

ORIGINAL ARTICLE**FREQUENCY OF GASTRO-ESOPHAGEAL REFLUX SYMPTOMS IN ASTHMATIC
PATIENTS**

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ABSTRACT

OBJECTIVE: To estimate the frequency of Gastro-Esophageal reflux symptoms in asthmatic patients.

Design: A prospective questionnaire based study.

Place and Duration of study: Jinnah Post Graduate Medical Center, Karachi (Pulmonology Department) from June 1999 to June 2000.

Subjects and Methods: Symptoms related to gastro-esophageal reflux were compared between two groups of which one group asthmatic while the second group was healthy volunteers. The first group comprised of 103 asthmatic patients and second, a control group consisted of 100 healthy individuals visiting out patient clinic as attendant. Both were interviewed about their reflux symptoms and surveyed with same questionnaire.

The diagnosis was made on Spirometry in all asthmatic patients who showed an increase in FEV₁ of at least 15% after bronchodilator, and a clinical picture consistent with the diagnosis of asthma.

Results: Among the asthmatics 73.8% experienced retro-sternal burning, 59.2% regurgitation, 49.5% belching and 91.3% cough, while in control group similar symptoms were experienced by 35%, 30%, 29%, and 22% respectively.

Conclusion: The questionnaire demonstrated a greater prevalence of Gastro-Esophageal Reflux symptoms in asthmatics as compared to the Control group.

KEY WORDS: Asthma, Gastro-esophageal reflux, retro-sternal burn, regurgitation, cough

INTRODUCTION:

Gastro-esophageal reflux disease and asthma are both common medical conditions that often co-exist¹. However the relationship between the two is still controversial². In a minority of asthmatics gastro-esophageal reflux aggravates or triggers asthma. The pathogenic mechanism can be a vagally transmitted reflex as well as micro-aspiration of refluxed material³. It is believed that acid reflux may stimulate vagal receptors in the lower oesophagus causing reflex bronchoconstriction. However, GER may be worsened by asthma causing abnormal diaphragm mechanics and by its treatment. Medical therapy with anti-reflux medications may improve both GER and asthma control. Studies have shown that up to 80% of asthmatics have abnormal gastro-esophageal reflux¹. In this prospective study we tried to evaluate, whether there is any difference in between asthmatics and control group.

MATERIAL AND METHODS:

This prospective, questionnaire based study was conducted between June 1999 to June 2000, at Jinnah Post Graduate Medical Centre, Karachi.

Symptoms related to gastro-esophageal reflux were compared between two groups of patients. The first group comprised of 103 asthmatic patients and second control group consisted of 100 healthy individuals visiting out patient clinic as attendant.

Both were surveyed with same questionnaire.

QUESTIONNAIRE:

It was designed to assess the severity of asthma symptoms, the severity of GER both retrosternal burn and regurgitation and determine whether asthma symptoms worsened.

All patients who fulfilled the following criteria for the definition of asthma were included in the study.

Patients had at least one of the following:

1. An increase in FEV_1 of at least 15% after bronchodilator.
2. Spontaneous variability of peak expiratory flow rates (PEFR) or FEV_1 of 20% or more. A clinical picture consistent with the diagnosis of asthma.

The comparison of difference percentages are analyzed by chi-square test of proportion. The results were considered significant for all values of $P < 0.005$.

RESULTS:

