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# ROLE OF COGNITIVE-BEHAVIORAL THERAPY OF ANXIETY-DEPRESSIVE DISORDERS IN THE STRUCTURE OF BRONCHIAL ASTHMA

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## Abstract

The psychopathological aspect of bronchial asthma is not limited to an anxiety response. There are also episodes of acute fear at the first developed asthmoid attacks; a combination of both often takes the form of so-called panic disorder with anxious anticipation of seizures. In the development of "panic attacks" in patients with bronchial asthma, the predominant distinguishing feature may be the difficulty of exhalation in a true bronchial asthma, while in functional anxiety-autonomic attacks the inhalation is usually difficult. As they are repeated, the alarming oscillations gradually transform into a persistent subdepressive (destic) state. The literature reports a significant link between various mental disorders and asthma, in particular depression and/or anxiety, with some more reliable data regarding anxiety disorders. However, the nature of this relationship remains largely unclear. Somatogenic asthma with increased exhaustion under normal loads and weakness after another asthmoid attack is increasingly noticeable. Dramatic awareness of the fact of severe somatic disease and its associated limitations modifies the content of affective disorders: anxiety becomes less acute, but along with it or in its place there are elements of melancholy depression with experiences of the impossibility of treatment, «attachment to therapy". The increasing somatogenic asthenia brings a feeling of severe physical ailment, similar to the vitalization of melancholia.

**Purpose of the study:** To test the hypothesis of a specific relationship between anxiety and depression and bronchial asthma, and to test the hypothesis of the effectiveness of cognitive-behavioral therapy as an additional means of treating bronchial asthma.

**Materials and methods**: 96 adults were surveyed by means of the main socio-demographic variables (i.e. sex, age, marital status, cohabitation/separate residence and BMI). Subjects with asthma were classified according to GINA and ACT. All subjects underwent structured clinical interviews for the diagnosis of ICD 10.

**Results:** There was a significant association between asthma and anxiety disorders throughout life (OR 3.03; $p = 0.003$); no significant association with other psychiatric diagnoses. Moreover, life-long anxiety and current anxiety were associated with levels of asthma severity ($p < 0.01$ and $p = 0.001$ depending on age). Asthma predates anxiety in 48% of cases; 52% of cases have anxiety predates asthma, with no significant differences between groups. The risk of asthma, especially severe, uncontrolled form ($p < 0.01$), was higher in patients with anxiety disorder throughout life ($p = 0.003$ and $p = 0.001$ depending on age of onset). Current anxiety increased the risk of asthma and uncontrolled form ($p < 0.05$). Asthma increased the risk of anxiety disorders throughout life ($p = 0.002$ and $p = 0.018$ with age). Intermittent asthma increased the risk of life-long anxiety disorders and ongoing anxiety disorders ($p < 0.01$).

**Conclusions:** Anxiety disorders, in particular life-long anxiety disorders, are the only mental disorder that is reliably associated with asthma, with a possible two-way link between anxiety and asthma, each of which may be caused by or result from the other.

**Keywords**

Anxiety; Bronchial asthma; Depression; Cognitive-behavioral therapy

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## Introduction

The psychopathological aspect of bronchial asthma is not limited to an anxiety response. There are also episodes of acute fear at the first developed asthmoid attacks; a combination of both often takes the form of so-called panic disorder with anxious anticipation of seizures. In the development of "panic attacks" in patients with bronchial asthma, the predominant distinguishing feature may be the difficulty of exhalation in a true bronchial asthma, while in functional anxiety-autonomic attacks the inhalation is usually difficult. As they are repeated, the alarming oscillations gradually transform into a persistent subdepressive (destic) state. The literature reports a significant link between various mental disorders and asthma, in particular depression and/or anxiety, with some more reliable data regarding anxiety disorders. However, the nature of this relationship remains largely unclear. Somatogenic asthma with increased exhaustion under normal loads and weakness after another asthmoid attack is increasingly noticeable. Dramatic awareness of the fact of severe somatic disease and its associated limitations modifies the content of affective disorders: anxiety becomes less acute, but along with it or in its place there are elements of melancholy depression with experiences of the impossibility of treatment, «attachment to therapy". The increasing somatogenic asthenia brings a feeling of severe physical ailment, similar to the vitalization of melancholia. Asthma is a serious global health problem affecting more than 300 million people of all ages worldwide and represents a significant socio-economic burden [1-3]. Its prevalence continues to increase in many parts of the world. Asthma and psychological factors have been linked for centuries: Moses Maimonides in his "Treatise on Asthma" defined asthma as "shortness of breath or chest pain", proposing behavioural changes as a treatment [4]. The literature reports a significantly higher prevalence of mental disorders in people with asthma, with special emphasis on people with depression and/or anxiety [5-7]. This relationship has important consequences for these patients resulting from the presence of psychiatric comorbidity, including severity of symptoms [8,9] and decreased control of asthma [10]; lower quality of life [2]; low adherence to therapy [6]; higher frequency of smoking, inactivity and obesity [13]; and increased use of health services and thus an increase in financial burden [1,4]. However, the evidence for a link between asthma and mental disorders is mixed, largely due to significant methodological differences between studies (e.g., differences in study design, sample, methods of psychiatric assessment), which appear to be justified only in cases involving the association of asthma and anxiety [5]. Thus, the question of whether there is a specific link between anxiety disorders and/or depression and asthma remains open. Moreover, the evidence for a link between asthma and affective disorders has led to ongoing debate about the true nature of this connection: whether asthma is associated with a higher risk of affective disorders and/or whether affective disorders increase the risk of developing asthma [16]. Our study was conducted using a robust psychiatric diagnosis assessment methodology to test the hypothesis that: (a) anxiety and/or depression are psychiatric conditions specifically associated with asthma, and (b) There is a two-way relationship between these disorders and asthma.

