

### RESPIRATORY ALLERGOSIS AND BRONCHIAL ASTHMA

#### Respiratory allergosis

The term "respiratory allergosis" aggregates a group of diseases specified with allergic involvement of various parts of the respiratory tract. Respiratory allergosis play a significant role in the framework of respiratory organ pathology in children and adults. The widespread prevalence of respirator system allergic diseases in children and adults is stipulated with that the respiratory apparatus being the immediate barrier between the internal environment of the organism and external environment, is exposed to various harmful ecological factors of specific and non-specific origin. Of great importance is the fact that the well-spread airborne allergens (household dust, plant pollen, epidermal ones, etc.) show the host range to cells of respiratory system.

Moreover, the respiratory passage is quite responsive to viral and bacterial exposure. The bacterial exposure may be both specific and non-specific factor. The specific exposure is the microbial sensitization, whereas the non-specific is what the microbial inflammation, being the so-called unique "poison", creates the beneficial environment to house non-bacterial airborne allergens, fix and cumulate allergic antibodies on the cells of the respiratory apparatus. Various chemical agents show explicit non-specific action, either. For example, such classic respiratory allergosis as bronchial asthma prevails in regions where the ambient air is contaminated with wastage of manufacturing enterprises, vehicle gases, etc.

In all clinical variations of respiratory allergy allergic reactions of immediate and suspended action may occur, though the first type is more frequent. The protective conflict "allergen-antibody" lies at the root of this type enacting on the surface of cells of shock organ which is the respiratory apparatus during respiratory allergy. This conflict results in activation of enzymatic system and the impaired mastocyte excrete in abundance such biologically active agents as histamine, serotonin,

acetylcholine, bradykinin, slowly acting substance of anaphylaxis, etc., and is associated with development of vasosecretory disorders and spastic events which are at the root of clinical symptoms of allergic diseases.

Allergen-antibody or allergen-lymphocyte immune conflict may run independently at any part of the respiratory tract, either seize several parts up to total involvement of the whole respiratory system. In this case, localization of the immune conflict determines the clinical form of respiratory allergosis. Extremely frequent combination of various forms of allergic involvement of respiratory system prevails.

Given that respiratory allergosis rank the top positions among allergic diseases, general practitioners, ENT-specialists, especially pediatricians, unfortunately, confuse exceptional atopic (allergic) involvements affecting the respiratory system with some inflammatory process. This results in patients with atopic form of respiratory system involvement receiving undue antibiotics and other antibacterial pharmaceutical products. As a consequence, such patients develop medicinal allergy with severe after-effect, disbacteriosis, liver impairment, and so forth.

Despite the frequent combination of various clinical forms of respiratory allergosis, we tend to consider the respiratory apparatus allergic involvements as follows: allergic cough, tracheitis, laryngitis (laryngostenosis), bronchitis, rhinitis, pneumonia, sinusitis; eosinophilic pulmonary infiltration.

#### Allergic cough

As the nosological entity (the sickness separated as the independent disease in terms of causes identified, mechanism and clinical and morphological symptoms), allergic cough is not considered in most countries of the world, apart from French allergologists.

However, the rate of seeking medical help by patients due to the solid growth of allergic diseases is increasing year by year.

The major reason of the cough development is the sensitization of the organism to dietary, medicinal, household, pollen, epidermal and other non-bacterial allergens. Lately the recurrent cough is most observed followed by withdrawal of antibiotics due to the insect bite (bee), nervous stress, and fragrance aroma. The core of the disease appears non-bacterial allergens which are manifested as the only symptom. The

patient is disturbed by the larynx itching and regular troublesome cough. The cough is dry which is quite tolerated in the daytime, but it intensifies at 03:00-04:00 a.m. tormenting the patient. There were no pathological changes identified by palpatopercussion and auscultatory method, the same result was seen with the roentgenologic imaging. High eosinophilia was reported by the results of the total blood count. Predominantly positive result was obtained to pollen and household allergens when allergology diagnostic test were performed. These patients will benefit with acupuncture procedure and SIT (allergen-specific immunotherapy).

## Allergic tracheitis

Allergic tracheitis is mainly observed in children at any age, though it is mostly common in infants and pre-school children; it is very rare in adults. Allergic tracheitis develops both independently and concurrently with other allergic diseases of the respiratory apparatus manifested as rhinotracheobronchitis, laryngotracheitis and others. The allergen-antibody immune conflict also underlies the conflict.

