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Physiology

Clinical Findings of Patients with Congenital Cyanotic Heart Diseases Using Cardiac Catheterization

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Abstract | **Original Research Article**

Introduction: Cardiac catheterization is a procedure to examine how well your heart is working. A thin, hollow tube called a catheter is inserted into a large blood vessel that leads to your heart. Now cardiac catheterization is being used widely. But there are very few studies are found on clinical findings of male & female patients with congenital cyanotic heart diseases using cardiac catheterization in Bangladesh. ***Objective:*** The main objective of this study was to assess clinical findings of male & female patients with congenital cyanotic heart diseases using cardiac catheterization. ***Method*:** This was a prospective experimental study was distributed in the Department of Cardiology, Rajshahi Medical College Hospital, Rajshahi Bangladesh during the period from January 2018 to December 2019. A total of 50 patients were screened with congenital cyanotic heart diseases. The data of male and female participants were displayed separately in the tables for better analysis. ***Result:*** The highest portion patient with congenital cyanotic heart diseases was found from 51-60 years' age group and that was 17 (34%). This rate was followed by 16 (32%) from 41-50 years' age group, 11 (22%) from 31-40 years' age group, 4 (8%) from 60+ years' age group and 2 (4%) from 18-30 years' age group. So it can be claimed that the chance of congenital cyanotic heart diseases increases with the age of people. ***Conclusion:*** In our study we found the chance of congenital cyanotic heart diseases increases with the age of people. Besides this, all the findings of this study may be helpful for further studies considering all the limitations of this study as it was a single centered study with a small sized sample.

Keywords: Echocardiography, Heartbeat, Cardiomegaly.

INTRODUCTION

Cardiac cycle consists of every heartbeat and pulsation, and so the classical syndrome of symptom heart disease, may even be either because of pulse pathology or pulse pathology or both. Symptom heart disease (CHF) with ancient elevate cavity pulse operate Associate in Nursing abnormal pulse operate could also be a standard clinical entity. Typically, signs and symptoms square measure indistinguishable from those of heart disease related to pulse dysfunction [1]. In cases of CHF in old patients, the prevalence of left cavity failure with traditional ejection fraction is as high as 30-40[2] with blood vessel cardiovascular disease being the foremost frequent etiologic cause [3].

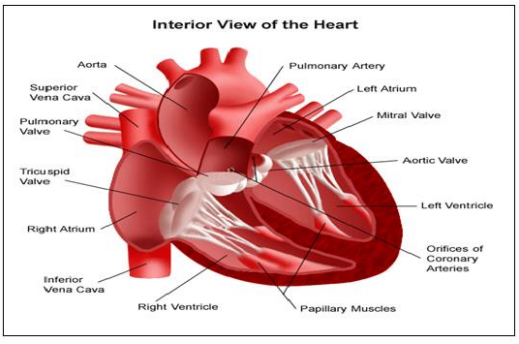

Fig-1
Source: Google

With the loss of elastic properties of the guts, there is reduction in compliance and with impairment of relaxation; there is a rise in cardiac muscle wall tension throughout pulsation, every of that cause increased

pulmonary vital sign. The foremost common condition inside that these factors conspire to elevate filling pressure is upset. Loss of elastic properties in upset leading to abnormal pulse operate results from the results of hypertrophy and increase in albuminoid network of the heart muscle[1] represented the dynamic albuminoid turnover within the heart muscle albuminoid. With a high strength, may be a major determinant of chamber stiffness, Factors that seems to contribute to the looks of heart muscle pathology through their effects as albuminoid turnover embrace hormones of the renin-angiotensin-aldosterone system, endothelia and bradykinin [4]. Besides this, impaired active relaxation additionally contributes to the trail physiology of cavity pulse disfunction, ensuing from general cardiovascular disease, artery illness and aging. Symptom heart condition caused by abnormal pulse operate could also be way more common than antecedently recognized. The pulse disorder ought to be distinguished from pulse abnormalities as a result of treatment is significantly different. A history of MI, mega porta, Q-wave on the graph Associate in nursing associate degree S, gallop favor's pulse pathology. However, Associate in Nursing S4 gallop, left cavity hypertrophy and ancient organ size favor pulse function' however, there is overlap since the unhealthiness might end up either or both' Clinical assessment whereas not organ imaging is, therefore, incomplete and inaccurate in many cases [5]. To accurately distinguish between pulse and pulse dysfunction, left cavity operate ought to be assessed. This might be accomplished with process, radionuclide radiography or picturing ventriculography. Therefore, noninvasive procedures like radionuclide and picture studies to be wide used. Whereas radionuclide X-ray photography may be a powerful tool for excluding left cavity pulse disfunction, its use for diagnosis pulse dysfunction is proscribed [6]. Christian Johann Doppler diagnostic technique, a noninvasive and straightforward procedure, provides insight into left cavity pulse disfunction[2]. As a result of the trail physiological mechanism in pulse heart condition includes a high pulse pressure-volume relationship, the medical care has been directed at reducing filling pressure by decreasing end-diastolic volume, reducing rate and treating cardiovascular disease with medicine that additionally cause regression of left cavity hypertrophy[1]. The syndrome of pulse heart disease is common but neglected event at intervals the analysis of hypertensive patients. The signs and symptoms may even be like those in patients with pulse heart disease. The prognosis may even be utterly totally different because of nonuniformity at intervals the parent population. There is not any uniformity within the thanks to diagnose and also the thanks to tear patients with heart disease with pulse dysfunction. Therefore, this study was undertaken to determine the left cavity pulse dysfunction in symptom heart disease succeeding from general upset in our population.

