Asthmatic patients may complain more often about eventual depressive symptoms than other chronic patients

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Asthmatic patients may complain more often about eventual depressive symptoms than other chronic patients

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Abstract

Introduction: Recently published researches point out that asthmatics seem to be distinguished by a psychological profile described as halfway between patients with mood disorders or anxiety and general population. In our study we aimed to compare the prevalence of relationship somatic disease – eventual mood disorders between asthmatic patients and subjects suffering some other chronic disorders carried out in the main Outpatients Service of Tirana.

Material and method: 79 consecutive asthmatic patients, 62 patients suffering diabetes, digestive disorders such as gastro-duodenal ulcers, or alcoholic hepatopathies, and 28 normal subjects were enrolled in this survey. All groups were homogenous with regard to sex and average age. The average age of subjects (109 f, 60 m) was 48.48 years ± 11.96 (SD). Included patients took regularly respective drugs but not psychotic ones, and female subjects at the time of study did not complain about menopausal disorders. Subjects were tested for eventual depressive symptoms due to a questionnaire prepared by Prof Dr HU Wittchen (www.depression.de/fragebogen/tx_fra_02.html).

Results: The initial data emerging from this research show that, asthmatic patients scored significantly higher than control group and other patients (mean ± SE respectively 4.35 ± 0.22; 1.14 ± 0.16; 2.48 ± 0.16). Female asthmatics scored a little higher than males (n. s.) and diabetic patients significantly higher than other non asthmatic subjects. Controls showed only DSS (3,6%), asthmatic patients showed DSS (34,2%) or ED (46,8%), and the rest of patients showed DSS (43,6%) and ED (only 4,8%). There was a weak correlation between asthma severity and questionnaire score (r = 0.275).

Conclusions: We conclude that ED could be significantly more prevalent by asthmatics than by subjects who are suffering chronic digestive disorders or diabetes. These patients maybe need a special psychological check-up to clarify the eventual presence of the depressive disorders and the introduction of psychotropic treatment.

Introduction

The relationship between bronchial asthma and a particular psychological profile has been studied for many years [1-6]. Several studies have shown a high incidence of well structured psychiatric disorders in asthmatic patients, while other authors have pointed out just a psychological behavior characterized by anxious and depressive traits. Also asthmatics seem to be distinguished by a psychological profile described as a halfway between patients with anxiety, mood disorders and the general populations [1,7-9]. Moreover, such associations between a somatic disease and psychological disorders are reported in patients with rheumatoid arthritis, cardiovascular diseases, recurrent abdominal pains, diabetes mellitus, etc [10-11].

In respect of bronchial asthma, the association with psychological disorders is better argued. Some studies in mice have shown that stress enhances airway reactivity and airway inflammation in experimental models [12]. In this context, such neuromediators like SP or other neurokinins are involved in the same manner in peripheral sensory fibers of the airways after allergic sensitization or permanent stress in experimental studies in mice [13-14]. In the central nervous system these mediators are distributed in some limbic regions like hippocampus or amygdale, which are involved in potentiation of defensive rage behavior or neuronal firing in response to stress [15-16]. Finally, the specific role of NGF, or other neurotrophins and sensory neuromediators in asthma was described only after the finding that NGF levels were altered in all subjects immediately before parachute jumping and a similar finding was shown only in an asthmatic subject who was participating in the control group [17-18].