In general, the clinical sign of tracheitis is the frequent paroxysmal cough followed by troublesome pain that steals sleep. The fit of coughing is the pertussislike. Antihistamine drugs and bronchial spasmolytics show no anticipated effect. This form of respiratory allergosis was earlier termed as atopic bronchial asthma due to the similarity of cough attacks, without the syndrome of expiratory dyspnea. Some general practitioners (I.P. Lerner, 1963) term the allergic tracheitis in adults as "tussic diseases", thus, emphasizing its dominating clinical symptom.

As well as any other clinical forms of respiratory allergosis, allergic involvement of the trachea is known for the exceptional persistence. The relapses are regular. As a rule, they run without any body temperature, though the health condition of children is considerably disturbed. They tend to become quaggy, whimsical, sometimes hyperexcitable. If the allergic tracheitis runs independently, there are no physical changes in the lungs. The intense eosinophilia is noted during the total blood count which remains also during periods free from relapses. The X-ray imaging shows the reaction of the lungs as the root heaviness, intensification of the juxtahilar pattern, mainly due to the inspissation of vascular marking.

As a rule, allergic tracheitis is difficult to diagnose for long-term period. In most cases the pertussis infection is wrongly diagnosed, as well

as acute respiratory system disorder, bronchitis, long-term and chronic pneumonia. Special investigations contribute to identify the adequate cause of the disease. The increased frequency to various allergens is reported in such cases.

The distinguished feature of allergic tracheitis is complete resolving of the clinical symptoms as soon as the contact with the causative allergen is avoided.

## Allergic laryngitis

This disease fall into the category of emergency cases in clinical allergology. The disease starts all of a sudden and transfers to the acute form easily. The popular literature has lots of names available to term this disease as follow: acute stenosis of upper air passages, acute catarrhal croup, acute laryngotracheitis (croup syndrome), acute laryngotracheobronchitis (false croup), obstruction of upper air passages, croup, catarrhal croup, acute subglottic laryngitis, allergic laryngostenosis (I.A. Larkova, 2006). The fundamental origin of allergic laryngitis is the body sensibilization to various allergens, including dietary, medicine-induced, due to insect bites, epidermal, and in rare cases – due to mites and fungal allergens. Allergic laryngitis may appear in the result of the Quincke's oedema, though along with allergic edema, it may fall into the complex of symptoms of the severe health condition, that is anaphylaxis.

Such dietary allergens as fish, nuts, and beans play one of the fundamental role in occurrence of acute laryngitis. The bovine milk protein and eggs may become the strongest allergen for infants. Almost any allergen of dietary origin may appear to cause such reaction. In some rare cases allergic laryngitis may be provoked due to the smell and odor of food.

Drug-induced stenosis is mostly caused by administration of antibiotics, predominantly with penicillin-group drugs; the similar event develops with intake of streptomycin and the group of aminoglycoside, and very rare the group of cephalosporin, tetracycline, macrolides, and laevomycetin may cause such effect.

The allergic laryngitis, both as independent event and as the part of the anaphylactic episode symptom combinations, may be the consequence of insect bite allergy. It is significantly manifested with the bites of hymenopterans. The issue of allergic laryngostenosis (allergic laryngitis) holds a most unique position in acute respiratory infections. During the last decade the incidence of acute respiratory viral infection



(ARVI) is reported, and if neurotoxicosis was the major symptom of severe ARVI, today there is tendency for the increase in acute obstructive laryngitis with the further process relapse. Nowadays the incidence of allergic laryngitis totals 64-90%. This disease is especially enhanced due to dietary and medicinal allergy. The environmental factors, seasonal and climatic conditions play a significant role in onset and development of allergic laryngitis. The highest rate of the disease is proved to be reported in autumn, winter and spring, particularly during periods of the ultimate fluctuation of ambient air temperature and humidity.

The subglottis is the narrowest part of the respiratory air passage and most stenosis cases report to occur in infants and young children at the age of 6 months and to 3 years due to ARVI.

Allergic laryngitis is manifested with the major clinical symptoms as follow:

- Voice hoarseness
- Rough barking cough
- Stenotic respiration

This disease distinguishes among other with the sudden onset, at night as a rule, concurrently with development of all symptoms, and herein the consequence of transition from one phase of stenosis to the another is not observed and predicted. Episodes commonly develop at night since the subglottic space edema aggravates when the patient is prone. This is the period when the parasympathetic innervation prevails. The acute laryngostenosis developed due to the ARVI episode may be followed with catarrhal events but in some cases such events are not available. The temperature response is of no diagnostic value, either. The most common symptom of stenosis is breastlessness (dyspnea) that is gradually worsening. Transition of the inspiratory dyspnoea to the combined respiratory embarrassment appears to be the life-threatening symptom which evidences on the severity intensification and potential involvement of lower respiratory tract in the process. The hoarseness gradually worsens, the cough is usually rough and barking, sometimes coughing appears as troublesome episodes. Intensity and duration of the laryngotracheal stenosis may vary from patient to patient. The general health severity in children is identified by the intensity of the stenosis, first of all. As it potentiates, respiratory failure and cardiovascular insufficiency occur and develop.

