

**Alicja Moes-Wójtowicz<sup>1</sup>, Piotr Wójtowicz<sup>2</sup>, Monika Postek<sup>1</sup>, Joanna Domagala-Kulawik<sup>3</sup>**

<sup>1</sup>Student Science Club *Alveolus* at the Department of Internal Diseases, Pneumology and Allergy, Medical University of Warsaw, Poland

<sup>2</sup>University of Social Sciences and Humanities in Warsaw, Poland

<sup>3</sup>Department of Internal Diseases, Pneumology and Allergy, Medical University of Warsaw, Poland

Head: Prof. R. Chazan, MD, PhD

## **Asthma as a psychosomatic disorder: the causes, scale of the problem, and the association with alexithymia and disease control**

The Twenty-Six-Item Toronto Alexithymia Scale (TAS-26) has been used in this paper courtesy of Dr Ewa Zdankiewicz-Scigala

### Abstract

**Background:** While psychological factors may play a significant role in the development and course of asthma, the availability of information on the scale of the problem and the factors associated with psychogenic asthma is limited. The aim of the study was to assess the frequency of coexistence of asthma and other diseases considered to be of psychosomatic origin, to assess the impact of stress and strong emotions on the occurrence of acute exacerbations of asthma, to measure the level of alexithymia in asthmatic patients, and to look for its association with acute exacerbations triggered by stress and strong emotions. The level of alexithymia was also assessed in the context of asthma control.

**Materials and methods:** The study was conducted on a group of 54 patients (75.9% females) with a diagnosis of asthma (mean age:  $54.37 \pm 14.52$  years) at the Independent Public Central Teaching Hospital in Warsaw, Poland. The patients completed a questionnaire composed of the Asthma Control Test, a list of factors that could trigger an acute exacerbation of asthma, and the Toronto Alexithymia Scale (TAS-26; translated into Polish by E. Scigala and T. Maruszewski). The patients were also asked about any co-morbidities that had been diagnosed by other doctors and that might be caused, at least in part, by psychological and behavioural factors, and co-morbidities that might be associated with stress but are characterised by somatic manifestations. The co-morbidities in question were: irritable bowel syndrome, atopic dermatitis, depression, panic disorder, and anorexia nervosa. In the remainder of this paper these disorders are collectively referred to as 'psychosomatic disorders'. The statistical analysis was performed using SPSS 14.0 PL at the significance level  $p < 0.05$ . Non-parametric tests for independent samples were used to test the associations between the qualitative variables.

**Results:** In 50% of the cases, at least one of the following disease entities were identified in the patients carrying the diagnosis of asthma: irritable bowel syndrome ( $n = 8$ ), atopic dermatitis ( $n = 7$ ), depression ( $n = 13$ ), panic disorder ( $n = 9$ ). Alexithymia was diagnosed in 11 cases (21.6%). The correlation of the level of alexithymia with stress and strong emotions was statistically non-significant ( $\chi^2 = 0.106$ ,  $p > 0.05$ ). Stress and/or strong emotions were identified as factors triggering acute exacerbations of asthma in 33 cases (61.1%). Poor, good, and complete asthma control was confirmed in 72.5%, 17.6% and 9.8% of the cases, respectively. No association of asthma control with the occurrence of alexithymia was identified ( $\chi^2 = 0.358$ ,  $p > 0.05$ ). No association of asthma control with gender was identified ( $\chi^2 = 0.605$ ,  $p > 0.05$ ).

**Conclusions:** The high level of alexithymia in asthmatic patients, the frequent occurrence of disorders considered to be psychosomatic in origin, and the considerable impact of stress and strong emotions on the development of acute exacerbations of the disease confirm that asthma can be considered a psychosomatic disorder.

