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Case Report

Study of Outcome of Children with Bronchial Asthma with Special Reference to Pulmonary Function Test

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Abstract

Aim: To study the disease control via pulmonary function test with usage of bronchodilators in bronchial asthma patients.

Setting and design: Prospective cohort study done at Asthma clinic, Dept of pediatrics, BJ medical college, Ahmedabad.

Materials and Methods: Patients enrolled in this study were from asthma clinic BJ medical college and Civil hospital. Pulmonary function test was done on total of 91 known asthma patients. Here three parameter of lung function is taken in to account. Percentage OD FEV1 of predicted, FEV1:FVC Ratio and PEFR , its effect on bronchodilators on PEFR.

Results: Out of 91 patients, 72 (79.25%) patients had almost normal pulmonary function. Only 1 patient had severe restriction of pulmonary function and 18 patients had moderate restriction of lung function. All patients shows improvement in PEFR more than 20% after bronchodilators therapy which is suggestive of reversible air flow limitation.

Keywords: PEFR; FEV_1; FVC

Abbreviations: PEFR: Peak Expiratory Flow Rate; FEV_1-Functional Vital Capacity at 1 second; FVC: Functional Vital Capacity

Introduction

Asthma is a chronic inflammatory disorder associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing in night or in the early morning. These episodes are usually associated with wide spread, but variable, airflow obstruction within the lung that is often reversible either spontaneously or with treatment. Spirometry helpful in clinically diagnosis of asthma is in doubt, improvement in FEV more than 12 % after inhaled short acting bronchodilators establishes the diagnosis of asthma, FEV_1/FVC ratio less than 0.80 suggestive of significant airflow obstruction. Exercise challenge, worsening in FEV > 15% suggestive of exercise induced asthma.

Materials and Methodology

a. Setting and Design: Prospective cohort at Asthma clinic BJ medical college and Civil Hospital.

b. Study period: January to September 2018

c. Inclusion Criteria: Diagnosed and enrolled patients at Asthma clinic

d. Exclusion criteria: Other respiratory disorders (Tables 1-3).

Table 1: % FEV_1 predicted.

% FEV_1 of predicted	No of patients (n=91)	Percentage of total
Mild or no obstruction >80 %	72	79.2 %
Moderate obstruction >60 % to <80 %	18	19.7 %
Severe obstruction < 60 %	1	1.1 %
Total	91	100 %

Table 2: FEV_1: FVC Ratio.

FEV_1: FVC ratio	No. of patients (N=91)	% of total
>80 %	72	79.2 %
75 to 80 %	18	19.7 %
<75 %	1	1.1 %
Total	91	100 %

Table 3: PEFR Effects on inhaled bronchodilators on peak expiratory flow rate in patients with acute asthma.

Number of patients	Increased PEFR >20 % after bronchodilator therapy
91	91

Discussion

Pulmonary Function test is done in total 91 patients. Hence three parameters of lung function are taken in to account.

i. % of FEV_1 of predicted

ii. FEV_1:FVC Ratio

iii. PEFR and effects of bronchodilators on PEFR

Out of 91 patients, 72 (79.2%) patients had almost normal pulmonary function. Only 1 patient had severe restriction of pulmonary function and 18 patients had moderate restriction of lung function. All patients shows improvement in PEFR more than 20% after bronchodilators therapy which is suggestive of reversible air flow limitation.

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