

# Psychosocial Characteristics of Patients with Bronchial Asthma and Coronary Disease: Similarities and Differences

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## ABSTRACT

*The authors compare two groups of subjects: patients with bronchial asthma and those with coronary disease, with regard to some social characteristics, abilities and perception of factors which they conceive are important in the etiology of their disease. Data were obtained by means of a questionnaire based on a known calibrated scale. A group of 100 patients with bronchial asthma and a group of 102 patients with coronary disease were examined. The significance of the difference was tested by  $\chi^2$ , t-test, Wilcoxon's test and multivariate discriminative analysis.*

*The results showed statistically significant differences between the patients with bronchial asthma and those with coronary disease in some social and psychological characteristics and also with regard to perception of potential etiological factors of their disease. However, no difference was found in life style and habits between the coronary and asthmatic patients.*

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## Introduction

Asthma is a chronic, persistent inflammatory disease of the airways, characterised by exacerbation of cough, wheezing, constriction in the chest and breathing difficulties, which are usually reversible but can occasionally be very severe and even fatal<sup>1</sup>.

Bronchial hyperreactivity represents a *conditio sine qua non astme*<sup>2</sup>, although Britton reports that approximately 5% of asthmatics have a negative bronchoprovocation test, by which bronchial hyperreactivity is determined<sup>3</sup>. Some investigations have shown that psychological factors have an influence on bronchial hyperreactivity in asthmatics<sup>4,5</sup>. As a

psychogenetic factor in the occurrence of the disease emotional traumas preceding the disease are usually considered, or the psychological characteristics of the patient prior to the occurrence of disease<sup>6</sup>. Although correlation between asthma and the psychological characteristics of patients have been described, the specific type of characteristic has still not been determined for asthmatics, which has been found for patients with coronary disease<sup>7–9</sup>. Coronary disease (CD) or ischemic heart disease is a clinical syndrome caused by narrowing or occlusion of the coronary arteries. The clinical status is dominated by characteristic pre-cordial pain, which begins abruptly, may last for several minutes and change in intensity, and usually stops after the application of nitrates and analgetics<sup>10–12</sup>.

The specific structure of the personality, known as A type, which is characterised by ambition, the need for competition, more or less hidden aggression, acts as an independent risk factor for coronary disease. This psychogenic risk factor is as important as other known risk factors for coronary disease, such as: hypertension, hypercholesterolemia, diabetes, obesity. Certain questionnaires or tests for measuring personality traits, such as Jenkins' questionnaire of activity and Bortner's questionnaire, can detect the characteristics which show increased risk of the development of coronary disease<sup>13–15</sup>. Such knowledge can later be utilised in procedures for the prevention of coronary disease.

Investigations have still not found such a clearly defined and unique »personality type« in populations of asthmatics, although it has been observed that asthmatics, compared for example to coronary patients, who characterise aggression and anger<sup>16</sup>, show different psychological characteristics, such as passivity, introversion and non-aggression<sup>8</sup>.

Mahoney considers that for the occurrence of bronchial asthma the effect of in-

heritance is relatively small; allergy and infection play an important role; bronchoconstriction and unadapted respiratory reaction may be learned and stress in the patients increases the possibility of the occurrence of asthmatic attacks<sup>17</sup>. The significance of personality traits was observed in asthmatic babies, who were found to be less active than non-asthmatic babies<sup>18</sup>. It has been shown that, regardless of the intensity of asthma, children with a high level of anxiety and dependence, live in highly cohesive families significantly more often use larger quantities of cortizone than children who have better adapted personality traits<sup>19,20</sup>.

Contemporary investigations have shown that many social factors which were once connected with the occurrence of bronchial asthma, such as for example, house ownership, the absence of crowded conditions in the home, sharing a bedroom with other members of the household and non-manual occupations, are no longer significantly correlated with the occurrence of bronchial asthma<sup>21</sup>.

