

Peak Expiratory Flow Rate in Bronchial Asthamatic Patients

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Abstract: *Bronchial Asthma is a disease characterized by hyper reactive airways, leading to episodic, reversible bronchoconstriction, owing to increased responsiveness of the tracheobronchial tree. The usual symptoms in Bronchial Asthma are breathlessness, tightness in the chest, wheezing and coughing, especially at night. It was possible to include 80 male patients with bronchial asthma in the age range of 20 – 50 years during the study period. These participants were again divided into two age sub groups for comparison purpose. Wright's Peak flow meter was used to measure Peak Expiratory Flow Rate. ⁴ The participants were explained in detail how to use the peak flow meter. Three readings were obtained and the highest recording was taken as PEFr of that subject. The participant's data was recorded in a pre designed and pre tested questionnaire. The mean PEFr for non smokers was higher than that for smokers but the difference was not found to be significant ($p > 0.05$). The smokers in this age group were found to have lower mean PEFr values when compared to non smokers. This difference in the mean value is found to be statistically significant ($p < 0.05$). It is concluded that PEFr is lower in Bronchial Asthma Subjects who smoke than Non-Smokers with asthma and in older age group than younger age group*

Keywords: PEFr, Wright's Peak flow meter, Bronchial Asthmatics.

1. Introduction

Bronchial Asthma is a disease characterized by hyper reactive airways, leading to episodic, reversible bronchoconstriction, owing to increased responsiveness of the tracheobronchial tree.¹ The word asthma is a Greek one meaning 'breathless or to breath with open mouth'. Originally applied to shortness of breath of any cause, as in the description of the mode of death of metal miners. It was named Asthma by scientist "Agricola" in 1556. Sir John Flyer in his Treatise of Asthma (1698) used the term in its general sense but confined himself largely to discussing the episodic type from which he suffered.²

Bronchial Asthma is of two types:

- Extrinsic Bronchial Asthma, Which is due to allergens.
- Intrinsic Bronchial Asthma, Which is due to inflammation.³

The usual symptoms in Bronchial Asthma are breathlessness, tightness in the chest, wheezing and coughing, especially at night.

2. METHODS

Study place:

Gandhi Medical College and Hospital, Secundarabad

Study period:

January 2000 to July 2001

Study design:

Cross sectional comparative study

Study population:

All study subjects were males as we could not find any females who were smokers. Even though they may be there, they were not willing to disclose their smoking status or not willing to participate in the study. It was possible to include 80 male patients with bronchial asthma in the age range of 20 – 50 years during the study period. These participants were again divided into two age sub groups for comparison purpose.

Methodology:

Wright's Peak flow meter was used to measure Peak Expiratory Flow Rate. ⁴ The participants were explained in detail how to use the peak flow meter. Three readings were obtained and the highest recording was taken as PEFr of that subject. The participant's data was recorded in a pre designed and pre tested questionnaire.

Statistical analysis:

The data was compiled and analyzed using mean and standard values. Student's t test was used to compare the difference in the mean values of the two groups. The difference was considered statistically significant when p value was found less than 0.05.

3. RESULTS

Table 1: Comparison of PEFR values among smokers and non smokers with bronchial asthma in the age group of 20 – 35 years

Category	Mean±PEFR value	T value	P value	Significance
Non smokers (n = 18)	330±115	1.6352	0.1141	Not significant
Smokers (n = 10)	258±105			

The mean PEFR for non smokers was higher than that for smokers but the difference was not found to be significant. (p > 0.05)

Table 2: Comparison of PEFR values among smokers and non smokers with bronchial asthma in the age group of 36 – 50 years

Category	Mean±PEFR value	T value	P value	Significance
Non smokers (n = 13)	273±110	2.4772	0.0180	Significant
Smokers (n = 39)	205±78			

The smokers in this age group were found to have lower mean PEFR values when compared to non smokers. This difference in the mean value is found to be statistically significant. (p < 0.05)

4. DISCUSSION

We found that the mean PEFR is lower in smokers compared to non smokers. Murdoch J.C (1985) studied Asthma and Peak

Expiratory Flow rates and found that all pulmonary function tests values significantly deteriorated when compared to normal Non-Smokers. Bronchial Asthmatics were found to have significantly lower value of PEFR in comparison to non-smokers.⁵ Other studies done by Pyszczynski D et al (1985), Sly P, et al (1985), Williams A J et al (1985), Woo J et al (1988) showed that PEFR in Bronchial Asthma was significantly low when compared with non-smokers in all age groups.^{6, 7, 8, & 9}

5. CONCLUSION

It is concluded that PEFR is lower in Bronchial Asthma Subjects who smoke than Non-Smokers with asthma and in older age group than younger age group.

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