Alimentary Tract

Irritable bowel syndrome in young and elderly patients with stable asthma

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Abstract

Background. It has been speculated that asthma and irritable bowel syndrome may share common pathophysiological processes.

Aim. To estimate the prevalence of irritable bowel syndrome in young and elderly patients with stable asthma.

Patients and methods. Sixty-five young (age < 60 years) and 66 elderly (age ≥ 60 years) stable asthmatics, and 119 age-matched healthy volunteers were enrolled. In all participants, presence of irritable bowel syndrome, quality of life and psychological status were evaluated.

Results. The prevalence of irritable bowel syndrome in asthmatic group was higher than that in the control group (27.5% versus 16.8%; odds ratio, 1.8 [1.0–3.4]; $p = 0.04$). The prevalence of irritable bowel syndrome was significantly higher in young asthmatics than in age-matched healthy controls (36.9% versus 20.3%; odds ratio, 2.2 [1.0–5.1]; $p = 0.04$) and than in elderly asthmatics (36.9% versus 18.2%; odds ratio, 0.3 [0.1–0.8]; $p = 0.01$). Logistic regression analysis identified the younger age (odds ratio, 2.1 [1.1–3.8]; $p = 0.01$), and the presence of asthma (odds ratio, 1.9 [1.0–3.5]; $p = 0.03$) as independent risk factors for irritable bowel syndrome in all participants after adjusting for gender. We also found impaired quality of life to be associated with the presence of irritable bowel syndrome and asthma in all participants after adjusting for age and gender.

Conclusion. The prevalence of irritable bowel syndrome appears to be significantly higher in young asthmatics, but not in elderly asthmatics, compared to age-matched healthy counterparts. Potential pathogenic mechanisms of higher irritable bowel syndrome prevalence in young asthmatics need to be explained by further studies.

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1. Introduction

Irritable bowel syndrome (IBS) comprises a group of functional bowel disorders in which abdominal discomfort or pain is associated with defecation or a change in bowel habit, and with features of disordered defecation [1]. IBS is a common disorder, accounting up to 15–20% [2] of the general population and 50% of cases seen by gastroenterologists [3]. Health related quality of life (HRQL) in patients with IBS is poor [4,5] and it can lead to loss of time in work or increased health care costs [6].

The symptoms of IBS are often accompanied by upper gastrointestinal symptoms, urinary symptoms, dyspareunia as well as extra-abdominal associations, including the hyper-reactivity of the bronchi [7–10]. Smooth muscle is a common factor in all of these extra-intestinal locations, and it seems logical, therefore, to invoke a hypothesis that involves disruption of central control rather than a primary multiorgan hyper-reactivity or hypersensitivity [11]. Association of IBS with bronchopulmonary disease was initially suspected in 1991, when White et al. [9] showed that IBS patients had an increased prevalence of bronchial hyper-responsiveness.

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Later, the association between IBS and asthma has been reported in a few studies [12–15]; however, in English, we did not find any study in which the prevalence of IBS was evaluated in different age groups of asthmatic patients. We aimed to investigate the prevalence of IBS in young and elderly asthmatic patients across their age-matched healthy counterparts.

2. Subjects and methods

2.1. Patients

Sixty-five young (age < 60 years) and 66 elderly (age ≥ 60 years) asthmatic patients who had been followed up in the outpatient clinics of Respiratory Diseases Department of Kırıkkale University Hospital were included in the study. Diagnosis of asthma was made according to the American Thoracic Society criteria with symptoms of episodic wheezing, cough and shortness of breath responding to bronchodilators, and reversible airflow obstruction documented in at least one previous pulmonary function study [16]. Exclusion criteria were: (i) an acute asthma exacerbation in the month prior to study, (ii) organic bowel disease, (iii) previous abdominal surgery, (iv) any major disease (e.g. diabetes mellitus and hypothyroidism or hyperthyroidism) and (v) smoking. All asthmatic patients were stable and had normal chest radiographies between episodes. Of 131 patients, 87 (50 young and 37 elderly) had mild persistent asthma and 44 (15 young and 29 elderly) had moderate persistent asthma.

2.2. Control subjects

The control group was composed of 119 (59 young and 60 elderly) healthy non-smoker volunteers selected from attendants of mosques or hospital visitors. Control subjects were matched with the asthmatics for gender and age. Subjects with a known history of any respiratory disease, gastrointestinal tract pathology, with previous abdominal surgery, and with any systemic disease were not included in the control group. All the patients and controls signed informed written consent forms, and the study protocol was approved by the Local Ethics Committee.

2.3. Asthma treatment—lung function

According to GINA 2002 guidelines [17], patients with mild persistent asthma had been using only inhaled corticosteroids regularly, and those with moderate asthma had been using inhaled corticosteroids and long-acting beta agonists. None of the patients had been using oral corticosteroids, theophylline preparations, anti-leukotriens, inhaled anti-cholinergics or nedocromil. Moreover, in all cases, spirometric values (FEV_1, FVC and FEV_1/FVC) were measured using a dry rolling spirometer (Microlab, UK). The best value of three manoeuvres was expressed as a percentage of the predicted value.

2.4. Assessment of asthma severity

Asthma severity score was defined according to the National Asthma Education Program (NAEP) guidelines (i.e. frequency of symptoms, degree of airflow obstruction and frequency of use of oral glucocorticoids) [18].

2.5. Assessment of psychological status

The General Health Questionnaire (GHQ) is the most widely used screening test to detect psychiatric disorders in medical practice and its measures possible prevalence of non-psychotic psychiatric disturbances, especially anxiety and depression. We used the short GHQ-12 version in which each of the 12 items with two answering categories was scored on a bimodal response scale, resulting in a score ranging from 0 to 12 [19,20].

2.6. HRQL

The general HRQL instrument used was the SF-36 Health Survey (SF-36), Version 1.0 (The Health Institute, New England Medical Center) which has been validated in asthma [21,22]. The SF-36 measures the health domains of physical functioning, role limitations due to physical health problems, body pain, general health, vitality, social function, role limitations due to emotional problems and mental health. These domains can be further aggregated into two summary scores: physical component summary (PCS) and mental component summary (MCS) scores.

2.7. Allergy-atopy evaluation

All subjects with IBS were tested in order to confirm possible sensitisation to allergens. Skin prick tests (SPT) were performed with common inhalant antigens, and a battery of seven food antigens (wheat flour, peanut, cocoa, fresh water fish, whole egg, chicken, cow's milk) (Stallergenes S.A.-Pasteur, France). Histamine hydrochloride (1 mg/ml) and phenolated glycerol-saline served as positive and negative controls. Also the level of serum total immunoglobulin E (T IgE) (IU/ml) was measured by nephelometric method (Dade Behring Marburg GmbH) in these subjects.

2.8. IBS evaluation

Diagnosis of IBS was based on Rome II criteria [1]. The Rome II criteria require the existence of abdominal discomfort or pain for at least 12 weeks, which need not be consecutive, in the preceding 12 months. The discomfort or pain should be characterised by at least two of the following three features: (i) relief with defecation, (ii) onset associated with a change in frequency of stool and (iii) onset associated with a change in form (appearance) of stool. Patients with IBS were subdivided into two groups as constipation