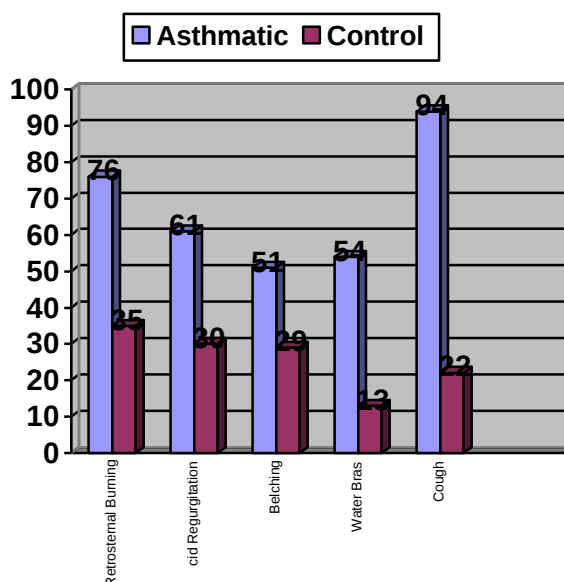
Demographic data for the patients are presented in Table 1, consisting of 103 asthmatic patients and 100 were in control group, all were healthy and non-asthmatics. The diagnosis in asthmatic patients was made on Spirometric reversibility with bronchodilator $FEV_1\%$, $FEV_1 / FVC\%$. All the asthmatics showed reversibility $>15\%$. Spirometry was not done in control subjects. Age range was 20-60 in both groups. Male to female ratio was 48: 52 in asthmatics, and 57: 43 in control group. The proportion of smokers and former smokers were similar in the asthma and control groups i.e. 14.56% vs. 12% (not significant).

The presenting symptoms are listed in Table 1. Symptoms related to gastro esophageal reflux like retro-sternal burning were significantly higher in asthmatics as compared to normal controls. Other symptoms such as belching and water brash though less in propensity as compared to other symptoms, but was still significantly higher in asthmatics. Cough was found to be a major presentation in patients who were asthmatics as compared to normal control (Table 1, Figure 1).

TABLE – 1

THE PRESENTING SYMPTOMS OF GER IN ASTHMATICS AND CONTROL GROUP

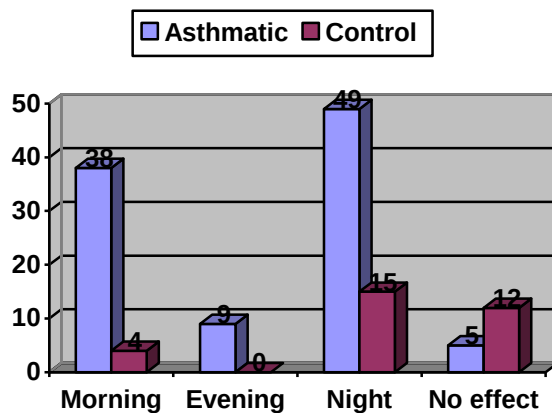
Presenting symptoms	Asthmatic (n=103)	Control (n=100)	P-value
Retrosternal burning	76 (73.8%)	35 (35%)	P<0.001
Acid regurgitation	61 (59.2)	30 (30%)	P<0.001
Belching	51 (49.5%)	29 (29%)	P<0.001
Water brash	51 (52.4%)	13 (13%)	P<0.001
Cough	94 (91.3%)	22 (22%)	P<0.001

FIGURE – 1**PRESENTING SYMPTOMS OF GER IN ASTHMATIC AND CONTROL**

Cough which was a major symptom in asthmatics with gastro-esophageal reflux was found to have a temporal relationship and was experienced more in the morning (38% vs. 4% $P<0.001$) and night (49% vs. 15% $P<0.001$). Whereas it was far less at all the times of the day and night in the control group (Figure 2).

FIGURE – 2

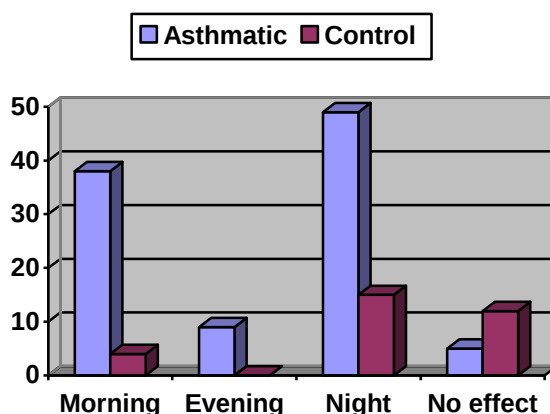
Specific time of cough



Aggravation of symptoms related to posture is shown in Figure 3. Most of them had aggravation of symptoms on lying down (45 vs. 16; $P<0.001$) and bending position (34 vs. 11; $P<0.001$). In asthmatics, its relationship was significantly higher as compared to control group, 12 asthmatics patients had no symptoms relationship with change of posture (12 vs. 67 $P<0.001$). However in the control group all the symptoms were for less affected by the change of posture (Figure 3).