Despite the mentioned facts, the rate of association between different somatic diseases and psychological disorders is not completely investigated [1]. The purpose of our research is to evaluate the presence of an eventual depressive profile in asthmatic patients, and to compare their data with data of control group and some different chronic non-respiratory patients.
Methods

In this study we enrolled 169 subjects: 79 consecutive asthmatic patients were monitored by Outpatients Service No 3 (Allergology Unit), 39 diabetic patients from the same service (Endocrinology Unit), 23 gastro-hepathologic patients (Gastro-Hepatology Unit), and 28 healthy subjects were enrolled as group of control. All subjects were included in the same period: September-November 2004. Subjects of the same group were visited from the same specialist of the unit, who has completed the questionnaires independently from the colleagues of other units. In our case all asthmatics of the district had the possibility to be visited in this service by only one allergologist, whereas in the other units there were 2-3 specialists. Therefore, even if diabetic or gastritis patients are not less numerous than asthmatic ones, in the respective study groups were included fewer participants. Additional including criteria were the confirmed diagnosis and the regular treatment. Excluding criteria was the use of psychotropic drugs, the diagnosis of any psychiatric pathology, and for female participants the presence of climacteric disorders. Bronchial asthma has been diagnosed and classified according to Global Initiative for Asthma, which has required contemporaneous presence of clinical and instrumental conditions [1].

Patients and healthy subjects were stratified according to sex, age and disease duration. Also, the distribution between the sexes, in our sample, with about 64.5% being women, is parallel to previous studies carried out on a very large scale in adult asthmatic subjects [1]. The mean age of all subjects was 48.48 ± 11.96 (± SD). There were no significant difference between groups in respect of age and sex. The disease duration by asthmatics was 14.06 ± 11.9 years, whereas by gastro-hepathologic and diabetic patients this parameter was only 4.6 ± 4.63 and 7.33 ± 4.99 years respectively (p < 0.001, see table 1).

Asthmatic patients have reported a sensitization in 50 cases, and familiar history for atopic disease in 28 cases. With mild asthma were classified 26 subjects, whereas with moderate or severe asthma were classified respectively 42 and 11 asthmatic subjects. To evaluate the psychological profile we used a questionnaire established from Prof H.U. Wittchen, which contained 9 items of negative statements (http://www.depression.de/fragebogen/tx_fra_02.html). Patients were requested to comment each statement with a tick if it suited themselves their present state of mind without providing a detailed answer. Subjects were informed that no right or wrong answers exists. Every tick of question is given a score of one point. The questions consist in the predominant lose of normal mood, appetite, hope, sleep, self-confidence or calm, worth, sexual demand (libido), concentration, life demand during last two weeks. The answers were classified as without disorders (0-2 points), with a probable depressive spiritual situation (DSS: 3-4 points), and with eventual depression (ED: 5-9 points).

Subjects were informed that evaluation of questionnaire was not an evident diagnosis. This could be made only by a specialist of the respective medical field.

Statistical analysis: Descriptive data for continuous variables were presented as means ± SD. The data were analyzed with t-test for unpaired independent variances, χ²-test, and Pearson’s correlation test. The difference was considered significant for p < 0.05.

Results

The initial data emerging from this research shows that asthmatic patients scored in the questionnaire significantly higher than controls (4.35 vs. 1.14 - p < 0.0001, study power (sp) 100%) or the rest of enrolled patients (gastro-hepathologic ones 1.39, diabetics 3.13, - p < 0.0005 and p < 0.025 respectively, whereas sp were 100% and 94.8% respectively). The diabetic patients scored significantly higher than gastro-hepathologic ones (p < 0.01) and control subjects (p < 0.005) (both sp 100%). There was no significant variation between patients with gastro-hepathologic diseases and control subjects, despite the higher score reached by patients (p < 0.3 - sp 16.4%, see table 1).

Asthmatic patients have shown a higher score variability between individuals of the group (SD of asthmatics 2 points, SD of other subjects 0.8 – 1 point), and female subjects scored insignificantly higher than male ones (4.6 vs. 3.9 – p < 0.25, see table 1 and figure 1).

ED asthmatic subjects were significantly more frequent than other ED grouped subjects (p < 0.001), whereas ED and DSS asthmatic subjects altogether were significantly more frequent than other respective groups (p < 0.001) except the diabetic one (p > 0.1, see figure 1 and 2). Odds ratio for ED in asthmatics compared to diabetics was 10.57, whereas compared to other groups was incalculable because any subject in these groups scored 5 points or more.

