our study shows that 59% patients were in the range of 2 to 5 years while 41% patients were found to be age less than 2 years. The Mean age was considered as 1 year with Standard Deviation (SD) of ± 1.26. The male and female patients' ratio was 56:44. The incidence of congenital heart disease with heart murmur was found in 58% patients in our study.

Conclusion: The major finding of our work reveals that frequency of congenital heart disease with heart murmur was found in 58% patients in our setup among patients in the age range of 2 months to 5 years.

Keywords: Pediatrics, Heart Murmur, congenital heart disease, children.

INTRODUCTION

The structure and function of Heart face one of the key problem termed as congenital heart disease, which adversely affects the routine functionalities of heart and this disease is present since birth[1,2]. The defects of Congenital heart are the most common group of Congenital malformation and is mainly results in prolonged mortality and morbidity [3,4].In pediatrics population heart murmurs are common and most children will have a detectable heart murmur. Early detection of the disease may improve the outcome by timely management and preventing complications [3].

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The blood flow via a heart valve, unusual connection between chambers, or narrowed chamber causes an unusual "whooshing" sound termed as heart murmur and is seen with Congenital heart disease [5]. The healthy infant and children also suffer from Heart murmurs. Murmur can be organic (pathologic) and inorganic (innocent). The murmurs reveal that severe defect is present in Heart [7,8,9]. Inorganic (innocent) heart murmur is the one which does not represent any heart disease while organic murmur show a heart defect. Of the innocent murmur termed as still's murmur is the most common in children and is considered to be flow related[10]. The characterization of murmur is purely relied on its duration, timing, and location. Further, the murmur is also classified on the basis of sound quality and sound intensity that it produces during blood circulation[5].

In this study, a total of 145 patients were tested and murmur was heard in all the considered patients including 74 boys and 71 girls and as result 51% of patients showed congenital heart disease[11]. Moreover, in another study done in Contonel hospital Bihac Bosnia on "The importance of heart murmur in

neonatal period" by Kardasevic, M. et al. reported that among 32 children with heart murmur, 14 (43.75%) patients had a structural heart abnormality[7].

In the light of aforementioned studies, our study presents the design process of determining the frequency of congenital heart disease in kids facing heart murmur. After carefully reviewing the literature in the area of problem, it was identified that although much was going on regarding congenital heart disease, but very few studies regarding congenital heart disease in children with heart murmur have been done in Asia in general and Pakistan in particular.

This study will be the first step toward local research work as locally no data is available in studies regarding this problem. The results of the study assist in provision and finding of local magnitude of the problem and thus will help in early detection, timely referral and proper management of treatable congenital heart disease. The results can then be compared with other internationally published data and based upon these comparisons more research work may be suggested for further line of action.

METHADOLOGY

Inclusion criteria:

1) Age: From 2 Months to 5 Years of either gender.

2) Children having a heart murmur on Auscultation.

Exclusion criteria:

Dysmorphic children with already diagnosed congenital heart defect.

We conducted this research study after prior approval from the hospital ethical and research review committee. Total 150 children coming as outdoor patient or admitted in Department of Pediatrics at Saidu Teaching Hospital and fulfilling the inclusion criteria were enrolled in the study. The potential benefits and extinct purpose of the study was discussed with the parents/guardians of the patients under consideration. A written informed consent was taken from the parents. Patient's biodata like age, gender and address was noted on a prescribed Performa. A detailed clinical examination was performed in a quiet room with the help of a stethoscope. For confirmation of congenital heart disease echocardiography was performed.

We used version 17 of SPSS (Statistical Package for Social Sciences) version 17 for analyzing the collected data using the MS windows environment. Age is considered as quantitative variable and we calculated Mean and SD for age. Further, the categorical variables like congenital heart disease and gender was analyzed via calculation of frequency and percentages. Congenial heart disease was stratified based on age and gender to see the difference. After the data stratification, we applied Chi-Square diagnostic test and p value less than 0.05 was assumed pertinent. The tabular description of Final results is present in the following Tables.