**Purpose of the study:** To test the hypothesis of a specific relationship between anxiety and depression and bronchial asthma, and to test the hypothesis of the effectiveness of cognitive-behavioral therapy as an additional means of treating bronchial asthma.

**Materials and methods.** A total of 96 adults were surveyed according to the average chosen by the main socio-demographic variables (i.e. sex, age, marital status, cohabitation/separate residence and BMI). Subjects with asthma were classified according to GINA and ACT. All subjects underwent structured clinical interviews for the diagnosis of ICD 10. Subjects suffering from asthma who met the following criteria were included: age 18-65

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years and diagnosis of asthma. Patients with other severe somatic diseases (e.g., heart disease, lung disease other than asthma, autoimmune diseases, past and current malignant neoplasms, neuromuscular disorders and any other conditions potentially affecting respiratory function), and pregnant patients were excluded. Of the patients who agreed to participate, 96 met the criteria (24 men, 72 women). The reasons for non-compliance with the criteria after signing the informed consent form were mainly as follows: decision not to undergo a psychiatric interview; discovery of additional documentation of another disease or condition specified in the exclusion criteria; and pregnancy (1 case). Demographic, social and clinical data were collected. At the same time, an equal sample of caregivers or relatives of patients or members of university hospital administration staff was selected and used as a control group for 24 months. All subjects were paired with patients with asthma according to sex, age ( 4 years), marital status, cohabitation status (cohabitation/separate residence), education and BMI (normal weight; overweight; mild, moderate or severe obesity). Controls falling under the same exclusion criteria were excluded. The diagnosis of asthma was based on a previous positive reaction to bronchoconstriction tests (methacholine, mannitol) or a bronchodeformity test. The diagnosis was made by a doctor of our outpatient clinic or an external specialist in allergy or respiratory medicine. After obtaining specific informed consent, all patients and the control group underwent a comprehensive psychiatric examination for the presence or absence of depressive disorders according to ICD 10 criteria using Structured Clinical Interview [1]. For the purposes of this study, we will only discuss results obtained with HADS.

**Results of the study and their discussion.**

Patients surveyed (both cases and controls) were mostly women (75%), average age 40-41, mostly well educated (>60% with a secondary or university degree), married (approximately 60%) and employed (approximately 65%). Approximately one third of the sample is overweight or obese. There were no significant differences between the cases and control groups in terms of distribution by sex, age, marital status, education, employment status and BMI classes. Data on the association between variable asthma and psychiatric conditions showed a significant association between asthma and life-long anxiety disorders (OR, 3.03; $p = 0.003$), but not between asthma and current anxiety disorders. Moreover, no other psychiatric diagnosis related to asthma has been found. For ACT, the only significant association was between ACT and anxiety disorder ($p = 0.007$). However, the proportion of controlled and partially or totally uncontrolled subjects with anxiety disorders is almost comparable, and the observed difference was significant between cases (both controlled and partially/uncontrolled) and control group. No other significant association with ACT has been identified regarding current anxiety disorder or any other psychiatric diagnoses, whether lifelong or ongoing. With regard to GINA, when the distribution of asthma severity at the time of diagnosis was assessed by mental disorder, a close relationship between life-long anxiety disorder and asthma severity levels ($p = 0.0006$) was found. This reflects the overall difference in anxiety distribution between cases and control group, with increased prevalence of life-long anxiety disorders in patients with "intermittent" and "moderate and severe purulent" asthma. Such a relationship was observed in relation to ongoing anxiety disorders ($p = 0.008$), which are more prevalent among subjects with both intermittent and moderate/severe persistent asthma. Even in this case, no other significant link was identified with respect to the other psychiatric diagnoses. Logistic regression, in which the asthmatic state was considered as a dependent variable and the diagnosis of current and life-long anxiety as explanatory variables, with socio-demographic and BMI variables considered as possible mixing factors, showed a significantly higher risk of asthma in patients with life-long anxiety disorder (p