### **Aim of the Investigation**

The aim of this investigation was to compare two groups of patients: a group with bronchial asthma and a group with coronary disease, with regard to the following:

1. Certain general characteristics
2. Certain personality traits
3. Perception of potential factors which they consider important in the etiology of their disease
4. Life style and behaviour
5. Certain social factors

### **Subjects and methods**

Two groups of patients were included in the investigation. The first group consisted of 100 patients, treated in our hos-

pital for bronchial asthma, and the second group consisted of 102 patients, treated in the Clinica for Cardiovascular Diseases of the Clinical Hospital Centre »Rebro«. All subjects satisfied diagnostic criteria for their disease and were not suffering from other chronic diseases. The first group included 60 women and 40 men with bronchial asthma, mean age 41.7 years, and the second group included 85 men and 1+ women with coronary disease, mean age 55.3 years.

## Methods

All subjects were questioned according to the specific needs of the investigation and starting bases were known psychometric scales<sup>22–24</sup>. The questionnaire consisted of several parts:

1. Questions on the basic characteristics of the patient, his/her family and disease.

2. A scale containing questions in which the patient is asked to evaluate his/her personal psychological characteristics.

3. Questions on the patient's life style and behaviour.

4. Questions on evaluation of the threat to his/her life because of the effects of ecological factors.

5. Questions on the importance of bad personal habits in the etiology of his/her disease.

6. Questions on some social factors.

The data obtained was statistically analysed by the application of statistical packet SPSS.

1. The difference in some personality traits between the asthmatics and patients with coronary disease was tested by  $\chi^2$  test, with the desired level of risk up to 5%.

2. Two variables were measured on numerical scales: age of subjects and de-

gree of sensitivity to stress were tested by parametric t-test, and as a control by non-parametric test of determinant ranks (Wilcoxon or Mann-Whitney U-test).

3. Multivariate discriminative analysis was applied in order to test the discriminative validity of the difference between asthmatics and coronary patients, with regard to psychological characteristics<sup>25</sup>.

## Results

As the present investigation included a large number of variables only some of the statistically important differences between the groups of patients are shown in the results.

### *General data on patients and their disease*

Patients with bronchial asthma differed from the coronary patients according to the frequency of hospitalisation. It was found that the asthmatics were more frequently hospitalised because of their disease. Namely, 25% of the asthmatics had been hospitalised four or more times because of their disease, compared to the coronary patients, in whom only 4.9% had been hospitalised as frequently because of their disease. Asthmatics and coronary patients also differed with regard to treatment of their disease, i.e. only 26% of the asthmatics take medications for asthma compared to 63.8% of coronary patients, who take medications for their disease. However, on the other hand as many as 74% of the examined asthmatics were treated by other methods (climatic, immunotherapy, alternative ways of treatment, medicine) compared to 36.2% of the coronary patients.

### *Personality traits – general physical condition*

*Tiredness* – a subjective feeling of tiredness is one of the indirect indicators of

general physical condition. The results of the investigation indicate that asthmatics feel significantly less tired than coronary patients. Thus, while 16% of the asthmatics said that they never feel tired, only 4.9% of the coronary patients said the same (Table 1).

*A tendency to take everything in life too seriously* is also a personality trait. Asthmatics and coronary patients differed significantly with regard to this personality trait in that asthmatics take everything in life significantly less seriously. The results of this investigation show that 37% of the asthmatics do not take everything in life at all seriously, 18% of asthmatics take everything in life fairly seriously, and 11% of asthmatics take everything in life very seriously.

In contrast 26% of the coronary patients do not take everything in life at all seriously, 32.4% fairly seriously and 14.6% very seriously (Table 1).

*Anxiety and tension due to work and responsibility.* The investigation showed differences between the groups with regard to this personality trait. Namely, 40% of asthmatics do not feel anxious at all because of work and responsibility, while 21.5% of coronary patients say the same. On the other hand while 21.5% of the coronary patients feel very anxious and nervous because of work and responsibility, 15% of asthmatics say the same (Table 1). There were no statistically sig-

nificant differences between the examined groups with regard to other psychological characteristics examined in this questionnaire.

