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ORIGINAL ARTICLE

To Determine the Frequency of Congenital Heart Disease in Infants of Diabetic Mothers

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ABSTRACT

Aim: To determine the frequency of Congenital Heart Disease in infants of diabetic mother.
Methodology: Cross sectional (Descriptive) study conducted in the Department of Pediatrics Special Care Baby Unit (SCBU) Khyber Teaching Hospital Peshawar from 15-04-2015 to 15-10-2015. The sample size was150 patients, using 52.5% incidence of CHD in IDM and 95% confidence interval with 8% margin of error under WHO software
Results: This study was carried out on 150 patients at the Department of Pediatrics, Khyber Teaching Hospital Peshawar. CHD was detected in 79 (52.7%) patients while in 71 (47.33%) patients, CHD was not detected.
Conclusion: Our study concluded moderate prevalence of Congenital Heart Disease in infants born to diabetic mothers.
Keywords: Diabetes mellitus, Pregnancy, Newborn, Heart defects

INTRODUCTION

Diabetes Mellitus (DM) has been associated with maternal and perinatal morbidity and mortality woridwide[1]. According to the American diabetes Association (ADA), in pre gestational diabetes the pregnant woman is earlier diagnosed with type-1 or type-2 DM. Gestational diabetes (GDM) is any degree of glucose intolerance with onset or first recognition during pregnancy. GDM occurs when pancreatic function is not sufficient to overcome the diabetogenic environment of pregnancy[2]. It accounts for 90% of cases in pregnancy while preexisting type-2 DM accounts for 8% of such cases[3].
In congenital heart disease, there is a defect in the structure of heart and great vessels present at birth[4]. Infant born to diabetic women are increased risk of CHD compared to non-diabetic women[5]. Diabetes mellitus affect the heart of fetus both structurally and functionally[6]. It is known to have teratogenic effect on CVS with risk of malformation in about 1.7-4% of cases[7].

METHODOLOGY

This cross sectional (Descriptive) study was conducted in the Department of Pediatrics Special Care Baby Unit (SCBU) Khyber Teaching Hospital, Peshawar from 15-04-2015 to 15-10-2015. The sample size was150 patients, using 52.5% incidence of CHD in IDM and 95% confidence interval with 8% margin of error under WHO software. Sampling Technique:
Non probability consecutive sampling
Inclusion Criteria:

- Infants of age 1-7 days with both genders.
- Infants whose mothers having diabetes since 5 years.

Exclusion Criteria:

- CNS abnormities.
- Pulmonary anomalies.
- Severe hypoxia.
- Severe Sepsis.

Data Collection Procedure: The protocol in our hospital is to bring all the diabetic mothers of babies to special care baby unit for detailed examination and kept in observation at least for 72 hours. Meanwhile babies from outside hospital if brought to hospital emergency shifted to special care baby unit for assessment. All infants included were subjected to detailed history and clinical examination. A detailed prenatal, natal and postnatal history was taken and relevant information was recorded. For all babies, echocardiography was done from Pediatrics Cardiology Unit of Hayatabad medical Complex, Peshawar. The demographic details like name, age, gender, address and contacts along with echocardiographic findings, mother's diabetic information was recorded on a pre-designed Performa. The data collected was analyzed in SPSS 16.

RESULTS

The detail of results is given in tables 1,2,3,4,5

Table 1: Age distribution

Age group	n	%age
1 Day	26	17.3%
2 Days	38	25.4%
3 Days	19	12.7%
4 Days	17	11.3%
5 Days	32	21.3%
6 Days	9	06%
7 Days	9	06%
Total	150	100%
Mean ± SD	3±1.81	

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Table 2: Gender Distribution

Gender	n	%age
Male	116	77.3%
Female	34	22.7%
Total	150	100%

Table 3: Frequencies Of CHD

CHD	n	%age
YES	79	52.7%
NO	71	47.3%

Table 4: Stratification Of CHD With Age

Age	CHD	N=	%age	P Value
1 Day	Yes	14	9.3%	0.547
	No	12	08%	
2 Days	Yes	19	12.7%	
	No	19	12.7%	
3 Days	Yes	09	06%	
	No	10	6.7%	
4 Days	Yes	10	6.7%	
	No	07	4.7%	
5 Days	Yes	16	10.7%	
	No	16	10.7%	
6 Days	Yes	05	3.3%	
	No	04	2.7%	
7 Days	Yes	06	04%	
	No	03	02%	

Table 5: Stratification of CHD With Gender

Sex	CHD	n	%age	P-Value
Male	Yes	62	41.3%	0.723
	No	54	36%	
Female	Yes	17	11.4%	
	No	17	11.3%	

DISCUSSION

The age wise distribution was 26 (17.3%) 1 Day group, 38 (25.3%) in 2 Days group, 19 (12.7%) 3 Days group, 17 (11.3%) in 4 Days group, 32 (11.3%) in 5 Days group, 9(6%) were in 6 Days group and 9 (6%) in 7 Days group. As per gender wise distribution, it was 116 (77.3%) in Male patients and 24 (22.7%) in Female patients. Frequency of CHD was detected in 79 (52.6%) patients and in 71 (47.3%) patients CHD was not detected. In stratification of Congenital Heart Diseases (CHD) with age we found that in the age group of 1 Day it was detected in 14 (9.3%) patients whereas it was not detected in 12 (8%) patients, in age group of 2 Days it was detected in 19 (12.7%) patients whereas it was not detected in 19 (12.7%) patients, in age group of 3 Days it was detected in 9 (6%) and was not detected in 10 (6.7%) patients, in age group of 4 Days it was detected in 10 (6.7%) patients and was not detected in 7 (4.7%) patients, in age group of 5 Days it was detected in 16(10.7%) and was not detected in 16 (10.7%). In age group of 6 Days, it was detected in 5 (3.3%) patients whereas it was not detected in 4 (2.7%) patients and in age group of 7 Days, it was found in 6(4%) patients whereas it was not detected in 3(2%) patients with P Value 0.547. Stratification of Congenital Heart Disease (CHD) with gender was found in 62 (41.3%) Male patients whereas in 54 (36%) Male patients, Congenital Heart Disease (CHD) were not detected. In 17(11.3%) Female Patients, Congenital Heart Diseases were detected whereas in 17(11.3%) female patients, congenital Heart Diseases (CHD) was not detected with P-Value 0.723.

Incidence of CHD varies in different studies, reporting it high in infants of diabetic mother, some studies showed that the incidence of CHD was more common in pre gestational diabetes than gestational diabetes mellitus[8]. In one study, the most common echocardiographic findings showed PDA in 54.7%, HCMP in 24%, VSD in 4%, ASD 2.7%, TGA in 1.3%, and COA in 1.3%[8]. In another study, the most echocardiographic findings in IDM were asymmetrical septal hypertrophy in 80%, PFO in 37.5% and PDA in 27.5%[9].

In Pakistan, one study showed that the incidence of CHD in IDM was 52.5%[10] which is almost similar to our study which shows CHD in 79 (52.7%) while in 71 (47.33%) patients CHD was not detected. Other studies showed that 69% of IDM were males and 31% were females[1]. However, in our study, IDMs were 116 (77.3%) in males whereas 34 (22.7%) were female patients.

CONCLUSION

Our study concluded moderate prevalence of congenital heart disease in infants born to diabetic mothers.

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