

BIO-PSYCHO-SOCIAL CHARACTERISTICS OF ASTHMA WITH PSYCHOGENIC TRIGGER, EMERGING FROM PERSONAL EXPERIMENTAL STUDIES

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ABSTRACT

Like other multifactorial syndromes, the onset of bronchial asthma with psychogenic trigger (BAPT) is influenced by psychological stimuli, supplementary to organ-specific factors (allergens, viruses, bacteria, physical or chemical irritants etc.). Demonstration of psychogenic etiology was made by questionnaires applied to asthmatic patients, with respect to the stressing circumstances of asthma crises, including the observations of physicians and, especially, by recording the clinical (acoustic) and ventilator variations during experimental distresses. Patients with BAPT, having an increased vulnerability to stress – based on a complex background (genetic and acquired) and involved in the immune response – have consumed their adaptive "reserves" through the biological and psychological stresses they suffered before/during the illness, in final having available a much reduced reserve of cortisol (the main stress hormone). Thus, their above-mentioned vulnerability to psychic stress is increased by a vicious circle, becoming also a biological vulnerability. The psychotherapeutic approach could improve both vulnerabilities – biological and psychological.

Key words: asthma, psychogenic trigger, anxiety, psychological vulnerability

Like other multifactorial syndromes, bronchial asthma with psychogenic trigger (BAPT) onset is influenced by psychological stimuli, supplementary to organ-specific factors (allergens, viruses, bacteria, physical or chemical irritants etc.).

In the middle of the XX century, the onset of asthma crises caused by psychological factors suggested the existence of bronchial asthma purely psychological („psychogenic asthma”) – supported by some authors, like Hansen, Findeisen, Seropian, Graham and Mathov – but favorised by the incomplete knowledge of asthma pathogeny (other forms than allergic asthma). Afterwards, and especially nowadays, the legitimacy of this form of asthma, exclusively psychological, has been confirmed even by several of the authors who innitially supported it, as Mathov – who expressed in 1981 a series of reservations with regard to the exclusive psychogenic etiology of asthma, and the so-called “psychogenic asthma”. The author invoked, just as

we do, the fact that patients with “psychogenic asthma” had either personal or family antecedents of allergy and a high level of total IgE, suffering in fact from allergic asthma. These patients had a quasi-constant evolution of the asthma in the spring or in the autumn, and did not respond favorably to anxiolytic medication. Mathov restricts the sphere – already limited – of purely psychogenic asthma to those cases that are triggered by psychogenic causes, in the absence of a demonstrated allergy or infection.

However, because some asthmatic patients suffer crises after different forms of psychological stress, while other patients don't, determined the consideration of the notion of “bronchial asthma with psychogenic trigger” (BAPT) that we use from 1980 (Iamandescu, 1980) and presents some characteristics useful to clinicians (both physicians and psychologists). These characteristics can be systematized using Engel's bio-psycho-social mo-

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del, which offers the 3 interrelated “sources” of every disease: biological (genetic background and acquired somatic characters), psychological (personality traits, shaped by the individual biography) and social (the social environment has especially mental, but also somatic influences).

The objectives of the study were:

- the evaluation of BAPT incidence;
- the evaluation of bio-psycho-social background factors for BAPT patients;
- the measurement of the ventilator response (VEMS variations) and modification of salivary cortisol level during two stress-inducing experiments (stress test-Iamandescu 1977 and TSST-Hellhammer 1998).

The results of studies conducted by Iamandescu & col. between 1977 and 2010 have been compared to data in the literature, systematized towards the characteristics of the subpopulation of asthmatic patients with psychogenic-triggered attacks, susceptible to medical and especially psychological treatment, with the aim of optimizing the complex therapy of this disease.

This analysis of bio-psycho-social characteristics of BAPT, as results from a series of personal studies, has to be preceded by the presentation of the incidence of this clinical-etiological form of the disease, including both patients with allergic and intrinsic asthma.

The incidence of BAPT

The demonstration of the psychogenic etiology was made by questionnaires applied to asthmatic patients, with respect to the stressing circumstances of asthma crises, including the observations of physicians and, especially, by recording the clinical (acoustic) and ventilator variations during experimental distresses.

We found the incidence of BAPT to be between 25% (in young patients, suffering from asthma for less than 10 years) and 64.5% (for pts. with asthma history of more than 10 years) (Iamandescu 1985, 1990).