*Differences between asthmatics and coronary patients on a scale of characteristic anxieties (general psychic condition) – results of a multivariate discrimination analysis*

A multivariate discrimination analysis showed that asthmatics and coronary patients statistically significantly differ in some psychological characteristics on a scale of characteristic anxieties. Coronary patients characterise well-balanced steady psychological characteristics, while asthmatics characterise a certain dissonance, contradictory to their statements on personal psychological state. Thus, on the scale of characteristic anxieties asthmatics report a feeling of simultaneous pleasure and depression, and also consider that they are more ill than others and worry about possible negligence.

In contrast coronary patients say that they anxious and nervous, with a tendency to take everything too seriously, they think too much of unimportant things and overreact to disappointment. However, they are well balanced and feel relaxed and protected (Table 2). With regard to other examined characteristics on the scale of characteristic anxieties no

**TABLE 1**  
SOME PSYCHIC CHARACTERISTICS OF ASTHMATIC AND CORONARY PATIENTS

Psychic Characteristics	Group	Degree of Influence				Statistical significance
		none	little	pretty	very	
Tiredness	I	16	22	31	31	0.033
	II	5	33	37	27	
Over Serious	I	37	34	18	11	0.045
	II	26	27	33	16	
Tense and Nervous	I	40	31	14	15	0.011
	II	22	30	28	22	

Group I – patients with bronchial asthma  
Group II – patients with coronary disease

statistically significant differences were found between the examined groups.

*Perception of potential etiological factors*

Asthmatic patients give great importance to the effect of ecological factors on their health and believe that their respiratory system, skin, mucous membrane and musculoskeletal system is significantly harmed by these factors. In comparison, coronary patients believe that their health is primarily threatened by bad habits and over excessive life style and stress (Table 3). No statistically significant difference in life style and habits was found between the coronary and asthmatic patients.

*Social factors*

Subjects with coronary disease and asthma differed statistically significantly

according to the level of education and occupation, but did not statistically significantly differ according to their place of residence and the number of family members with whom they lived and worked.

**Discussion**

Asthma is a disease which has been known for three and a half Millenia. However, in spite of this medical science has still not entirely explained the etio-pathogenesis or discovered the optimal method of treatment. Thus it represents a significant social-medical problem in the developed countries of the world, similar to coronary disease, which is one of the leading causes of mortality in these countries<sup>26,27</sup>.

The number of previous hospitalisations served as one of the indicators of

**TABLE 2**  
DIFFERENCES BETWEEN ASTHMATIC AND CORONARY PATIENTS IN THE SCALE OF CHARACTER ANXIETY (GENERAL PSYCHOLOGIC CONDITION)

Analized variable	Coefficient of discriminatory validity	Significance
Patient		
1. is anxious and nervous	.420	.000
2. is prone to taking everything seriously	.344	.000
3. is thinking too much about insignificant things	.296	.000
4. feels comfort	-.216	.000
5. is well balanced	.204	.000
6. is very dissappointed	.186	.000
7. feels depression	-.186	.000
8. is concerned because of possible awkwardness	-.171	.000
9. feels refreshed	.138	.000
10. things that he is worse than others	-.126	.000
11. feels protected	.083	.000
12. feels calm and relaxed	.069	.000
13. is undecided in convenient situations	.069	not statistically significant
14. is quckly tired	.059	
15. is occupied with many problems	.057	
16. is prone to cry	.046	
17. is obssed by insignificants thoughts	-.038	
18. has lack of selfconfidence	-.037	
19. feels to be happy	.021	
20. is satisfied	-.013	
Centroids of examined groups – Asthmatics	-.508	
Coronary patients	.408	

