ELSEVIER

Journal of Psychosomatic Research 62 (2007) 23–30

Journal of Psychosomatic Research

Do psychological distress and somatization contribute to misattribution of asthma? A Chilean study

Roberto J. Rona[a,*], Nigel C. Smeeton[b], Hugo Amigo[c], Claudio Vargas[c]

[a]Division of Asthma, Allergy and Lung Biology, and Academic Department of Psychological Medicine, King's College London, London, United Kingdom
[b]Division of Health and Social Care Research, King's College London, London, United Kingdom
[c]Department of Nutrition, University of Chile, Santiago, Chile

Received 1 February 2006; received in revised form 22 June 2006; accepted 3 July 2006

Abstract

Objective: The aim of this study was to assess the association between asthma and distress by whether symptoms of asthma present alone or are accompanied by atopy or bronchial reactivity to methacholine [bronchial responsiveness (BHR)], hence, to ascertain whether overreporting of asthma symptoms occurs in those with distress. **Methods:** We studied 601 young adults in four groups: those with asthma symptoms and atopy or positive BHR, those with asthma symptoms only, those with atopy or positive BHR only, and controls. The main independent variables were the General Health Questionnaire-12 (GHQ-12) and 45 physical symptoms to assess somatization. **Results:** The somatization score was highly associated with asthma symptoms alone and asthma symptoms with BHR or atopy, GHQ-12 with asthma alone and asthma and BHR or atopy related to a control group. After adjustment for somatization, GHQ-12 was not associated with the asthma outcomes. **Conclusions:** Excess asthma symptom reporting due to psychological distress or somatization as a cause of the association is unlikely.

Keywords: Asthma; Bronchial responsiveness; Psychological distress; Sensitization; Somatization

Introduction

Psychological distress has been found associated with asthma in children and adults [1–7]. One possible mechanism for explaining this consistent association is that psychological distress may be associated with somatization, and some respiratory symptoms would be misattributed to asthma symptoms [6,7]. Alternatively, psychological distress may be related to asthma through a not yet identified common factor associated with both asthma and psychological distress [2], psychosocial factors promoting an increase risk of asthma through the regulation of the immune system or other physiological mechanisms [8,9], or a mechanism of positive feedback between asthma and psychological distress resulting in exacerbation of asthma increasing the level of distress and psychological distress exacerbating asthma [7,10].

A misclassification of respiratory symptoms such as those of asthma could be the result of symptoms of common mental disorders in terms of psychological distress or somatization. This type of misattribution of respiratory symptoms would inflate the perceived prevalence of asthma, decrease the specificity of the condition, and decrease the effect size in etiological studies. In terms of management of the condition, it may lead to some subjects receiving inappropriate treatment. It is therefore important to explore whether this is the reason for an association between symptoms of common mental disorders and asthma. If we were able to exclude misattribution of respiratory symptoms as a reason for the association between symptoms of common mental disorders and asthma, we would be able to focus on exploring possible mechanisms for explaining such a strong association.

* Corresponding author. Academic Department of Psychological Medicine, King's College London, Weston Education Centre, Cutcombe Rd, London SE5 9RJ, United Kingdom. Tel.: +44 20 7848 6618; fax: +44 20 7848 6605.
E-mail address: roberto.rona@iop.kcl.ac.uk (R.J. Rona).

0022-3999/07/$ – see front matter © 2007 Elsevier Inc. All rights reserved.
doi:10.1016/j.jpsychores.2006.07.015

In epidemiological studies, asthma symptoms based on standardized questionnaires or physician-diagnosed asthma are the main criteria of assessing whether a person has asthma. Atopy or specific IgE in serum and bronchial responsiveness (BHR) to a physical or chemical challenge are often objective signs of subjects with asthma, but are not specific of asthma. In community studies such as the European Community Research Health Survey (ECRHS), it is usual to find that a large percentage of subjects may have asthma but not be sensitized or hyperresponsive to a challenge [11]. Physician-diagnosed asthma has the disadvantages of being dependent on an unstandardized clinical judgment and access to a doctor.