The evaluation of bio-psycho-social background factors for BAPT patients

The biological background of BAPT revealed an increased incidence in women with endocrine dysfunctions (especially thyroid and ovarian), increased frequency of viral respiratory infections, easy onset of asthma attacks caused by nonspecific factors (meteorological, smoking, air pollutants),

sensitization to aspirin and derivatives. The psychological background was characterized by a general vulnerability to stress, dominated by anxiety, leaning towards depression, high scores in one or more MMPI scales and high frequency of some psychiatric symptoms.

The ventilator and hormonal (salivary cortisol) response during distress-inducing experiments

a. In a 1997 study, Ionescu, Iamandescu and Popovici applied an experimental distress-inducing test (Iamandescu 1976), by requesting the subjects to resolve arithmetic equations under conditions of hyper-motivation, lack of time and disturbing factors (emotional and noise of metronome). Besides rhinoscopic modifications (either congestion or vasoconstriction, compared to the state before the test), there have been observed decreases of PEF with more than 15% in 80% of asthmatic patients in the subgroup with mild and medium bronchial obstruction, while in patients with normal ventilator values before test, the PEF decrease was only of 5%. These results suggested that distress alone can hardly induce the onset of asthma crises.

b. Using another stress test (TSST – Trier psychosocial stress test) elaborated by Hellhammer and colab. (consisting in arithmetic calculation, followed by the simulation of a interview for a job), Serghiescu and colab. (2006) evidenced a low cortisol response in patients with BAPT compared to asthmatics without psychogenic onset of asthma crises. This confirms the theory of Hellhammer who suggests the exhaustion of cortisol response in chronic prolonged stress; we believe this applies also to BAPT patients, caused by the frequent stresses they suffer, on the background of a more facile “enter” in the stress state.

The biological background of patients with BAPT

The psychological triggering of asthma attacks was predominant (86%) in patients who are cortico-dependent (Iamandescu, 1996) or present certain endocrine dysfunctions (high estrogen and thyroid hormones secretion), as well as multi-factorial triggering of the attacks (especially non-specific respiratory irritants, including physical-chemical factors and meteorological changes).

In the cases reported above the bronchial asthma is, at least initially, of allergic or intrinsic (non-allergic) origin, and the psychogenic triggering is a “supplemental factor”. It should be stressed that the study of the role played by psychogenic factors in the triggering of bronchial asthma attacks has two aspects:

- The relationship between the psychological stress – as a rule extending over a long period of the patient's life, and having a variable intensity and duration – and the occurrence of the first bronchial asthma attacks, corresponding to the **onset of the disease**.
- The relationship between common, daily psychological excitants and the triggering of asthma attacks **after the onset of the disease**.

The first is possible to be involved in all forms of asthma and the second, only in those forms of asthma with supplementary onset by psychological trigger, with alternate or additive action, besides other non-psychological triggers.

Comparing our data with the data in the literature regarding the incidence of psychogenic triggering of allergic asthma attacks, this varies – according to the data in the literature – in relation with the severity of the disease, but also with the age of the patient (Weiner). The percentages of old statistics vary from 8% (Rees, 1956) in a group of 441 patients with asthma, to 33% (Opperman, 1980), or 54% (Pearson, 1968) in a lot of 375 patients. More recently (1991) Richter and Dahme evaluated the appreciations in this regard made by physicians (60%) and psychosomaticians (68%).

The nature of the psychological traumatic events that have occurred months and weeks before the onset of the first asthma attacks

These events that happened in the familial environment are clearly in majority, especially the marital conflicts, culminating with the trauma of the divorce. Besides this type of events taking place in the intimate life of patients, also cited in other statistics (Holmes and Rahe, for instance), we would like to mention that, in our cases (Iamandescu 1990), the stress induced by failure to pass admission exams in faculty was present in 6% of the candidates and in 3% of the candidates' parents.

A detailed anamnesis was carried out in hospitalized patients on the incidence of asthma attacks occurring following emotional situations after the onset of the disease (Iamandescu 1985). These could be incriminated as the triggering factor in 62.5% of the subjects under study (77% of women and 55% of men), a far higher percentage than that found in ambulatory patients (30% in a previous study), although holding an intermediate position compared with the results noted in patients with ulcers (48%) and in those with urticaria (80%). We could certainly maintain that this percentage is much higher than the median incidence of asthma

attacks, because only the severe cases were hospitalized, generally intricated asthma cases.