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= 0.003). Using the asthma control level (ACT) as a dependent variable, the results of the sequential logistic regression show that suffering from life-long anxiety disorder increases the risk of developing uncontrolled asthma ($p = 0.006$). Considering the "severity of asthma" as a dependent variable, the ordinal logistic regression demonstrates how life-long anxiety disorder tends to significantly increase the risk of developing a more severe form of asthma ($p < 0.001$). Moreover, current anxiety increases the risk of developing asthma ($p = 0.047$) and disease of uncontrolled form of asthma ($p = 0.024$).

Moreover, obesity was associated with both shortness of breath and asthma in various ways [3]. Finally, two meta-analyses [10] have shown that overweight or obesity increase the likelihood of asthma depending on dose; however, weight-loss interventions demonstrate low quality evidence for the beneficial effect of weight-loss on asthma-related outcomes [11].

Our study shows that the rate of subjects diagnosed with ongoing or lifelong mental disorder was generally higher among those who suffered from asthma, compared to healthy control subjects. However, the only common disorder for which a significantly higher prevalence was observed among those suffering from asthma was life-long anxiety disorder (32% versus 14% in the control group), with a three-fold increase in risk. Moreover, non-parametric analysis has shown how poor asthma control is associated with higher prevalence of life-long anxiety disorders, whereas intermittent asthma and, to a lesser extent, the constant and moderate/severe degree of asthma is associated with a higher risk of life-long anxiety disorders and, less obviously, with current anxiety disorders. These results seem to confirm a special association between asthma and anxiety disorders, but not with depressive disorders, for which the literature is somewhat contradictory [15]. Our data are broadly consistent with the only population study [12] that assessed the relationship between mental disorders and asthma using structured clinical interview to assess psychiatric diagnosis and clinical assessment to diagnose asthma. This study, which includes a large sample of adults, demonstrates how severe asthma is associated with a significantly higher risk of anxiety disorders, while the current mild asthma is associated only with an increased risk of mood disorders, a Mild lifelong asthma is associated with an increased risk of anxiety and molar disorders (2). Overall, our study largely confirms the close relationship between asthma, especially uncontrolled or poorly controlled and moderate/severe, and anxiety disorders. Indeed, the relationship between anxiety (and/or various depressive disorders) and poorly controlled asthma has been repeatedly confirmed in several clinical studies, regardless of the methodologies used. The confirmation of a significant link between asthmatic disorders and anxiety brings us back to the problem concerning the specificity and nature of the link between asthma and anxiety disorders [10]. In particular, it remains unclear whether the subsequent onset of asthma anxiety or the latter is conducive to the subsequent development of anxiety. In our study, the data support a bidirectional hypothesis of causality, given that asthma precedes the onset of anxiety with almost the same frequency as anxiety disorder precedes the onset of asthma; Moreover, the latter is associated with an increased risk of anxiety disorders throughout life, but even the presence of anxiety disorder, especially during life, is associated with an increased risk of suffering from asthma. Our data seems to largely confirm what has been revealed by prospective long-term studies, namely that both clinically significant anxiety and/or depression are significant risk factors for asthma [4-7], and asthma may be the cause of subsequent affective disorders [8,9]. However, a recent study reports that the history of respiratory disease does not appear to increase the risk of depression or anxiety [10]. The angiogenic role of some types of antiasthmatic drugs should also be considered, in particular adrenergic agonists [11,14]. Anxiety disorders, in turn, especially early onset, may be causally related to asthma through behavioral mechanisms (e.g., increased cigarette smoking [11]) or through biological mechanisms (e.g.,

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hyperventilation, which can act as a "trigger" for asthmatic attacks, determining bronchoconstriction) [10]. It is also necessary to consider the mutual role of adverse events in childhood as a risk factor not only for anxiety disorders, but also for the development of asthma [5].

**Conclusions.** Cognitive-behavioral therapy has achieved some control of bronchial asthma by blocking or reducing the anxiety component of the condition, which adversely affected the course of the disease and made it difficult to establish a therapeutic partnership with the patient. 2. The results obtained in this study show a reliable high efficiency of cognitive-behavioral therapy when it is included in the comprehensive treatment of patients with bronchial asthma. Regression analysis has shown that having an anxiety disorder throughout life carries a nearly four times higher risk of developing asthma, in particular uncontrolled and more severe asthma. 4. Similarly, the presence of asthma carries more than twice the risk of developing anxiety, confirming the possibility of a two-way relationship between anxiety and asthma, each of which may be the cause or consequence of the other, even though it is impossible to rule out some basic mutual ethopathogenetic mechanisms explaining the frequency of their association.

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