**Key words:** alexithymia, asthma, psychosomatic disorders, asthma control

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**Corresponding author:** Lek. Alicja Moes-Wójtowicz, ul. Krucza 10, 05-822 Milanówek, Poland; Mobile: +48 507 294 735; E-mail: [alicja.moes@gmail.com](mailto:alicja.moes@gmail.com)

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## Introduction

### Asthma: somatic and psychogenic aetiologies

Asthma has long been a focus of psychosomatics. Two currents emerged over the years: one assumed a psychogenic aetiology of asthma, while the other focussed on elucidating the biological basis of the disease [1]. Researchers are currently trying to explain the association of emotional states with asthma based on a model in which stress and negative emotions activate the immune system and increase the activity of inflammatory markers in the blood [2], which may in turn cause depression, somnolence [3], social withdrawal, and lack of appetite [4]. A relationship has been shown between the manifestation of asthma and the activation of the insula and the anterior cingulate gyrus—central nervous system areas responsible, among other things, for emotions and cognitive processes [5].

According to the Global Initiative for Asthma (GINA), asthma is defined as a chronic inflammatory disorder of the airways associated with bronchial hyperresponsiveness, leading to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning [6]. These episodes are usually associated with an impaired airflow through constricted bronchi, an impairment which often subsides with treatment. Factors contributing to the development of asthma include: genetic factors, obesity, male sex, and environmental factors (allergens, respiratory tract infections, occupational factors, tobacco smoke, environmental pollution, diet). According to the GINA guidelines, emotional stress is not regarded as a factor causing asthma, although it is considered a factor that exacerbates the course of the disease [6]. On the other hand, according to the 10th edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), in selected cases, asthma may be coded as J45+F54, making it possible to indicate the presence of psychological and behavioural factors, which may play the main role in the aetiology of a somatic disorder [7].

### The problem of alexithymia

A psychological factor that may cause or exacerbate asthma is a syndrome referred to as alexithymia. Alexithymia is a construct which takes into account regulation of emotions and personality changes in the pathogenesis of multiple somatic diseases [8]. According to the simplest definition, alexithymia is the inability to understand and identify emotions and to describe emotions with

words and express them [9]. The overwhelming majority of researchers believe that alexithymia has the following components:

- difficulty identifying and describing feelings;
- difficulty distinguishing between feelings and emotional arousal;
- limited ability to fantasise;
- tendency towards describing situations associated with emotions in a very detailed manner (operational thinking).

Studies have shown that alexithymics find it very difficult to describe their own emotional states. The matter is not so straightforward, however, when it comes to describing other people's emotions. Alexithymics find it more difficult to identify complex emotions in other people and interpret symbolic emotions from images or films compared to non-alexithymics. They are, however, able to describe the feeling and expression of simple emotions in other people as accurately as non-alexithymics [10]. In addition, in typical situations, in which "patterns" of feeling emotions exist, alexithymics function in the same way as people without an increased level of alexithymia. The syndrome is also associated with a lack of emotional expression (gestures, smiles, facial expression) and a lack of well-developed emotional regulatory mechanisms. The lack of healthy emotional regulatory mechanisms leads to frequent use of primary (non-adaptive) defence mechanisms, such as projection or denial [10]. Considerable differences of opinion exist as regards the genesis of alexithymia. Researchers representing the psychoanalytical approach point to the influence of early childhood experiences with particular emphasis on the mother-child relationship. Representatives of the cognitive approach seek the causes of alexithymia in post-traumatic stress disorder and introduce a dual definition of the syndrome: alexithymia as a permanent personality trait and alexithymia as a condition which may be caused by extremely stressful situations [11]. As we do not know the direction of association between alexithymia and psychosomatic disorders we should assume that alexithymia might be one of the risk factors of psychosomatic disorders. It might also develop as a consequence of a sudden deterioration of health (as a coping method); it is also possible that both of these circumstances affect its development [10].