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The relationship between the age of asthmatics, the severity and the duration of their disease was evaluated for questionnaire scores. Asthmatic subjects
didn’t show a correlation between ages or disease duration and questionnaire score. However, in these subjects there was emerged a mild correlation between disease gravity and questionnaire score ($r = 0.2751$, $t = 2.669$, $p < 0.01$, CI 95% = 0.071 - 0.457), indicating the higher score when this disease was more severe.

**Discussion**

At first our survey demonstrates that depressive symptoms are more apparent among asthmatic patients than patients with diabetes, gastro-hepathologic disorders and healthy patients. On the other hand, these symptoms are more prominent by diabetic patients, even if less than by asthmatic ones. Because the restriction in life-style may have an influence on patients daily approach to living with a chronic disease, we studied patients suffering from different chronic diseases to evaluate if the eventual depressive symptoms are specificity of the asthmatics or of the being chronic of the disease [1]. Our data suggest that both being chronic and the specificity of asthmatic disease are inducing factors regarding the occurrence of depressive disorders. Also the presence of different diseases has shown a different impact in the occurrence of these symptoms [10-11]. Moreover, asthmatic women have higher level of mood disorders than asthmatic men, even if the difference between respective data was not evident. On the other hand, severe asthmatics show more frequently depressive symptoms. In this respect, Chetta et al have reported that asthmatic subjects with severe disease have more frequently hypochondriasis, psychological disturbances, like agoraphobia or panic disorders, and poor perception of breathlessness [19].

Also patients with “brittle” asthma have greater psychiatric morbidity than those with less severe asthma [19-20]. Furthermore, Brown et al. demonstrated that among patients of moderate to severe asthma treated community, health facilities may have high rates of often untreated mood and anxiety disorders [21]. Higher rates of psychiatric disorders by asthmatics in comparison to healthy subjects are also reported by Campbell and Mrazek, which has been linked to more severe disease, increased length of stay in hospital, and increased use of steroid medication [20,22-24]. In addition, Ten Brinke et al. reported that presence of psychopathologic disorder in patients with severe asthma increases odds ratios for frequent visits to general physicians, frequent emergency units, frequent exacerbations, and frequent hospitalizations, indicating that the morbidity and costs of asthma might be related to the level of psychological dysfunction in patients with severe asthma rather than to asthma severity per se [25]. On the other hand, Kilpeläinen et al reported that stressful life events promote the manifestation of asthma and atopic diseases, indicating the evidence of stress-induced alteration in immune-mediated diseases [26-27]. Even if the presence of a chronic diseases like asthma in the family can be a reason of stress increase, further experimental studies have demonstrated an interaction between inflammatory cells in the lungs, production if IgE, induction of bronchial hyper-reactivity or local eosinophilic inflammation, and nervous system, explaining partially the relation between allergic airway disease and psychological stress [12,27-29]. Moreover, nervous stimulation can promote mast cell degranulation, by such mechanism as axon reflexes [27,30].

In this respect, stressful events and atopic diseases like asthma are shown to induce neurotrophine synthesis and release in bronchial lavage and plasma [17-18,31-34]. Similar findings are reported in experimental asthma in mice which have shown induction of different neuromediators like NKA or SP under the influence of NGF and BDNF [14,35-38]. Moreover, their antagonists are shown to have anti-depressive effects in different studies, as well as inhibitory effects regarding airway hyper-reactivity [13,15-16,39]. Indeed, these neurotransmitters are shown to be expressed in sensory airway fibers, as well as in some brain regions (limbic system) that are critical for the regulation of affective behavior and neuro-chemical responses to stress [14-16,39-40]. Also the under-expression of these neurotransmitters or their receptors is shown to inhibit the expected response to stressful events, or may lead to the mutilation behaviors like in schizophrenia [15,41-42].