**TABLE 3**  
PERCEPTION OF THE INFLUENCE OF ECOLOGICAL AND OTHER RISK FACTORS IN ASTHMATIC AND CORONARY PATIENTS

	Group	Degree of Influence			Statistical significance	
		None	To a certain degree	significant	p	
Ecological influence on:	respirat-ory system	I	21	35	44	0.000
		II	58	28	16	
	skin and mucous	I	68	17	15	0.000
		II	78	23	1	
	sceletal system	I	81	10	9	0.01
		II	82	19	1	
Other Etiological Factors	stress	I	29	42	29	0.000
		II	10	29	63	
	bad life habits	I	63	29	8	0.04
		II	30	39	33	
	other factors	I	69	18	13	0.000
		II	95	5	2	

Group I – patients with bronchial asthma

Group II – patients with coronary disease

disease severity in the examined coronary and asthmatic patients. As many as 25% of the asthmatic patients had been hospitalised four or more times, while only 5% of the coronary patients had been hospitalised the same number of times. Apart from the death rate from coronary disease, which can be the reason why such patients do not have a greater number of hospitalisations, certain psychological characteristics may have an influence on the frequency of hospitalisation, such as, for example, a greater tendency to panic and depression<sup>28</sup>. While some investigations have indicated the significant role of panic in the occurrence and precipitation of asthmatic attacks, others suggest that asthmatic patients feel subjectively more severe symptoms than can be measured objectively by lung function tests. This has been confirmed by the so-called dyspnea fear theory, according to which asthmatic patients have low correlation of their own symptoms of bronchoconstriction and objectively measured lung functions<sup>29</sup>. The tendency to panic was not examined in this investigation

and consequently the extent to which this personality trait may have contributed to the more frequent hospitalisations of asthmatic patients could not be concluded. Lack of co-operation in the treatment of their disease, or inadequate therapy, may also have been a reason for frequent hospitalisation. Only 26% of the asthmatic patients took medications, which may be because of the patients' lack of education concerning their disease, resulting in poor motivation to adhere to a prescribed therapeutic plan. It may also be due to the nature of asthma, which is characterised by attacks of breathing difficulties, between which the patients may feel quite healthy and consequently stop following the therapeutic plan. However, lack of co-operation in the treatment of their disease may also be a result of the patient's personality trait, shown in this investigation, because one of the characteristics of the examined asthmatic patients is that they do not take everything in life too seriously. It was found that type A personality represents an independent risk factor for coronary disease and that

changed behaviour in this respect can reduce the risk of developing the disease, while in the case of patients with bronchial asthma a specific type of character has still not been confirmed. In accordance with this knowledge we have attempted to ascertain whether patients with bronchial asthma have some special psychological and social characteristics compared to those with coronary disease. Knowledge of which would help both in the prevention and treatment of bronchial asthma. As this was a retrospective study on patients who already have the diseases, it was difficult to differentiate the characteristics which the patient had before the development of the disease with those which developed during the disease, i.e. those which developed as a consequence of the disease. Patients included in the study were asked to describe their psychological characteristics prior to the occurrence of the disease. However, it is not clear whether or not patients also described characteristics developed as a consequence of the disease. We used a scale of general psychic condition to determine statistical significant differences between the examined groups of patients in relation to the following psychological characteristics: subjective feeling of tiredness, a tendency to take everything in life too seriously, tense and nervous during their work and responsibility. Results of the multivariate discrimination analysis produced similar data on the psychological characteristics of asthmatics and coronary patients. According to the analysis asthmatics have the following characteristics: they feel relaxed, have difficulty accepting disappointment, feel melancholy, believe that their condition is worse than others. In contrast coronary patients report that they are tense and nervous, tend to take everything too seriously, think too much of unimportant things, have difficulty accepting disappointment, feel relaxed and

protected. Thus this investigation, like others carried out in a population of asthmatics, failed to find a specific pattern of personality trait which would characterise these patients<sup>30</sup>. Investigations so far have shown that psychological factors do have a significant role in all phases of bronchial asthma, such as those more or less directly preceding the appearance of symptoms of asthma or influence the course of the disease with regard to its worsening or improvement. Some psychotherapeutic interventions also have a positive effect in the treatment of asthmatic patients<sup>31–34</sup>. Therefore, further investigations are necessary of the psychological characteristics of asthmatic patients, both retrospective and prospective.