### The psyche and the soma, or the association of alexithymia with asthma and other disease entities

The list of diseases considered psychosomatic in origin started to be formed over 2000 years

ago by Greek philosophers [12]. The best-known list was drawn up by Franz Alexander in 1952. Based on his own studies and observations, he included the following diseases in the list of psychosomatic disorders: asthma, peptic ulcer disease, ulcerating colitis, atopic dermatitis, rheumatoid arthritis, hypertension, and hyperthyroidism [13]. At present, given the progress in medicine, the causes of these conditions are sought in genetic and environmental factors rather than psychosomatic abnormalities. On the other hand, ICD-10 accepts recognising psychological and behavioural factors as being of key importance in the aetiology of somatic disorders (F54 according to ICD-10), and recognises manifestations such as cough, diarrhoea, dyspepsia, irritable bowel syndrome, hyperventilation, and others as vegetative abnormalities that are not manifestations of a somatic disease of an organ or a whole system (F45.3 according to ICD-10) [7]. Taking into account both these opinions, each disease should be treated as a combination of genetic, environmental, psychological, and behavioural factors, and the significance of each of these factors should be assessed separately. In order to do that, standardised tools are necessary: questionnaires for the assessment of the level of alexithymia in this case. Table 1 reviews studies investigating the prevalence of alexithymia and conditions considered psychosomatic [11, 14–17].

Data on asthma vary. In patients with an asthma episode requiring hospitalisation, alexithymia was significantly more common (24%) compared with patients who did not require hospitalisation (12%) and healthy individuals (12%) [18]. In another study of 25 patients with asthma, an elevated level of alexithymia was observed in 12% of the patients. These results do not differ significantly from those obtained for the general population, in which the prevalence of alexithymia ranges from 8.2% to 8.9% in women and from 11.1% to 12.8% in men [19–21].

Similar results in a Polish study were obtained by Schier, a psychologist, who evaluated 34 asthmatics. In this study, the association of asthma with alexithymia was non-significant [22].

### **Aim**

The aim of the study was to assess the coexistence of asthma and other disorders considered psychosomatic in origin, to assess the impact of stress and strong emotions on the occurrence of acute exacerbations of asthma, to measure the level of alexithymia in asthmatic patients, and to look for an association between the level of alexi-

thymia and acute exacerbations triggered by stress and strong emotions.

The level of alexithymia was also assessed in terms of asthma control.

### **Materials and methods**

Patients with a diagnosis of asthma were enrolled in the study. They comprised patients in the course of hospitalisation at the Department of Pneumology and Allergy, Medical University of Warsaw, Poland, and patients reporting to the outpatient clinic at the Independent Public Central Teaching Hospital in Warsaw, Poland, between November 2009 and February 2010. The study involved taking the patients' medical histories and asking them to complete a questionnaire that included an assessment of the level of alexithymia.

A total of 54 patients were included in the study (75.9% were female). The mean age of the patients was  $54.37 \pm 14.52$  years. The history included information on age, sex, education, occupation, age at diagnosis of asthma, and information about any family history of asthma. The history also included questions about co-morbidities diagnosed by a doctor, in which psychological and behavioural factors could play a role, and about co-morbidities associated with stress, which manifested as somatic disorders. These co-morbidities were: irritable bowel disease, atopic dermatitis, depression, panic disorder, and anorexia [7]. In the remainder of this paper these disorders are collectively referred to as 'psychosomatic disorders'.

The second part of the study involved completion of a questionnaire. The questionnaire was composed of three parts: a list of factors triggering an asthma attack [23], the Asthma Control Test (ACT), and the Toronto Alexithymia Scale (TAS-26).

From the list of factors triggering an asthma attack, which included: allergens present in the air, pollutants present in the atmospheric air, respiratory tract infections, physical exercise, weather changes, strong emotions, stress, foods, food additives (preservatives), drugs, tobacco smoke, and irritants such as cleaning products, sprays, paints and varnishes, the patients selected all those that triggered asthma attacks in their case.