One way of deciding whether the association between symptoms of common mental disorders and asthma is due to misclassification of symptoms would be to assess whether the strength of this association varies according to the characteristics of subjects with asthma symptoms. If symptoms of common mental disorders led to the over-reporting of asthma symptoms, there would be a gradient of psychological symptoms according to whether those reporting asthma symptoms had at least one of the objective characteristics positive BHR to methacholine or atopy, or not. There would be the most psychological distress or somatization in those with asthma symptoms only, intermediate distress in those with symptoms and positive BHR to methacholine or atopy, and the least in those not reporting asthma symptoms but with a positive BHR or atopy. Thus, the first aim of our study was to assess the strength of psychological symptoms, distress or somatization, and asthma symptoms in relation to their accompanying traits. A second aim was to assess whether an association between psychological distress and asthma is greatly reduced after adjustment for somatization in terms of physical symptoms. The reason for this aim was that most patients with psychological distress present with somatic symptoms, and in many communities, individuals are more willing to report somatic symptoms than psychological complaints [12,13].

Materials and methods

Study subjects and design

The current analysis is cross-sectional and based on information obtained on two occasions. In the first occasion, 1232 subjects, randomly selected from those born in the hospital of Limache in Chile, were studied at the ages of 22 to 28 years [14]. Of 1232, subjects 601 were revisited in 2004 to assess their psychological status. The time gap between the first and second assessments was 18 months. The selection in the second stage was designed to give a large proportion of subjects with asthma symptoms, sensitization, or BHR. Sampling was made using the following strata: asthma symptoms only (n=195 subjects), asthma symptoms along with positive BHR and/or positive sensitization (n=136), positive BHR and/or sensitization but no asthma symptoms (n=86), and controls (asymptomatic, negative BHR, and not sensitized) (n=184). This second stage was originally designed to have three groups. After data collection, but before initiating the analysis, we decided to subdivide those with an objective characteristic associated with asthma such as positive BHR or sensitization according to whether the individual had asthma symptoms in the initial survey. In the first stage, 17.8% of the selected sample was replaced for reasons specified in the research protocol such as death, emigration, a custodial sentence, and disability, and 7% were replaced for unwillingness to participate.

Limache and Olmue, also included in the study, form an agricultural area, with a population of 52,000 inhabitants. The level of poverty broadly corresponds to the median for Chile [14].

Variables used in the analyses

In the first stage of the study, participants completed the Spanish version of the ECRHS questionnaire [14]. The following asthma symptoms were considered: wheeze in the last 12 months, waking with shortness of breath in the last 12 months and breathlessness at rest in the last 12 months, and reported asthma ever, mostly related to physician-diagnosed asthma. All the asthma symptoms were assessed as binary variables. Skin test sensitizations were assessed to cat fur, dog hair, cockroach, *Dermatophagoides pteronyssinus*, *Alternaria alternata*, and blends of grass pollen, trees, and weeds and shrubs common in Chile [14]. All allergens were manufactured by Allergy Therapeutics (Worthing, West Sussex, UK). A mean size reaction of at least 3 mm to any of the eight allergens was considered positive. We assessed BHR to methacholine by using the tidal breathing method up to a concentration of 16 mg/ml [14,15]. Forced expiratory volume in one second (FEV_1) was measured following the American Thoracic Society norms [16]. An FEV_1 decrease of 20% in comparison to baseline FEV_1 at any concentration was considered as positive BHR. Three university nurses trained for the study administered the questionnaire and carried out the tests, apart from the psychological tests that were administered by three trained university students. The Ethics Committee of the Faculty of Medicine of the University of Chile approved the study.

In the second visit, we administered a list of 50 physical symptoms to assess somatization (Table 1), and the General Health Questionnaire-12 (GHQ-12) to assess psychological distress [17,18]. We also asked about the severity of each symptom as mild, moderate, and severe. We excluded from the analysis five physical symptoms on the list that can be common in asthmatics or that can be mistakenly attributed to asthma. Somatization score was calculated as the number of symptoms and the number of moderate or severe symptoms [19]. The GHQ-12 gives four options for each statement. We scored each item as zero or 1, with a score of 1 if the subject ticked “always” or “frequently.”