Laryngotracheal stenosis (Laryngo-: Glottic Stenosis; Subglottic Stenosis; Tracheal) is classified into four grades (I.A. Larkova, 2006):

Degree I - compensated; the general health state is moderate; that patient experiences barking cough and hoarseness; sounds when breathing appear mostly when undertaking physical activities, excitement and crying; clinical signs of respiratory insufficiency are not observed;  $PaO_2$  and  $PaCO_2$  are within a normal range;

Degree II - incompletely compensation; severe health state; a child is excited and anxious; the feeling of shortness of breath, barking cough, and persistent stenotic respiration at rest, which increases during insignificant physical tension; signs of respiratory insufficiency; the respiration process involves auxiliary musculature; perioral perioral (asphyxia), inspiratory dyspnea, tachycardia;  $PaO_2$  at the lowest limit of normal and  $PaCO_2$  - on the upper limit of normal;

Degree III - decompensated; severe health state or extremely severe; expressed express discomfort, feeling of fear, barking cough, aphonia, stenotic respiration recognized at the certain distance; signs of evident respiratory insufficiency - acute inspiratory dyspnea, involvement of all muscles of respiration while breathing, retracting of epigastrium, asphyxia and acrocyanosis; cardiac sound are mute, tachycardia, thread pulse dropping while breathing in; cold extremities, cutis marmorata (marble pattern of derma); decrease of  $PaO_2$  to 50 mmHg and increase of  $PaCO_2$  to 70 mmHg;

Degree IV - terminal; the health state is extremely severe or agonal; respiratory rhythm impairment, convulsions, loss of consciousness, involuntary urination, bowel movement; sharp hollowness of cardiac sounds, bradycardia, arterial pressure decreases or not identified; asphyxia develops;  $PaO_2$  below 50 mmHg, and  $PaCO_2$  is over 70 mmHg.

When estimating the stenosis degree, the availability of symptoms at rest or at loads (psychic tension) of intense respiration is considered. Of the great significance is the voice (cry) and coughing features. A hoarse, barking cough is typical for subglottic laryngitis. Aphonia is the persistent symptom of vocal cords involvement. The availability of the allergic edema is evidence through such symptom as dissociation of stenosis signs and voice sounds alteration, when когда vibrant sounds are still recognized even with the severe stenotic respiration. With recurrent forms of allergic laryngitis mostly compensated (Degree I) and incompletely compensated (Degree II) are observed. Decompensated (Degree III) and terminal (agonal) forms are rare or not observed at all. This is likely associated with the facilities available to modern pharmacotherapy.

Treatment of allergic rhinitis of any degree should be performed in hospitals.

## Allergic bronchitis

Among respiratory allergosis, allergic bronchitis ranks second in incidence, by our observance, following the bronchial asthma. Both children and adults are exposed to this form of allergy. As compared with adults, the allergic bronchitis is more often in children. Children of any age range are subject to this disease. The immune component allergen-antibody is the core cause of allergic bronchitis development. The immune conflict develops in the large and medium bronchi; the bronchiole remains intact. This is proved by no asthma episode. During the bronchoscopy the bronchi mucosa coating is identified as edematous and muculent. The edema is the reason of bronchoconstriction. During the visual examination while performing bronchoscopy, a great amount of mucin can be recognized. When the bacterial infection concurrently penetrated the bronchi, the physicians diagnose hyperemia, with the bronchus mucous coat and mucin appear mucopurulent. This form of respiratory allergy is known for clinical frequent relapses, approximately, several times a month. Since most bronchitis are caused by viruses, antibiotics are not generally recommended as they are not efficient, and the recurrence figure is not decreased. This only brings to the development of antibiotic-resistant bacteria and severe allergic reaction due to medication may develop. Every case of recurrence is followed by the persistent, compulsive, and often paroxysmal coughing, predominantly at nights. When examined, different bubbling rales are auscultates in lungs, with prevalence of coarse and medium moist rales. Along with the moist rale some dry rales are auscultated. Unlike the bronchial asthma, the dry rales are identified mainly when breathing in. physical changes in lungs are usually of diffuse origin. The allergic bronchitis it is indicative that in allergic bronchitis abovementioned physical changes vary several times a day, whether appearing or disappearing.

The total blood count shows evident eosinophilia up to 25-30%. The roentgenologic findings report on the intensified transparency of the pulmonary tissue, perivascular infiltration and intensification of vascular pattern.

