

Original Article



Echocardiographic Changes of The Patients of Bronchial Asthma

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Abstract

Background: Bronchial asthma is the major health problems and causes of chronic morbidity and mortality in Bangladesh as well as worldwide. Echocardiography was performed to observe changes in the patients of bronchial asthma. **Objectives:** The purpose of this study was to observe echocardiographic changes in case of bronchial Asthma. **Materials and Methods:** It was an observational study carried out in the Department of Medicine, Rajshahi Medical College Hospital, Rajshahi for to years. According to inclusion and exclusion criteria 73 people having bronchial asthma were selected. Thorough history, physical examination and spirometric along with echocardiographic assessment were done. **Results:** In case of bronchial asthma, 03(4.11%) cases showed echocardiographic changes and 70 (95.89%) cases showed normal echocardiogram. **Conclusion:** In this study, echocardiographic changes were 4.11% in bronchial asthma patients. So while treating asthma patients' physicians should be aware of the cardiac condition also.

Keywords: Bronchial Asthma, Echocardiography.

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Introduction

Our lungs are affected by multiple disorders such as Obstructive lung diseases e.g. COPD and Bronchial Asthma. These diseases are the major health problems and cause of chronic morbidity and mortality in Bangladesh as well as worldwide.¹ Asthma is a chronic inflammatory disease of lung. Small and medium air ways typical symptoms (cough, wheezing, breathlessness, chest tightness) and air ways narrowing that are partially or completely reversible either spontaneously or by treatment associated with increased air ways responsiveness to a variety of stimuli.² Asthma is a serious respiratory problem affecting 300 millions of people throughout the world. According to First National Asthma Prevalence study (NAPS), 1999, in Bangladesh about 7 million people 5.2% of the population are suffering from current asthma (i.e. at least three episodes of asthma attack in last 12 months).³ For asthma in addition to spirometry 2 peak

expiratory flow, ECG and Echocardiography can be done to see changes (Bangladesh lung health manual, 2009).⁴

Material and Methods

This observational study was done in the department of medicine both indoor and outdoor, Rajshahi Medical College Hospital, Rajshahi from July, 2010 to June, 2012. All asthma patients fulfilling the inclusion and exclusion criteria as were included as cases. Inclusion criteria were within 40 to 70 years age, patients who fulfilled the case definition of bronchial asthma according to GINA Guideline. Both male and female were enrolled. Exclusion criteria were age less than 40 years and more than 70 years. Patients having MI, CKD, CLD, Vulvular Heart Disease, and Hypertension were excluded. Sample size was 73 cases having Bronchial asthma. In case of Bronchial Asthma prevalence in Bangladesh=15.2%.

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Data were collected after taking informed consent of the patients. The data was analyzed with the help of SPSS (Statistical Package for Social Science) software program version 16.0. Descriptive analytical technique involving frequency distributions, computation of percentage were applied. Association between variables was conducted applying statistical tests. P-value <0.05 was considered significant.

Results

To achieve this goal, a total 73 bronchial asthma patients aged 40-70 years were included in this study. The patients were free from diseases other than bronchial asthma. The cases were under gone through complete history taking, physical examination and spirometric examination. Spirometry was done firstly without using bronchodilator inhalation in all the cases and those who showed obstruction, they were also under gone through post bronchodilator spirometry to confirm irreversible obstruction i.e. COPD (FEV1 <15%) and post bronchodilator spirometry if FEV1 increases ?15%, it was treated as bronchial asthma. Then staging of bronchial asthma was done according to National Guidelines Asthma's Criteria (2010). Then echocardiographies were done among the asthma cases to observe changes among them.

