



Frequency of gastroesophageal reflux disease in nonatopic children with asthma-like airway disease

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Summary Gastroesophageal reflux disease (GERD) is commonly associated with asthma; however, frequency in nonatopic children with asthmatic symptoms is unknown. The aim of this study was to determine the frequency of gastroesophageal reflux (GER) in nonatopic children with asthma-like airway disease that recur despite conventional asthma treatment and to evaluate the clinical response to lansoprazole treatment. Twenty-five nonatopic children aged between 1 and 16 years who have asthma-like airway disease and 25 healthy children were included in the study. All cases underwent 24 h pH monitoring with dual sensor catheters. Additionally, acid suppressor treatment was administered to patients diagnosed as having GERD and clinical response was evaluated.

Major symptoms encountered in the patient group included wheezing and cough (88%, and 32%, respectively). Reflux episodes were more common in distal esophagus during the prone position (reflux index (RI) of 11.5 ± 10.3 vs. 16.2 ± 9.4 during supine vs. prone). All distal esophageal parameters were significantly higher in the patient group except number of reflux episodes lasting longer than 5 min (RI of 13.3 ± 13.1 vs. 3.9 ± 2.9 in the patient vs. control groups, respectively). There was a significant improvement in symptoms and requirement for medication with treatment (number of systems decreased from 2.3 ± 0.6 to 0.4 ± 0.6 , $P = 0.00$).

In conclusion, GERD is significantly more common in nonatopic children with asthma-like airway disease compared to the controls and clinical improvement is significant after acid suppressor treatment. Thus, we suggest that children followed-up with the diagnosis of nonatopic asthma with recurrent exacerbations despite adequate asthma treatment have a high frequency of GER and that lansoprazole treatment may be considered early in management.

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Introduction

Prevalence of asthma symptoms in children reaches up to 30% in some populations.¹ The pathophysiology of this disease depends on airway hyperresponsiveness and airflow limitation.² Only around 10% of asthmatic children have been reported to be nonatopic.³ Allergen exposure is an important factor in exacerbations of respiratory symptoms in children with atopic asthma. However, other factors like gastroesophageal reflux disease (GERD) may be contributing to asthmatic exacerbations in nonatopics because this factor is absent. GERD, which is the passive regurgitation of gastric contents retrograde into the esophagus may be associated with asthma.⁴⁻⁶ However, exact causal relationship has not been confirmed between asthma and GERD.⁴ Most suitable diagnostic tool for GERD is 24 h pH monitoring with a sensitivity and specificity above 90%.^{5,7,8} The relationship between asthma and GERD has been detected in many studies by 24 h pH monitoring.^{7,9-11} However, these studies have not been conducted on a specific subgroup of asthmatic patients and a more precise relationship can be detected if the study population is limited to specific subgroups.

Many different categories of drugs like H₂ receptor antagonists, antacids, prokinetics, and proton pump inhibitors (PPIs) may be used in the treatment of GERD.^{12,13} Among these, PPIs constitute the most effective treatment option for GERD.¹³⁻¹⁶ It has been reported that lansoprazole produce greater symptom relief than omeprazole.¹⁷ Thus, lansoprazole therapy was given to nonatopic children with asthma-like airway disease and GERD in our study.

Therefore, the aim of this study was to detect the frequency of GERD in a subgroup of nonatopic children who have asthma-like airway disease that recur despite asthma treatment and also to evaluate the influence of lansoprazole treatment on asthma severity.

Material and methods

Study population

Twenty-five nonatopic children (16 boys and 9 girls) aged between 1 and 16 years (mean \pm SD of 72.6 ± 38.1 months) who have asthma-like airway disease with recurrent exacerbations despite conventional asthma therapy (such as inhaled steroids, bronchodilator, etc.) directed by international consensus report were included in this prospective

study.¹⁸ It was carried out during the period between January 2003 and October 2004.

Inclusion and exclusion criteria

Diagnosis of asthma-like airway disease was based on history of recurrent cough and wheezing with prolonged expiration time which demonstrated clinical reversibility with short effective bronchodilator therapy, β_2 agonist. Absence of atopy was confirmed by normal immunoglobulin E values in children less than 5 years of age and negative skin prick test in the ones above 5 years of age. Immunoglobulin levels were normal; purified protein derivative (PPD) and sweat chloride test were negative in all the patients. None of the children included in the study had body mass index above 20 to avoid the GER provoking influence of obesity.

Study design

All patients and control subjects underwent 24 h pH monitoring. Patients diagnosed as having GERD according to the results of 24 h monitoring received acid suppressor treatment (lansoprazole). Then, the results of this treatment were evaluated on the basis of symptoms, requirement of bronchodilator, systemic steroid use, days of hospitalizations and number of acute asthmatic attacks.

pH monitoring

All cases underwent 24 h pH monitoring according to a standard protocol. None of the subjects had received anti-reflux treatment during the last 1 month. Moreover, 1 week before the procedure all medications which might interfere with the results were discontinued. Then an antimony catheter with a diameter of less than 2.1 mm and two sensors were placed nasally following an overnight fast. The sensors of the catheter were 10 cm apart to measure pH in the proximal and distal esophagus. Position of the catheter was verified by chest X-ray to be 2-3 cm above the diaphragm.⁹ Measurements of pH were recorded using a pH recorder (Digitrapper Mk 3, Synetics Medical AB, Stockholm, Sweden). Patients received regular feeds during recording and daily activities resumed as normal. Parents recorded the meal times and position of the patients using the buttons on the recorder. Recorded pH data were downloaded in an IBM compatible computer and analyzed by a software (EsopHogram Software System). Fraction of time with pH for proximal and distal esophagus was

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