The chronological relation between distress and the onset of asthma attacks

Of the 75 patients with asthma in whom attacks were triggered by emotional factors, 80% had mentioned important psychological stress in the immediate antecedents of the onset of their condition. This should not be unexpected, considering the general percentage of 51.4% of asthma patients with stress in their antecedents, and a clear correlation between the “receptivity to stress”, before the onset of the disease, and the additional receptivity to stress due to the traumatic experience of the asthma attacks (Iamandescu 1980).

The “latency” time between the stress and the onset of the attacks in 62.5% of the patients in whom asthma attacks were triggered by psychogenic causes was as follows:

- **in 40% the attacks occurred in less than 5 minutes**
- in 12.5% the attacks occurred between 5 and 30 minutes
- in 10% the attacks occurred in the following night (after periods during which the patients had not experienced a single attack).

It would have been interesting to perform measures of humoral values in these patients, because this would have allowed identifying possible correlations between emotional factors and other etiological ones.

These clinical observations from 1980, may be correlated with experimental data obtained by Forsythe et al (2003), who have studied on a murine model, the effects of short and long-term distress on the bronchial inflammation but also with previous data regarding the 2 types of response (early and late response) during type I reaction involved in onset of bronchial asthma.

The mechanism of action of psychological etiological factors

Although psychogenic-triggered bronchial asthma is not purely psychogenic, it also includes cases of bronchial asthma that are clearly triggered by psychological stimuli (usually stress stimuli) in the context of multiple triggers, on the background of bronchial hyperreactivity induced by allergic inflammation or by non-immunological factors.

The mechanisms of intervention of psychological stimuli either favor the occurrence of asthma attacks by other triggers (by summation), or induce asthma attacks “per se”.

It is not only the stress stimuli that play a triggering role, but also a series of conditioned excitants, the number of which increases with the duration of illness, such that, even patient's perception about his/her wheezing, will become a stress capable to induce patent asthma attacks (Kinsman et al). It seems logical to deduce that the intensity of bronchial hyperexcitability, expressed by the decreased thresholds to acetylcholine (Tiffeneau) could be in direct proportion with the possibility of psychogenic triggering of asthma attacks, especially because, in the final stage, efferent cortico-subcortical impulses that occur in the psychological stress result in liberation of acetylcholine and other mediators (including also stress hormones) at the level of the bronchial effector, or in alpha-adrenergic stimulation (Farreron). Also, the unconscious hyperventilation during anxiety generates the irritation of bronchial denuded nerve endings, leading to the release of bronchoconstrictor mediators such as substance P and other neurokinins (Rihoux JP-1993).

The vulnerability to stress of asthmatic patients

a) Literature and general data

In adults, the studies of personality types have led to different conclusions, varying with the authors that have investigated the problem. A summary of data from papers by those we have consulted (including Kourilsky, Gendrot, Held, Roche, Norman, Staehlin, Haynal, Marty, Kerekjarto, Kleinsorge, Schmengler, Teiramaa-Esko, etc.) showed, after standardization of the language used in the different methods of testing, that a series of features are encountered with an increased frequency. These are: **affective immaturity** (affective regression), dependency (either maternal or for a substitute such as drugs, the doctor or other factors), **anxiety, obsessions, vulnerability to frustration, irritability, aggressiveness, feelings of guilt, and depression**.

One should mention an attempt by Haynal to present a global example of affectivity of asthma patients defined as "an avidity of sentiment" in the sense of "what is given is not enough".

A privileged position in defining the personality of the asthma patient is that of **alexithymia**, as a psychological feature related to the incapacity of psychosomatic patients in general (including asthma patients) to describe their personal feelings, leading to an expression of these feelings by symptoms of their bodies (Sifneouss and McNemiah). The generic formula "no words for moods" defines this type of individuals, with a poor imaginary life (Verissimo 2007), but impossible to

conceive by many asthma patients, coming, for a large part, from the ranks of artists, writers, etc. It is however true that a certain part of the asthma patient population does display such traits. Brush and Mathe believe that alexithymic patients have a more severe evolution of their disease, especially because of their impossibility to exteriorize their feelings—a role of catharsis – of their psychological problems, including those related to their illness..

b) Personal studies

With regard to our studies on the personality of asthmatic patient, using a battery of psychological tests of which we retain only the MMPI and the Rorschach tests, we have arrived at the following conclusions (Iamandescu 1980, 1984):

- there is **no specific personality type** for the asthma patient;
- our results demonstrated a **wide range of personality traits**, having in common the fact that they make the patient **more vulnerable to PS**.