OBJECTIVES

General Objective

To assess Clinical findings of male & female patients with congenital cyanotic heart diseases using cardiac catheterization

Specific objectives

To assess the effectiveness of cardiac catheterization in diagnosis and treatment on patients with congenital cyanotic heart diseases

METHODOLOGY AND MATERIALS

The present prospective experimental study was undertaken in the Department of Cardiology, Rajshahi Medical College Hospital, Rajshahi, Bangladesh during the period from January 2018 to December 2019. Fifty indiscriminately designated hypertensive patients both male and female with congenital cyanotic heart diseases were taken as the study population. A pre designed questioner had been used for data collection. The Inclusion Criteria were: a) Patients with history of systemic hypertension for >5 years. b) History of infectious disease and rheumatic heart condition, engorged heart condition and any general diseases that causes left cavum hypertrophy and c) History of angina or MI. On the other hand the Exclusion Criteria were: a) History of diabetes, chronic kidney failure and hypertrophic. b) Any endocardial, heart muscle or serous membrane malady. c) Sinus rhythm and d) Secondary hypertension. Maintaining all the inclusion and exclusion criteria and deducting the participants with uncompleted data finally those 50 participants were fixed as study population. Among the total participants 26 were male and rest 24 were female. For better analysis the data of male and female were displayed separately in several tables.

RESULTS

In this study 26 (52%) were male and 24 (48%) were female patients. The highest portion patient with congenital cyanotic heart diseases was found from 51-60 years' age group and that was 17 (34%). This rate was followed by 16 (32%) from 41-50 years' age group, 11 (22%) from 31-40 years' age group, 4 (8%) from 60+ years' age group and 2 (4%) from 18-30 years' age group. So it can be claimed that the chance of congenital cyanotic heart diseases increases with the age of people. According to the history of the patients we found highest number 15 (30%) patients had been suffered from bellow five years. Then this rate was followed by 14 (28%) for 6-10 years, 10 (20%) for 11-15 for years, 9 (18%) for 16-20 years and 2 (4%) for more than 20 years.

In assessment of Correlation between the findings of Doppler echocardiography & cardiac catheterization we found 100% patients with diastolic dysfunction by Doppler echocardiography. But through it was found 81.82% among 22 ETT positive patients.

Table III shows Correlation between Doppler echocardiographic findings and cardiac catheterization of the respondents, most of the respondents were present and ETT positive patients 18(81.82%) were present and 4(18.18%) were absent. Table V Shows dyspnea in twenty-six cases and in twenty-four cases. Mean age is fifty-three. 65 years with Coyote State eleven. 28 and fifty-seven. 29 with Coyote State nine. 44 in Males were thirty-one and feminine nineteen. Mean pulse ±SD is eighty. 92+8.03 and 78.75+6.18 in S3 were in the main found, whereas S4 each pulse and heartbeat force per unit area is higher, LVH were a lot of positive, enlarged heart, ejection fraction a lot and period of cardiovascular disease were virtually equal.

Table-I: Age and sex distribution of the study patients (N=50)

Age (Yrs.)	Male		Female		Total	
	n	%	n	%	n	%
18-30	1	3.85	1	4.17	2	4
31-40	6	23.08	5	20.83	11	22
41-50	8	30.77	8	33.33	16	32
51-60	9	34.62	8	33.33	17	34
60+	2	7.69	2	8.33	4	8
Total	**26**	**100**	**24**	**100**	**50**	**100**

Table-II: Duration of hypertension and diastolic dysfunction (N=50)

Year	Male		Female		Total	
	n	%	n	%	n	%
<5	8	30.77	7	29.17	15	30.00
6-10	7	26.92	7	29.17	14	28.00
11-15	5	19.23	5	20.83	10	20.00
16-20	4	15.38	5	20.83	9	18.00
>20	2	7.69	0	0.00	2	4.00
Total	**26**	**100.00**	**24**	**100.00**	**50**	**100.00**

Table-III: Correlation between the findings of Doppler echocardiography & cardiac catheterization (N=50)