Numerous investigations have been carried out in the world on the possible connection between the increased incidence of bronchial asthma and increased ecological pollution. In this connection the effect of ecological factors on increased sensibilisation of the tracheobronchial system and the occurrence and precipitation of asthmatic attacks has been confirmed<sup>35,36</sup>. Although objective measurement of harmful ecological factors was not performed in this investigation, patients were asked to evaluate the presence and effect of harmful ecological factors on their health. While asthmatics consider ecological factors to be very important for the development of their disease, and perceive their harmful effect on the skin, mucous membrane and musculoskeletal system, coronary patients consider that bad habits and stress are important for the occurrence of their disease. The investigation showed that the asthmatics and coronary patients did not differ in their reaction to stress or with regard to their place of residence, which indicates that they live in similar ecological surroundings. We can therefore assume that the differences shown in the potential etiological factors of their dis-

ease was a result of the different personality traits of our subjects, i.e. different perception of these factors.

As one of the factors of social status the level of education and occupation was examined as potential risk factors for asthma and coronary disease. Namely, recent investigations have shown that people with a lower educational status have a higher risk of the occurrence of coronary disease and that factors of the working environment can be connected with the frequent occurrence of asthma and coronary disease<sup>37,38</sup>. On the other hand the disease can influence the choice of occupation. In this investigation subjects with bronchial asthma were found to have a lower level of education, i.e. as many as 12% had only 4 classes of primary school. Such a low level of education was found in only 4% of subjects with coronary disease, and consequently the investigation did not confirm that a lower level of education is associated with a more frequent occurrence of coronary disease. As we know that asthma often develops in childhood, and that it is the reason for frequent absence from school, it is possible that the disease has an influence on the lower education of such patients. In this investigation, in keeping with the age and education of the subjects, a distribution according to occupation indicated that in the group of asthmatics there

were more schoolchildren and students (8%), farm workers and housewives (14%), and less retired persons (15%) than in the group of coronary patients. Among the coronary patients workers predominated, mainly craftsmen (43.1%), retired persons (32.4%), schoolchildren and students 0.9%, and farm workers and housewives (3.9%).

The two groups of subjects in this investigation did not differ statistically according to their place of residence, i.e. the same percentage of asthmatics and coronary patients live in the town and village. The groups also did not differ statistically according to the number of family members with whom they live and work. This agrees with earlier investigations which showed that many social factors, which were earlier associated with the occurrence of bronchial asthma, such as house ownership, sharing a bedroom with other members of the household, the number of family members, are no longer significantly connected with the occurrence of bronchial asthma.

The present investigation indicates that patients with asthma and coronary disease differ according to some psychological and social factors, and that further research of these factors is necessary, with the aim of improving preventive and therapeutic methods in the treatment of these diseases.

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## **PSIHOSOCIJALNE OSOBINE BOLESNIKA S BRONHIJALNOM ASTMOM I KORONARNOM BOLESTI – SLIČNOSTI I RAZLIKE**

### **S A Ž E T A K**

Autori uspoređuju dvije skupine ispitanika: bolesnike s bronhijalnom astmom i one s koronarnom bolešću, i to prema nekim socijalnim osobinama, crtama osobnosti i percepciji čimbenika kojima pripisuju važnost u etiologiji svoje bolesti. Podaci su prikupljeni anketom kojoj su osnova poznate u našim prilikama baždarene skale. Ispitano je 100 bolesnika s bronhijalnom astmom uz kontrolnu grupu 102 ispitanika s koronarnom bolešću. Značajnost razlike testirana je 2, t-testom, Wilcoxonovim testom i multivarijantnom diskriminacijskom analizom.

Rezultati pokazuju da postoje statistički značajne razlike između bolesnika s bronhijalnom astmom te onih s koronarnom bolešću u nekim socijalnim i psihološkim osobinama te u percepciji potencijalnih etioloških čimbenika njihove bolesti. No, astmatičari i oboljeli od koronarne bolesti se ne razlikuju prema načinu života i navikama.