In addition, the immune profile may also explain the association between these pathologies. Thus, Pavon et al. reported about a T helper 2 response in such psychological disorders, which are characteristic of allergic pathologies [43-44].

Taken together, these mechanisms may indicate that the response against psychological and antigenic “stresses” could be expressed in the same “language”. The induction of SP, NGF, specific IgE, etc might be only a consecutive response against different kind of harmful stimuli. Disposing trophic functions from a part of these neurotransmitters is in the same time a critical for the regulation of affective behavior and neuro-chemical responses to stress [14-16,39-40].

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experience these situations as his breakdown [46-47].

**Conclusion(s)**

We conclude that depressive disorders may be more prevalent by asthmatics than by subjects suffering different chronic digestive disorders or diabetes. These patients might need a special psychological check-up to clarify the presence of the depressive disorders and the introduction of respective therapies if it were reasonable. Despite the objective limitations, the time and resource investment employed in gathering these data seems to be an effective as well as efficient way of proceeding, which could beneficial for a better fitted treatment of asthmatic patients in the future [1].

**Abbreviation(s)**

depressive spiritual situation (DSS), eventual depression (ED), standard deviation (SD), nerve growth factor (NGF), substance P (SP), Immunoglobulin E (IgE).

**Acknowledgement(s)**

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**Authors Contribution(s)**

E. Mingomataj is the ideator of the survey and the main author of the manuscript. He also has analysed and interpreted the provided data.
F. Xhixha, L. Bruka and A. Duni have selected and recruited patients; F. Xhixha has also recruited the control subjects.
E. Gjata and F. Xhixha have contributed with helpful discussions.
A. Bakiri has contributed with helpful discussions and helped in the construction of the manuscript.

**Reference(s)**


41. Indo Y. Molecular basis of congenital insensitivity to pain with anhidrosis (CIPA): mutations and polymorphism in Trk A (NTRK1) gene encoding the
44. Mingomataj EÇ, Xhixha F, Gjata E. Helminths can protect themselves against rejection inhibiting hostile respiratory allergy symptoms. Allergy 2006; 61(4): 400–6.
Illustrations

Illustration 1

Figure 1: Patients dispersion - groups and questionnaire scores. X-axis - scores, Y-axis patient proportions.

Illustration 2

Figure 2: Scores - diseases groups X-axis - questionnaire scores, Y-axis patients proportions.
Illustration 3

Table 1: Summary of patients' data

<table>
<thead>
<tr>
<th>Groups</th>
<th>Asthmatics</th>
<th>Gastro-Hepa</th>
<th>Diabetics</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients mean age (± SD)</td>
<td>47.8 ± 12</td>
<td>39.7 ± 11</td>
<td>55.1 ± 9.6</td>
<td>48.4 ± 9.2</td>
</tr>
<tr>
<td>Patients sex (F / M)</td>
<td>52 / 27</td>
<td>16 / 7</td>
<td>22 / 17</td>
<td>19 / 9</td>
</tr>
<tr>
<td>Disease duration (mean ± SD)</td>
<td>14.1 ± 11.9</td>
<td>4.6 ± 4.6</td>
<td>7.3 ± 5</td>
<td>0</td>
</tr>
<tr>
<td>0-2 Questionnaire points (%)</td>
<td>19</td>
<td>87</td>
<td>30.8</td>
<td>96.4</td>
</tr>
<tr>
<td>3-4 Questionnaire points (%)</td>
<td>34.2</td>
<td>13</td>
<td>61.5</td>
<td>3.6</td>
</tr>
<tr>
<td>5-9 Questionnaire points (%)</td>
<td>46.8</td>
<td>0</td>
<td>7.7</td>
<td>0</td>
</tr>
<tr>
<td>Mean score (± SD)</td>
<td>4.35 ± 1.99</td>
<td>1.39 ± 1.01</td>
<td>3.13 ± 0.99</td>
<td>1.14 ± 0.83</td>
</tr>
</tbody>
</table>
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