The second part of the questionnaire comprised the ACT, which determines the degree of asthma control. It consists of 5 questions concerning: the frequency of symptoms, the need to use reliever medication, the impact of the disease on daily activities, and the subjective assessment of asthma control. Each question is rated from 1 to 5,

**Table 1. The review of scientific inquiries in which the coincidence of asthma and diseases known as a psychosomatic was analysed**

Disease	Percentage of patients with alexithymia			Percentage of patients with alexithymia in the control group	Country
	Total	M	F		
Hypertension	55	–	–	16	Italy [15]
Hypertension	–	57	46	18 M. 9 K	Finland [16]
Inflammatory bowel disease	35.7	–	–	4.5	Italy [17]
Panic disorder	47–67	–	–	–	United States of America [18]
Anorexia nervosa	68.8	–	–	3.3	United Kingdom [12]
Bulimia nervosa	40–61	–	–	–	United Kingdom [12]

M — men, F — females, – lack of data

where 5 refers to good control and 1 to poor control. Total scores of 25, 20–24, and 19 or less represent fully controlled asthma, well-controlled asthma, and poorly-controlled asthma, respectively [24].

The presence of alexithymia was investigated using the TAS-26 questionnaire translated into Polish by Maruszewski and Scigala [10]. It is one of the questionnaire methods based on self-description and was developed in 1985 by Taylor and Bagby. It contains 26 statements reflecting alexithymic traits. The respondent decides whether he or she identifies with a given trait using a scale from 1 to 5, where 1 means “definitely disagree” and 5 means “definitely agree”. The individual answers are rated and a total score is calculated. The total score ranges from 26 to 130, with a score of more than 78 indicating alexithymia. The test has four subscales defining: difficulty identifying feelings and physical experiences, paucity of imagination, operational thinking style, and difficulty describing feelings [10].

The statistical analysis was performed using SPSS 14.00 PL, adopting a significance level at  $p < 0.05$ . Non-parametric tests for independent samples were used to test the relationships between qualitative variables.

## Results

In the group of 54 patients with asthma, half of the patients reported at least one disease considered psychosomatic that a doctor had diagnosed them with. We noted 8 cases of irritable bowel syndrome, 7 cases of atopic dermatitis, 13 cases of depression, and 9 cases of panic disorder. According to these data, some of the patients had been diagnosed with more than one disorder from the list.

Alexithymia was confirmed in 11 cases (21.6%) and stress and/or strong emotions were

demonstrated as factors triggering asthma attacks in 33 cases (61.1%). No association was found between alexithymia and stress or strong emotions as factors triggering asthma attacks. This association was non-significant:  $\chi^2 = 0.106$ ,  $p > 0.05$ . No statistically significant difference in the occurrence of alexithymia between men and women was observed:  $\chi^2(1) = 1.986$ ,  $p > 0.05$ .

The ACT results were as follows: 72.5% of the cases showed poor asthma control, 17.6% of the cases showed good asthma control, and 9.8% of the cases showed complete asthma control. No association of the level of alexithymia with asthma control was observed:  $\chi^2(1) = 0.358$ ,  $p > 0.05$ .

Complete or good asthma control was observed in 30.0% of women and 18.2% of men, while poorly controlled asthma was present in 70.0% of women and 81.8% of men. No association of sex with asthma control was identified:  $\chi^2(1) = 0.605$ ,  $p > 0.05$ .

## Discussion

Our paper confirms the common occurrence of alexithymia in patients with asthma and the impact of stress and strong emotions on the occurrence of the disease manifestations. We also investigated the frequency of coexistence of asthma with selected disorders considered psychosomatic in origin and the association between asthma control and the occurrence of alexithymia.

We adopted the ICD-10 definition of asthma, according to which, in selected cases, psychological and behavioural factors may play the main role in the clinical course of a somatic disorder (of the inflammatory aetiology), such as asthma.

Our search for a relationship between asthma and alexithymia was based on studies (including the few Polish ones) confirming the association

between these disorders and the fact that alexithymia coexists with other psychosomatic disorders, such as asthma. Our main motive while designing this study was the general tendency to manage patients with asthma with drug treatment only, without offering psychological support, which seems incorrect, taking into account the potential contribution of psychological and behavioural factors. It may be that the lack of professional psychological counselling leads to treatment failure.