These personality traits are found not only in asthma patients, but also in any psychosomatic patient (suffering with ulcers, urticaria, etc, as found in our studies), and even in neurotic patients, with the distinction that in psychosomatic patients the intensity of such deadaptation particularities of the personality hold an intermediate position between the two poles of the intensity scale: the area of normality and that of psychiatry (Iamandescu, 1980).

In the attempt to count these traits, identified by ourselves most often in asthma patients, we will mention firstly the data resulting from the use of the MMPI test, more easily converted into a common medical language. Thus we have encountered in the first place (practically in all our patients) **anxiety**, followed by **paranoid features** (tenacity, perseverance, stubbornness, and extreme suspiciousness), an **increased introversion, emotional immaturity, obsessive and phobic tendencies**, as well as elements of **depression** (these last were correlated by us to the somato-psychological effect of the illness).

It should be noted that, in the asthma patients we have studied with the **MMPI test, all the clinical scales had "representatives" at a higher level as compared with normal controls** (the scales with the tallest peaks were Pa, Hy, Hs, D, Pt and Pd).

c) Main affective traits (anxiety and depression) secondary to bronchial asthma

If the various personality traits described above reflect the psychological diversity of asthmatic patients, and thus do not play a role in the onset of the

illness, they do have a role in the evolution of bronchial asthma through summation of the psychological stress they favor with the allergic factor, as well as with other non-specific etiologic agents.

Of the affective traits frequently encountered in asthma patients (including in our studies, Iamandescu 1980, 1995, 1997), **anxiety and depression appear to be secondary to the onset and evolution of the illness.**

With regard to the **anxiety**, its onset triggers unconscious hyperventilation, and is certainly involved in the psychologically traumatic experience of asthma attacks. With regard to the degree of anxiety, Dirks, using an “Asthma Symptoms Checklist”, has demonstrated in several studies that **“panic fear traits” are predictors for a series of negative aspects of the evolution of bronchial asthma**, as well as excessive use of broncho-dilating medicines, difficulties of corticoid weaning, and the high probability of re-hospitalization in the following 6 months.

Schmidt-Traub pointed out that one of the **exacerbation of anxiety-panic disorder is developed five times more in asthmatic (10%)** than in controls (2%).

Janson et al. has demonstrated that anxiety and depression evaluated with the HAD (Hospital Anxiety-Depression) questionnaire are **significantly higher in asthma patients who experience asthma attacks upon waking or during effort.** However, these traits are not mandatory for the other categories of asthmatic, especially if they have a less severe evolution of their illness.

These patients do not display altered respiratory functional parameters by comparison with other asthma patients that do not have the above-mentioned symptoms, but the subjective fear to awaken, or to perform an effort, generate a quasi-permanent anxiety, and discourages the patient, pushing him into the arms of depression.

In the last years, studies regarding anxiety, as an affective constant trait in asthmatics, are abundant in the literature. There are authors that recommend screening for anxiety and depression in asthma patients (Wagena et al 2004). Anxiety could be diagnosed and appreciated as a risk factor (Stauder and Kovacs, 2003) or at least invoked together with the depressive traits, as one of the “non-adherence causes” to the medical regimen, inaccuracy of asthma perception (Lehrer et al 2002). Our observations, as well as other authors, from those mentioned sustain the fact that patients extremely anxious have many problems regarding their disease, including developing attacks, but we consider

that not all anxious asthma patients need a special long-term psychotherapy. A correct informing of the patient, centered on the optimistic perspective of the treatment is often adequate.

With regard to the depression, this affective trouble is of a reactive nature, a reaction against the chronic evolution of the illness, or the prospect of new and unexpected attacks. There are also cases (see Iamandescu 1980, 1985, 1994) where depression precedes (and possibly contributes to) the onset of asthma. As a rule, however, it is frequently encountered after the onset of the illness, as we ourselves have found (scale D of MMPI), and as recorded by Teiramaa (cited by Brush and Mathe) with the Beck Depression Inventory.