Diagnosis	Diastolic dysfunction			
	Present		Absent	
	n	%	n	%
Doppler Echo. (n=50)	50	100	0	0
Cardiac Cathe. (n=22)	18	81.82	4	18.18
Cardiac catheterization was done in only in ETT positive patients				

Table-IV: Clinical findings according to degree of hypertrophy (n=50)

Components	Male	Female	p value
General			
Dyspnea (NYHA II-IV)	26(100%)	24(100%)	NS
Age(years) (Mean± SD)	55.65±11.28	57.29±9.44	NS
Sex			
Male	19(73.08)	12(50.00%)	NS
Female	7(26.92%)	12(50.00%)	
Heart Rate (Mean± SD)	80.92±8.03	78.75±6.18	
Heart Sound			
S3	4(15.38%)	17(70.83%)	NS
S4	15(57.69%)	5(20.83%)	
Systolic BP (Mean± SD)	169.23±24.81	176.67±23.34	NS
Diastolic BP (Mean± SD)	93.85±8.87	98.96±9.09	<0.05*
ECG(LVH)			
Positive	25(23.08%)	4(16.67%)	<0.01* *
Negative	1(3.85%)	20(83.33%)	
Cardiomegaly			
Positive	6(23.08%)	7(21.17%)	<0.01* *
Negative	20(76.92%)	17(70.83%)	

*** =significant, * * =highly significant, NS= Not significant**

DISCUSSION

The main objective of this study was to assess clinical findings of male & female patients with congenital cyanotic heart diseases using cardiac catheterization. As a result of the sample size wasn't very large, they'll not be representative of all hypertensive heart diseases with congenital cyanotic heart diseases at intervals the community. Within a study, age of the study population ranged from thirty to seventy-five years, with incidence in 61-70 years comprising thirty-two p.c, followed by 51-60 years twenty-eight p.c, 41-50 years twenty-four p.c, 71-75 years eight p.c and 30-40 years half-dozen p.c. Paul and Gheorghiade *et al.* [1]. Additionally, found pulsation pathology additional in aged (50 to sixty years) cluster. Though by customary echocardiographic criteria is reversal of E/A quantitative relation favor's the diagnosing of pulsation pathology [2] have shown that this inversion could also be traditional in older subjects. To evaluate the Influence of the ventricular mass and rate of regional ischemia, the cutting point is mass/volume ratio is 1.8 with maximal level of differentiation between hypertrophy and ischemia [3]. Diastolic dysfunction was common in male (62%) than

female (38%). Less number of female patients was involved in the study as small number of female patients attends the hospital for treatment. High incidence of hypertrophy was found in male patients in comparison to female (73.08% vs 26.92%) but incidence is ischemia were about equal in both male and female. There was no published data both at home and abroad to compare the relationship between duration of hypertension and incidence of diastolic dysfunction with the present study. Doppler patterns of diastolic dysfunction include normal diastolic function, impaired relaxation, pseudoformal filling and restricted filling. These patterns evolve from one to another in a single individual with changes in disease evaluation, treatment and loading condition as described by [5]. This phenomenon is called pseudo normalization to indicate that although left ventricular filling appears normal, significant abnormalities of diastolic functions are present. In most cases, left atrial and left ventricular and diastolic filling pressure is elevated, the left atrium is increased in size and patients often complain of exertional dyspnea [7]. Exercise tolerance tests were done hi all cases that were physically active. Out of 50 cases, 22 were positive for providable myocardial ischemia. Among 22, 18 positive cases. Characterized by high degree of reactive hypertrophy and low incidence of ischemia and only moderate hypertrophy and high risk of ischemia. These findings correlated well with the results [8]. There was no significant difference between groups for NYHA class, age, sex, heart rate, systolic blood pressure. A fourth sound was more common in group II, whereas the third sound was more frequent. The findings correlate well with the study [8]. The findings indicate that patients with diastolic dysfunction in hypertensive heart disease with CHF with normal ejection presented hi two ways: one characterized by severe hypertrophy and the other by a high rate of ischemia. But their clinical profile was uniform and indistinguishable from CHF due to depressed LV systolic function as reported [9]. Out study showed the possible influence of degree of hypertrophy or of regional myocardial ischemia on the pathophysiologic or clinical characteristics of hypertensive heart disease results in CHF with normal ejection fraction. It provides a noninvasive, safe and rapid bedside alternative to cardiac catheterization for the assessment of ventricular diastolic function. In our study we found the chances of congenital cyanotic heart diseases increases by age of people and there is not any alternative of proper diagnosis in proper time to save the patients from these types of diseases.

Limitations of our study

This was a single center study with small sample size, which might not be reflected with the scenarios of the whole country.

CONCLUSION AND RECOMMENDATIONS

It was a prospective experimental type study with small sample size, which may not reflect the scenario of the whole country. We would like to recommend for conducting more studies with larger sample size in several places to get more accurate findings.

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