Similar psychological characteristics in mild and severe asthma

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Abstract

Objective: Psychological factors have been implicated as potentially contributing to asthma severity. In the present study, we investigated whether patients with mild and severe asthma differ with regard to several psychological characteristics. Methods: Ninety outpatients with severe asthma (74% female, mean [S.D.] age: 46.5 [13.7] years) and 37 outpatients with mild asthma (73% female, age: 39.4 [13.9] years) were compared with respect to general psychological health, anxiety sensitivity, hyperventilation symptoms, personality, and locus-of-control orientation, all measured by well-validated self-report questionnaires. Analysis of (co)variance (ANCOVA) was used to assess between-groups differences. Results: No significant differences in psychological characteristics were found between patients with mild and severe asthma. Only on the subscale for external locus-of-control orientation, severe asthmatic patients differed from those with mild disease (P = .005) in showing less trust in physicians and medication with regard to influencing their asthma. Conclusion: The results suggest that mild and severe asthmatic patients cannot be differentiated on the basis of psychopathology or personality. Whether or not the observed lack of confidence in the influence of physicians or medication on asthma course is cause or consequence of disease severity, remains to be established. © 2001 Elsevier Science Inc. All rights reserved.

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Introduction

Asthma is a chronic inflammatory disease of the airways characterised by variable airway obstruction and bronchial hyperresponsiveness, varying from a very mild disorder to a disabling and life-threatening disease. Only a small minority of asthmatic patients have severe disease, which, nevertheless, has a profound impact on health status [1] and accounts for more than 50% of costs of asthma [2,3]. Therefore, all factors possibly contributing to asthma severity are of particular interest.

Several psychosocial variables have been implicated as potential factors contributing to asthma severity [4–6], including level of general psychological health [7–10], anxiety and hyperventilation [11–14], personality [8,15–17], and health locus-of-control orientation [18,19]. However, studies into these characteristics in patients with asthma have produced unequivocal results, and the question remains whether patients with severe asthma exhibit different psychological features as compared to patients with only mild disease.

Therefore, the aim of the present study was to investigate whether or not patients with mild and severe asthma differ with regard to psychological characteristics (i.e. general health, anxiety sensitivity, hyperventilation, personality, and locus-of-control orientation).

Methods

Sample

Thirty-nine patients with mild asthma and 94 patients with severe asthma were recruited from the outpatient departments of 10 different teaching and nonteaching hospitals. The diagnosis of asthma was based on recommendations by the Global Initiative for Asthma [20], and asthma severity was defined according to the proposal by the
European Respiratory Society Task Force on difficult/therapy-resistant asthma [21]: Patients with severe asthma had to use high doses of inhaled corticosteroids (≥ 1600 µg/day beclomethasone or equivalent) and long-acting bronchodilators for more than 1 year and yet had to have uncontrolled asthma, requiring at least 1 course of oral corticosteroids for exacerbations during the last year or maintenance therapy with oral prednisone ≥ 5 mg/day. Patients with mild asthma had to use no or low dose inhaled corticosteroids (≤ 800 µg/day) without exacerbations during the past year.

All nonsmoking asthma patients (18–75 years) visiting the outpatient clinics who met the criteria for mild or severe asthma were asked to participate, personally and always by the same investigator, and were included in the study whenever informed consent was obtained. Eight patients refused participation for reasons of lack of time or transport and seven patients were excluded because they were not fluent in Dutch. These patients could not be differentiated from the included patients with respect to biographic characteristics. The study was approved by the Hospital Medical Ethics Committee.

Measures

Subjects completed five self-report psychological questionnaires. First, changes in normal psychological functioning were measured by the General Health Questionnaire (GHQ-12) and the GHQ items were rated on the standard 0-0-1-1 scale and summed to a total score [22,23]. Furthermore, an individual’s concern about the consequences of experiencing anxiety symptoms was measured by the Anxiety Sensitivity Index (ASI) [24], whereas the Nijmegen Hyperventilation Syndrome Questionnaire (NHSQ) was used to measure the frequency of complaints about hyperventilation [25].

To assess dimensions of temperament and character, the Temperament and Character Inventory (TCI-105) [26,27] was used. The TCI consists of four temperament scales (i.e. Novelty Seeking, Harm Avoidance, Reward Dependence and Persistence) and three character scales (i.e. Self-directedness, Cooperativeness and Self-transcendence).

Finally, the locus-of-control orientation was measured by the Multidimensional Health Locus of Control (MHLC) scale [28,29] adapted for asthma. The MHLC consists of three subscales, namely the internal, external and chance locus-of-control orientation, representing the belief that the patient’s asthma can be influenced by himself/herself, by an important other, e.g. a physician or medication, or by chance/fate, respectively.

Statistical analysis

Differences between severe and mild asthmatic patients were analysed using unpaired Students’ t tests, chi-square analyses and nonparametric tests, whenever appropriate. In order to adjust for age and asthma duration, analyses of (co)variance (ANCOVAs) were employed with these factors as covariates. P values less than .05 were considered statistically significant.

Results

Patient characteristics

Of the 133 included asthmatic subjects, six patients (four severe, two mild) had to be excluded from the analysis, due to inadequate completing of the questionnaires. These six patients showed no significant differences in biographic characteristics as compared to the remaining 127 patients.