Our results demonstrate a higher prevalence of psychological problems in patients with asthma, often in the form of alexithymia. As the syndrome may only be diagnosed using a specialist questionnaire that is not widely available to doctors, their task is to carefully observe the patient's behaviour, his or her way of responding to emotions, to take a detailed history (to determine the presence of co-morbidities that might result from problems with regulation of emotions), and in cases that raise concerns, to consider referring the patient to a psychologist.

In each case, diligent patient education, the role of which in the management of asthma has been well documented, is of extreme importance [6]. Educational programmes generally come down to discussing the general management and drug treatment. Our study has shown that stress and strong emotions trigger acute exacerbation in more than half of the patients, which quite naturally leads to increasing anxiety (and the resulting stress and strong emotions), thereby establishing a vicious circle leading to deterioration of the patient's condition. It is therefore essential to dispel concerns and alleviate anxiety associated with the disease. The very provision of information on how a vicious circle works and, as a consequence, understanding of the process by the patient and learning effective ways of coping in such situations may facilitate disease control, which directly translates into improved quality of life [25]. It is therefore important to find out what the patient's style of coping with stress is, as it will allow for individual planning of educational activities [26].

A total of 22% of patients with asthma had an increased level of alexithymia. For comparison, in European populations such as German and Finnish, elevated levels of alexithymia were observed in 8.2–8.9% of healthy women and in 11.1–12.8% of healthy men [20, 21]. Additional data on the scale of alexithymia in patients with asthma in Poland could be provided by a comparison of the study group with the Polish population of healthy individuals.

Our results should encourage doctors to take a wider look at the problems of each patient and

make them more sensitive to the fact that psychological problems may affect the course of the disease. This seems necessary in light of the data demonstrating that appropriate psychotherapy makes it possible to reduce the level of alexithymia and treat panic attacks, and that appropriate patient education makes it possible to improve asthma control [6, 27–30].

A separate task involved finding out whether the presence of alexithymia affected asthma control (as measured by the ACT). The lack of correlation between these two factors in our study seems puzzling and is in contradiction with the previous studies cited in the Introduction, which demonstrated significantly increased levels of alexithymia in patients with poorly controlled asthma [18, 19]. It may result from the diversity of the patient groups involved in the compared studies. The correlation was positive in patients hospitalised for acute exacerbation (which reflected poor asthma control). They were compared with a group of outpatients (good asthma control) and healthy individuals (control group). We evaluated asthma control using the ACT only, which is a self-description tool, rather than relying on assessments performed by the patient's doctor. At the same time we would like to point out that patients often failed to understand the questions contained in the ACT and requested assistance with interpretation of the questions or were unable to complete the test unaided because they found the print too small. Due to these problems our results may not be reliable and should be verified against assessments performed by doctors. The problems with the completion of the ACT emerged during the study, when the procedure could no longer be modified. As the ACT is a standardised tool recommended by GINA, we believe that these problems are worth emphasising, as this information may be valuable to persons who use it. Verification and assessment of the ACT questions will be investigated in our next paper.

## Conclusions

The high level of alexithymia in patients with asthma, the common presence of disorders considered psychosomatic in origin, and the large impact of stress and strong emotions on the occurrence of acute exacerbations of asthma demonstrated in our study confirm that asthma can be considered a psychosomatic disorder. Based on the frequent coexistence of asthma and psychosomatic disorders (50%) it may be concluded that these should be taken into account while taking history

and, in justified cases, treated by specialists. It has been shown that psychological support is effective in reducing alexithymia, panic disorder, and other psychosomatic disorders [27–30] and it is a good idea to consider involving psychologists on hospital wards and in outpatient facilities for patients with asthma and informing patients about the possibility to take advantage of the psychologist's support. A clear signal of changes towards this goal has been given by the Respiratory Diseases Commission of the Polish Academy of Sciences Clinical Pathophysiology Committee: "A comprehensive asthma management plan should include psychotherapeutic measures, which may offer an effective way of solving health problems in patients with asthma" [31]. Such a multidisciplinary approach to asthma is being tested in the United States, where a programme to involve doctors, school nurses, psychologists, and physical education teachers has been launched to reduce the impact of asthma on children's lives [32].

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