FIGURE – 3

AGGRAVATION OF SYMPTOMS RELATED TO POSTURE



Various medications were taken by asthmatics. Majority of them (55.2%) were on β_2 agonist (tablets 31% and inhalers 24.2%); xanthine derivatives (21.3%); corticosteroid in oral form 6.7% and inhaled form 16.5%. A few subjects in control group were also on asthmatic medications without being, diagnosed for asthma.

Regarding anti reflux or ant acid treatment, a total of 22 asthma patients were on at least one medication for their gastro-esophageal reflux symptoms; 20.4% took antacids with or without other medication, whereas only 2% of the control subjects used antacid (20.4% vs. 2% $P<0.001$) (Table 2).

TABLE – 2

Anti reflux medications used

Medication	Asthmatic (n=103)	Control (n=100)	P-value
Antacids	21 (20.4%)	2 (2%)	P<0.001
H ₂ blockers	1 (0.9%)	-	Not possible
Not taking any drug	81 (78.6%)	98 (98%)	P<0.001

DISCUSSION:

Gastro-esophageal reflux is a potential trigger of asthma. GER symptoms are more prevalent in asthma patients compared with control population; with prevalence of approximately 75%. GER symptoms are associated with respiratory symptoms and inhaler use^{4, 5}.

Recently, Sontag and Coworkers⁶ report that 40% of asthmatics have endoscopic evidence of erosive esophagitis; therefore, it may as well be that the prevalence of reflux symptoms is greater than that reported by others⁷.

The relationship between asthma and GERD is controversial. Antireflux therapy improves asthma symptoms and reduces medications requirement but does not improve pulmonary function⁸.

In the present study we have found a greater prevalence of gastro-esophageal reflux symptoms in asthmatics as compared to the control group of similar age, gender, smoking habits.

A recent ambulatory pH monitoring study done in an American Veteran's Administration Hospital demonstrated abnormal gastro-esophageal reflux is more than 80% of asthmatics⁹.

Does asthma cause GER?

There is controversy about the association between GER and asthma, but the exact nature of the relationship is unclear.

Moote and Coworkers¹⁰ demonstrated an increase in GER during methacholine induced bronchospasm in patients with mild asthma. Cough and the greater respiratory muscle effort that accompany asthma increases abdominal pressure, facilitating the movement of gastric secretions past the lower esophageal sphincter, moreover, diaphragmatic contractions contribute to the development of lower esophageal sphincter pressure^{11,12}.

Both β_2 agonists and theophyllines reduce lower esophageal sphincter pressure in animals and humans¹².

In the present study, asthma patients had a higher prevalence of GER symptoms and greater need for antireflux medication than control group.

Does GER make asthma worse?

The high asthma prevalence in patients with GER and the beneficial effect of successful esophageal surgery on asthma has been reported¹³. The results of controlled studies designed to demonstrate that GER triggers asthma have been conflicting¹⁴.

In one report conservative therapy improved asthma symptoms and reduced bronchodilator requirements but did not improve results of Spirometry¹⁵.

In another study done on asthmatics with GER, cimetidine, improved both GER and asthma symptoms and was associated with a slight but statistically significant increase in PEF¹⁶.

The findings of present study are consistent with most of international studies in many respects.

CONCLUSION & RECOMMENDATIONS:

The questionnaire demonstrated a greater prevalence of gastro-esophageal reflux symptoms in asthmatics as compared to the control group. It would suggest that approximately 73% of asthmatics experience symptomatic reflux. At least one anti-reflux medication was required by 20.4% of asthmatics.

- GERD should be considered as a cause of cough if there are typical GER symptoms or if cough remains unexplained after standard investigations.
- An empiric trial of antireflux medication can assist in suggesting GERD as a cause of chronic cough.
- Medical therapy with antireflux medications may improve both GER and asthma symptoms and reduces bronchodilator requirements.

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