RESULTS

We performed this study in Department of Pediatrics at Saidu Teaching Hospital/Saidu Medical College, Saidu Sharif Swat. We observed a total number of 150 patients and after careful observations, frequency of congenital heart disease is determined in children having age of 2 months to 5 years suffering from heart murmur. The detailed analysis of the results is mentioned as:

Out of total 150 patients, 62 (41%) patients were in age range ≤ 2 year, 88(59%) patients were in the range of 2 to 5 years. The age of 1 year was considered as Mean age with SD ± 1.26. The gender wise distribution was 84 out of 150 (56%) male patients and 66 out of 150 (44%) female patients.

Congenital heart disease was tested for 150 patients, as a result 87 out of 150 (58%) patients were reported with congenital heart disease while 63 out of 150 (42%) patients had no congenital heart disease as listed in Table I. Further, Table II shows the Stratification of congenital heart disease in relation to gender and age and P value lower than 0.05 was taken as significant. There was no statistical significance of age and gender with congenital heart disease (p= 0.997and p=0.873 respectively).

Table 1: Frequency of Congenital Heart Diseases with Heart Murmur (N=150)

Congenital heart disease	FREQUENCY	PERCENTAGE

Negative	63	42%
Positive	87	58%
Total	**150**	**100%**

Table 2: Stratification of Congenital Heart Disease with Respect to Age and Gender.

Congenital heart disease	≤ 2 year	2-5years	Total	Male	Female	Total
Yes	36	51	**87**	49	38	**87**
No	26	37	**63**	35	28	**63**
Total	**62**	**88**	**150**	**84**	**66**	**150**

(n=150)

Chi Square test was performed with P value of 0.873 (Gender)
Chi Square test was performed with P value of 0.997(Age)

DISCUSSION

A detailed study was conducted on "Prevalence and etiology of heart murmurs" by Bagheri and Torabi in kerman University of Medical Sciences Iran.

Congenital heart disease is a prominent disease that appears from birth and its mainly disturb the structure and function of heart. This is caused from the birth and is reported after diagnosing the patients since its presence from first day[1,2]. Congenital heart defects are considered as common group of congenital malformation and is one of the principal reasons of prolonged mortality and morbidity [3,4]. In pediatrics population heart murmurs are common and most children will have a detectable heart murmur. Early detection of the disease may improve the outcome by timely management and preventing complications

The findings of our study reveal that 41% patients (150 patients overall) were in the range of age less than and equal to 2, while 59% patients were in the range 2-5 years. The reported SD is ± 1.26 with Mean age of 1 year. The ratio of male and female patients was Fifty six percent (56%) and 44% patients respectively.

The frequency of congenital heart disease with heart murmur was found to be 58% patients in our setup. Almost similar results were found in a study conducted on "Prevalence and etiology of heart murmurs" by Bagheri and Torabi in Kerman University of Medical Sciences Iran. In this study, murmur was heard in 145 patients including 74 boys and 71 girls in which 51% of patients showed congenital heart disease .[11]

However, a study done in Contonel hospital Bihac Bosnia on "The importance of heart murmur in neonatal period" by Kardasevic, M. et al. reported that among 32 children with heart murmur, only 14 (43.75%) patients had a structural heart abnormality which is lower than our results.[7]Opposite to our study, in a study conducted by Kalimuddin Aziz et al[12] in which two thousand eight hundred and twenty four (2824) new patients age 12 years and less were seen. Congenital Heart Disease was present 72% of patients which is higher than our results. No significant heart disease including functional murmurs was present in 472 (17%) which is lower than our study in which functional or innocent murmur were found in 42% of cases. These children had no structural heart disease on Echocardiography. Two other studies showed that no structural heart disease was found in 23% and 13% of healthy newborns with murmurs, respectively[13,14]. These results are also lower than our finding.

CONCLUSION

Our study concludes that the frequency of congenital heart disease with heart murmur was found to be 58% patients in our setup among patients from 2 months to 5 years age.

CONFLICT OF INTERESTS: The authors declare that no conflict of interests is found in this paper.

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