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CONGENITAL HEART DISEASES IN INFANTS PRESENTING WITH RESPIRATORY DISTRESS AT A TERTIARY CARE HOSPITAL

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Date Received:
September 07, 2020
Date Revised:
March 09, 2021
Date Accepted:
March 21, 2021

■ ABSTRACT

Objective: To determine the frequency of congenital heart diseases (CHD) in infants admitted with respiratory distress to pediatrics unit.

Methodology: This cross-sectional study was conducted on 261 infants, presenting with respiratory distress and treated as indoor patients in the pediatrics department, Lady Reading Hospital, Peshawar. Non probability purposibe sampling technique was used to enroll the sample. History was taken and infants were examined by a consultant pediatrician. The findings were recorded on a pre-designed proforma. Trans-thoracic echocardiography was performed at the cardiology unit of the same hosptial. SPSS v. 20.0 was used as a statistical tool.

Results: Out of 261 infants, 5 (1.9%) were found to have congenital heart disease with a mean age of 6.0±4.6 months. Female predominance was noted (n=143, 54.8%). Maternal age was 30.0±10.5 years. Pulmonary stenosis was the most CHD, reported in 2 (0.7%) patients, followed by ventricular septal defect, atrial septal defect and tetralogy of fallot, reported in 1 (0.4%) patient each.

Conclusion: The study reported a low incidence of CHD among infants with respiratory distress and may come to attention as standalone respiratory distress in infants.

Key Words: Congenital heart disease; Infants; Respiratory distress; Pulmonary Valve Stenosis

■ INTRODUCTION

The cardiac and respiratory systems are interlinked with each other and changes in respiration affect cardiac output and ventilation. Congenital anomalies of the heart lead to disturbance in this system.[1] The incidence of congenital heart diseases (CHD) is approximately 7-9/1000 live births in infants worldwide.[2-4] In Pakistan, approximately 40,000 children are born with CHD every year.[5] Incidence was reported to be 8.2/1000, 10.8/1000 and 25/1000 live births in China, United States and Bangladesh, respectively.[6-8] Incidence in Europe was 8.2/1000 which is significantly higher than North America, which was 6.9/1000.[7] Differences in incidence between developed and developing countries is partly explained due to availability of diagnostic facilities.[9]

In context of CHD, changes in respiration are so significant at times, that it becomes mandatory to be familiar with the nature and dynamics of CHD and the patterns in which it affects children. Respiratory distress is one of the most common presentations of infant's admission to intensive care unit (NICU).[10] This disease presents as tachypnea with respiratory rate more than 60 per minute, grunting, cyanosis, and use of accessory muscles for respiration.[11] Respiratory distress without other signs of respiratory infection may be one of the signs for CHD.[12] At term, 15% and at late preterm, 29% infants admitted to the NICU develop significant respiratory morbidity. Before 34 weeks of gestation, respiratory problems in infants are even higher.[10]

There have been studies conducted in other parts of Pakistan regarding heart diseases in children.[13, 14] However, there is a lack of data from this part of the world. Considering the importance of the matter and its implications in the prognosis of children with respiratory distress syndrome, this study was carried out to find the frequency of CHD in infants admitted with respiratory distress symptoms at a tertiary care hospital in Peshawar - Pakistan.

■ METHODOLOGY

This was a cross sectional study conducted at pediatrics department, Lady Reading Hospital, Peshawar from 24th November 2018 to 24th May 2019. The study enrolled a sample of 261 infants. Non-probability consecutive sampling technique was used to enroll the infants. Infants with age of 2-12 months, presenting with respiratory distress, were included in the study. Infants'

with maternal history of birth defects in previous pregnancies were excluded.

Approval was taken from hospital research and ethical board. All infants presenting with respiratory distress, meeting the inclusion criteria, admitted in ward were enrolled in the study. A written informed consent was taken after explaining the guardians, the purpose and benefits of the study and assuring them of maintaining the confidentiality.

A complete history followed by physical examination by consultant Pediatrician was conducted in the ward. All infants were subjected to transthoracic echocardiography with doppler at cardiology department of the same hospital. Patient's demographics along with maternal age were recorded on a pre-designed proforma. Data were stored and analyzed using SPSS version 20.0.

RESULTS

Out of 261 infants with respiratory distress, majority (n=151, 58%) were in the age range of 2-6 months, with a mean age of 6.0±4.6 months. Female infants (n=143, 54.8%) were more than male (n=118, 45.2%). The mean maternal age of the study population was 30.0±10.5 years. The details are given in Table 1.

Five (1.9%) infants had CHD, in which pulmonary stenosis (PS) was the commonest (n=2, 0.7%) followed by 1 (0.4%) patient each of ventricular septal defect (VSD), atrial septal defect (ASD) and tetralogy of fallot (TOF).

DISCUSSION

Worldwide, the prevalence of CHD has increased substantially from <1/1000 live births in 1930 to 9/1000 live births after 1995. This increase in CHD incidence is largely explained by improvement of screening and diagnostic facilities with the passage of time.[9] The prevalence rate varies from 1.3 per/1000 to as high as 13.28/1000 children.[3] This study reported prevalence of 1.9%. The differences in prevalence are explained by sample size, type of echocardiography, expertise of echocardiographer and place of study. In this study, infants with respiratory distress were screened for CHD. Many small lesions like ASD < 2mm and PDA<1.5mm that are more prevalent in neonatal life were not included as study population comprised of infants age 2-12 months.[5] Infants whose mother had history of previous birth defects were also excluded thus further contributing to lower frequency in the present study. Pulmonary stenosis can present as respiratory distress in infants. Pulmonary stenosis may resolve completely or mild PS may progress and ultimately need surgery.[15] Age at diagnosis and morphology of pulmonary valve do not determine the resolution of mild PS.[15]

TOF, VSD and ASD may present as respiratory distress in infants with or without symptoms and signs of congestive cardiac failure.[5,11,16] These septal defects and transposition of great arteries have consequences in terms of delayed management and complications with the passage of time.[16] PDA is one of the most common CHD and may present as respiratory distress.[17] However, no case was reported in our study probably due to the age of the study sample.

Though most CHDs are diagnosed early due to clinical presentation and signs but standalone respiratory presentation of CHDs should always be considered in differential diagnosis.

The limitation of this study was a small sample size and more such studies should be conducted nationwide, with a larger sample size, to look at the complete picture of the condition.

CONCLUSION

There is a low incidence of CHD among infants with respiratory distress. CHD may come to attention as standalone respiratory distress in infants. Though not a very common presentation, but CHD must be considered in differential diagnosis where no other cause can be found. Missing a diagnosis of CHD in time and delay in management can have profound consequences for infants, later in life.

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Table 1: Age distribution of Infant, mother and gender distribution of infant (n=261)

Age		Number	Percentage	Mean (± SD)
Infant age	2 - 6 month	151	57.9 %	6.0±4.6
	> 6 - 12 month	110	42.1 %	
Maternal age	18 - 30 years	159	60.9 %	30.0±10.5
	31 - 40 years	102	39.1 %	

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Author's Contribution

MH Conceived the idea, planned the study and drafted the manuscript. MH helped in the acquisition and analysis of data, editing and finalization of the manuscript. MI also helped in the acquisition and analysis of data, editing and finalization of the manuscript. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved..

Conflict of Interest

Authors declared no conflict of interest

Grant Support and Financial Disclosure

None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.