In a personal statistic of 100 corticoid-dependent asthma patients we have used the MMPI and found that 88 % of them were depressed. Many authors (Struck et al., Miller) consider depression as one of the lethal risk factors in asthma patients.

The child with asthma

There is a large amount of data in the literature on psychosomatic diseases, concerning the personality type of the asthma patient. It is easier to identify the characteristic features of a “primary personality” in children with asthma, than in patients whose personality had undergone “secondary changes” induced by the evolution of the disease. This opinion was supported by a great number of authors, including Kleinsorge, Creer et al.

Main affective traits

Many studies have been dedicated to this aspect, and the role was established, between other personality features, of the maternal dependence (correlated with a hyper protective attitude of the mother). Meijer and coworkers consider that this is more marked in those children with a severe evolution of asthma. Other psychological characteristics of these children include irritability, reduced control of impulses, and motor disinhibition, anxiety and increased aggressiveness in the context of a lower degree of sociability.

French and colab., considering the therapeutic practice in general, stressed the fact that „constitutional element” (such as the atopic terrain and the onset of sub-clinical allergic bronchial inflammation – our complement) must wait for the occurrence of the „accidental element” (the contact with allergens and/or the occurrence of psychological stress).

Repression of aggressiveness is a stress by itself, but other situations capable to generate stress (other

types of stressing agents) could also trigger the onset of asthma attacks, or the onset of the disease. Such is the case of the servant allergic to flour that was seized by her employer while she was stealing foodstuffs (Cruchaud)

The family of the asthmatic child frequently constitutes a traumatic environment from the psychological point of view (a psycho-traumatizing background), and there is general agreement concerning asthma-genetic mothers, classified into two categories:

- **Over-protective mothers**, extremely anxious, transmitting their anxiety to the asthmatic child, exaggerating the need for compliance with restrictions imposed by the doctor in view of avoiding triggering of asthma attacks. As a rule, such mothers have a dominant role in the matrimonial relationship with their husbands, who frequently become a resonance factor of their wives opinion (Bosse). The many frustrations related to the lack of understanding for some specific childhood temptations result in chronic stresses that worsen the evolution of asthma. On the other hand, the almost permanent critical attitude of the mother, coupled to *dependency* will result in the developing of an *increased aggressiveness in the asthmatic child*. The censorship of this aggressiveness will become a real stress in adolescent asthmatics and excess of the parental implication in the management of the disease instill in these teenagers a loss of self-esteem and self-acceptance (Theodorakis). They „feel isolated, alone” and cannot feel part of a group or „to get together with their peers” (ibidem).

The second category is that of:

- **Rejecting mothers**, who are a source of major stress for the ill child, whose affiliation needs are not satisfied, although the severe discomfort of asthma attacks increases the need for affection and security.

Frequently *marital conflicts* contribute to the onset of depression in the child, and this has an aggravating role in the evolution of bronchial

asthma. Their repetition or latent persistence may determine alterations of the child’s personality, especially in the affective area.

- An important, although indirect role, is that of the *asthmatic child’s father* (Richter and Ahrens). This becomes evident in the evolution of allergic asthma, noted by Jacobs and co-workers in children whose fathers were either physically absent or did not provide affective support (ibid.)

DISCUSSION

Nowadays, it is almost unanimously admitted that psychic stimuli represent a facultative trigger for asthma attacks. In contrast, the study of the bio-psycho-social background of patients with BAPT is rarely encountered in the actual literature. For this reason, we have presented the results of some of our older studies, confirmed in different points by the works of other authors who addressed the topic of the background of BAPT patients. We consider that the isolation of this group of patients can offer them a supplemental chance to cure, through psychotherapy associated to asthma control therapy.

CONCLUSIONS

All these results suggest the general conclusion that BAPT patients, having an increased vulnerability to stress – based on a complex background (genetic and acquired) and involved in the immune response – have consumed their adaptive “reserves” in biological and psychological stresses they suffered before/during the illness, in final having available a much reduced reserve of cortisol (the main stress hormone). Thus, their above-mentioned vulnerability to psychic stress is increased by a vicious circle, becoming also a biological vulnerability. The psychotherapeutic approach could improve both vulnerabilities – biological and psychological.

RESOURCES

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