A significantly older age (mean: 46 vs. 39 years), longer asthma duration (median: 25 vs. 12 years), and increased level of airways obstruction (mean forced expiratory volume in 1 s (FEV1): 77 vs. 92% pred) were found in the 90 patients with severe asthma as compared to the 37 patients with mild disease (Table 1). In other biographic characteristics no significant differences between the groups were observed.

Psychological questionnaires

Overall, there were no significant differences between patients with mild and severe asthma in scores on the GHQ-12 (P = .93), the ASI (P = .76), the NHSQ (P = .09), and on the temperament and character scales of the TCI-105 (.11 < P > .60) (Table 2). Only on the MHLC subscale for

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Patient characteristics</th>
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<tbody>
<tr>
<td>Mild (n = 37)</td>
<td>Severe (n = 90)</td>
</tr>
<tr>
<td>Age, years a</td>
<td>39.4 ± 13.9</td>
</tr>
<tr>
<td>Sex, M/F</td>
<td>10/27</td>
</tr>
<tr>
<td>Age at onset, years b</td>
<td>16 (0.5 – 52)</td>
</tr>
<tr>
<td>Asthma duration, years b</td>
<td>12 (3 – 70)</td>
</tr>
<tr>
<td>Packyear c</td>
<td>0 (0 – 10)</td>
</tr>
<tr>
<td>FEV1, % pred d</td>
<td>92.2 ± 13.5</td>
</tr>
</tbody>
</table>

FEV1 = forced expiratory volume in 1 s.

a Means ± S.D.

b Median (range).
external locus-of-control orientation, a difference \((P = .005)\) between the groups was observed, showing that severe asthmatic patients have less trust in physicians and medication with regard to influencing asthma as compared to the patients with mild asthma.

Adjustment for age and asthma duration did not change the results as the ANCOVA again revealed no significant between-groups differences except for the MHLC subscale for external locus-of-control orientation \((F(1,111) = 4.41, P < .05)\).

### Discussion

The present study shows that patients with severe asthma cannot be distinguished from those with mild asthma with regard to the investigated psychological characteristics. The only exception appeared to be the external locus-of-control orientation, showing that severe asthma patients have less trust in physicians and medication with regard to influencing their asthma. Since this has been shown to be related to noncompliance with medical treatment [18], the identification and management of such patient attitude might provide a valuable approach to improve asthma control in patients with severe asthma.

This is the first study using well-validated psychological questionnaires in a large group of asthmatic outpatients to compare psychological characteristics between patients with mild and severe asthma. We found no increase in psychopathology in patients with severe as compared to mild asthma, in contrast with earlier reports on patients with life-threatening asthma [9,10]. This might, however, be attributed to a selection bias, since these studies investigated extremely severe hospitalised patients, as compared to more general severe asthmatic outpatients in our study. Previous studies have suggested a relationship between asthma, hyperventilation, and anxiety [11–13,30]. We did not find such an association, although the severe asthmatic patients tended to have more hyperventilation complaints. Moreover, we did not observe an increase in personality disorders in our patients with severe asthma, which is in accordance with findings in brittle asthma [17]. These results suggest that the influence of personality and psychopathology on asthma severity might have been overestimated in literature [31].

A striking finding of this study relates to the locus-of-control orientation. It shows that patients with severe asthma do not expect that physicians or medication can influence their asthma. It has been demonstrated that the external locus-of-control orientation influences noncompliance [18], although this has not been studied specifically for asthma. Poor compliance to medical regimens is a continuing source of frustration for health professionals [19]. It is conceivable that this external locus-of-control orientation negatively influences the doctor–patient interaction. Identifying and managing this patient attitude may be critical for compliance with treatment.

The present results might have been influenced by methodological issues. First, the selection criteria for severe asthma were based on recent international recommendations [21]. By using these criteria, we could not find any difference in psychologic characteristics between patients with mild and severe disease. However, it is not unlikely that in patients with ‘near-fatal’ or ‘oral steroid dependent’ asthma, such differences might have been observed. Second, although only well-validated questionnaires were used, the results might have been biased by the tendency of severe asthmatic patients to deny and minimise their problems [9], an attitude more easily detected by interview than by self-report questionnaires [10]. Finally, with this cross-sectional study design, it could not be established whether a severe grading of asthma was cause or consequence of the observed external locus-of-control orientation. More longitudinal research is required to clarify the causality of this association.

The results of the present study may have some wider implications. Possibly, the association of psychopathology and asthma severity has been overestimated in the past. A more fruitful line of research might be to study patient’s illness perception (i.e. the patient’s own beliefs about the identity, causes, consequences and controllability of their illness) [32], which has already been shown to be associated with disease severity in patients with COPD [33]. With respect to controllability, the present study shows that an external locus-of-control orientation discriminates between patients with mild and severe asthma. Therefore, it seems warranted to pay more explicit attention to illness perceptions in general and doctor–patient interactions in studying
the influence of psychological factors on course and severity of asthma.

In conclusion, the present study shows that patients with mild and severe asthma cannot be differentiated on the basis of psychopathology or personality. Less trust in physicians and medication with regard to influencing asthma was found among severe asthmatic patients, which might be associated with noncompliance. However, the causal status of this finding remains to be established.

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