Table I: Age distribution of the study population

Age group (yrs.)	Asthma (n=73)	
	N	%
40 -50	27	36.99
51 -60	31	42.47
61 -70	15	20.55
Total	73	100

Maximum age group of bronchial asthma were between 51-60 years, number of subjects were 31(42.47%). Minimum age group of asthma were between 61-70 years, number of subject were 15(20.55%) (Table I)

Table II: Sex distribution of the study population

Sex	COPD (n=64)		Asthma (n=73)	
	N	%	N	%
Male	63	98.44	40	54.79
Female	01	1.56	33	45.21
Total	64	100	73	100

40 (54.79%) cases were male and 33 (45.21%) case were female out of 73 cases. (Table II)

Table III: Occupation distribution among cases of Asthma

Occupation	Asthma (n=73)	
	No.	Percentage
Farmer	25	34.25
Businessman	13	17.8
Service	11	15.07
Housewife	24	32.87
Total	73	100

Maximum of the cases of asthma were farmers 25(34.25%) out of 73 were farmer. Minimum cases of asthma were service holder 11(15.7%). (Table III)

Table IV: Change of right atrium in echo among the cases of asthma

Right atrium	Asthma (n=73)	
	No.	Percentage
Normal	70	95.89
Dilated	03	4.11
Total	73	100

Seventy (95.89%) cases were normal and 03(4.11%) showed hypertrophy out of 73 asthma cases (Table IV) .

Table V: Change of right ventricle in Echo among the cases of asthma

Right ventricle	Asthma (n=73)	
	No.	Percentage
Normal	70	95.89
Dilated	03	4.11
Total	73	100

Maximum cases 70 (95.89%) were normal and 03(4.11%) showed dilated right ventricular out of 73 asthma cases (Table)

Table VI: Change of Tricuspid valve in Echo among the cases of Asthma

Tricuspid valve	Asthma (n=73)	
	No.	Percentage
Normal	70	95.89
TR	03	4.11
Total	73	100

Maximum 70 (95.89) were normal tricuspid valve and 03(4.11%) were tricuspid regurgitation out of 73 asthma cases(Table VI)

Table VII: Total No. of normal and Echo change among the cases of Asthma

Echo	Asthma (n=73)	
	No.	Percentage
Normal	70	95.89
Change	03	4.11
Total	73	100

70 (95.89%) cases were normal echo and 03 (4.11%) showed echo change out of 73 asthma cases.

Discussion

Bronchial asthma is an obstructive pulmonary disease. The disease is a major health problem and cause chronic morbidity and mortality in Bangladesh as well as worldwide.

In our study, maximum age group of asthma were between 51-60 years, number of subjects were 31(42.47%). Minimum age group of the cases were between 61-70 years, number of subjects were 15 (20.55%.)

(54.79%) cases were male and 33 (45.21%) cases were female out of 73 cases. According to GOLD (Global Initiative for Chronic Obstructive Lung Disease) in its Global Strategy for diagnosis, management and prevention executive summary, update 2009, the risk of developing asthma is inversely related to socioeconomic status i.e. it occurs more in illiterate and primary (75.3%), farmers (34.25%) and low income group earning <3000 Tk/month (52.1%)

Duration of illness, 31.51% were <5 years, 23.29% were within 6-10 years, 10.96% were 11-15 years, 12.33% were within 16-20 years and 21.92% were >21 years. According to a study conducted in Bangladesh on Burden of Obstructive Lung Diseases in Bangladeshi, patients involved by asthma are 40-50 years (31.51%). For the age group 51-60 years involvement was 42.47% and for 61-70 years it was 20.55%. Spirometric classification of asthma based on National Guidelines Asthma was 2.7% mild, 66.3% moderate, 34.2% severe and 2.7% life threatening. The study in Singapore, in case of asthma right ventricular dilatation were not seen.⁴ In our study bronchial asthma tricuspid regurgitation (TR) was 4.11%.

In case of right atrial and right ventricular dilatation, it was 4.11%. In the study there was cardiac enlargement in asthma cases.⁵ In our study we found that right heart enlargement also occurred i.e. both right atrial and right ventricular dilatation that was 4.11%. Table-VII.

Our study populations were 73. 70(95.89%) showed normal echocardiogram and 03(4.11%) showed echocardiographic changes.

Conclusion

In this study, Echocardiographic changes were 4.11% in bronchial asthma patients. So while treating asthma patients physician should be aware of the cardiac condition also.

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