Despite the persistent recurrence, the signs of general intoxication are missing, as a rule. Changes in cardiovascular system, liver and kidney are not observed. Various disorders in the Central nervous system, especially of its vegetative part, should be also considered. Children become whimsical, inactive, hyper-irritant and perspirable. However, during the short symptom-free periods, children with allergic bronchitis appear completely healthy.

Often allergic bronchitis runs concurrently with other immediate-type allergic diseases, and in most cases – with rhinitis, conjunctivitis and allergic dermatosis.

Below find the differential and diagnostic description of allergic bronchitis and infectious-inflammatory acute bronchitis in patients with respiratory allergosis in general, and allergic bronchitis in particular. The histamine level in such patients increases to reach 40 mcg %, that is histamine-peptic index 0-5% is disturbed. Furthermore, most people are sensibilized to household dust, and plant pollen. During elimination process and acupuncture procedure all symptoms resolve.

Table 12

Differential diagnostics description of the allergic bronchitis and infection-induced inflammatory acute bronchitis

Clinical symptoms of disease	Allergic bronchitis	Infection-induced inflammatory acute bronchitis
Hereditary load in allergic diseases	Permanent	Rare
Disease onset	Abrupt, without temperature	Acute, with high temperature
Pathogenesis	Allergen-antibody component is the source	Bacterial inflammation of contagious origin
Recurrence	Often, several times a month	Non typical
Antibiotic treatment	Ineffective	Highly effective
Glossitis ariata migrans (geographic tongue)	It abruptly intensifies prior to relapse	Non typical
Cough	Persistent (intensifies at night), compulsive, paroxysmal	Intensifies in the daytime, it is quite untroubled at night
Physical events	Change several times a day, appearing and resolving	Of persistent nature
Eosinophilia	High extent, up to 25-30 %	Non typical
Skin patch test	Too positive	Absent



## Hypersensitivity pneumonitis

Children are exposed to this kind of respiratory allergosis at any age, though this is diagnosed in rare cases. As a rule, hypersensitivity pneumonitis develops in an acute form. It is often provoked by various non-specific factors. When this occurs, acute respiratory infection of viral origin may become a trigger to develop hyperergic response in lungs whereas the true pneumonia associated with the bacterial flora activation may not develop. Acute forms of hypersensitivity pneumonitis run differently.

It is assumed that the third type of allergic reaction takes place in hypersensitivity pneumonitis cases, in accordance with the Coombs and Gell Classification (1968). This type of reaction is known to rely on the interaction of the allergen with precipitant antibodies that refer to class IgG. In this case micro-precipitators develop around vessel walls; vessel walls degrade and obstruct.

This reaction runs by the type of Arthus phenomenon. The typical example of hypersensitivity pneumonitis is the "farmer's lung" described mainly in foreign literature. This is described as acute allergic alveolitis (mushroom-worker's lung) that runs with the high body temperature, intoxication, leucocytosis, increase in erythrocyte sedimentation rate (ESR), and so forth. Sensibilization to the flour allergen underlies in this pathological condition.

Sometimes the health condition of the patient worsens and the body temperature rises to febrile figures. The inspiratory breathlessness develops; the breathing rate intensifies and becomes superficial. The cough is infrequent without sputum expectoration. The contraction of the percussion sound is observed in lungs in the affected zone. Also various moist rales and crepitant rales are auscultated due to weak breathing rate. Due to the alveolar hypoventilation hypoxemia develops followed by hypoxia. Asphyxia and acrocyanosis (Raynaud's sign) are observed along with the cardiac acceleration and muteness of cardiac sounds. In some cases allergic pneumonia runs smoothly without any evident cardiopulmonary manifestation. Hypersensitivity pneumonitis, irrespective of its severity, is known for its relatively prompt regression of all clinical symptoms.

Allergic pneumonia may develop both independently and due to various diseases of allergic genesis.

Similar clinical conditions are too common in bronchial asthma. Hypersensitivity pneumonitis in children with bronchial asthma run in

a varied manner as well as independent allergic involvements of alveolar tissue. The course of the disease is often non-severe, with moderate manifestations of intoxication and mildly expressed signs of respiratory insufficiency. Thus, during the attack-free period, various moist rales develop in lungs of many pediatric patients with prevailing small bubbling rales that simulate physical changes peculiar to the common microbial inflammation. The X-ray picture of thoracic organs demonstrates, apart from zones of peribronchial and perivascular infiltration, local edema of pulmonary tissue, and sometimes the visceral pleura response. Apparent eosinophilia and moderate lymphocytosis are usually observed during total blood count; ESR is not decreased. One of the basic peculiarities of allergic pneumonia is the quick (within 3-4 days) resolving of both clinical and roentgenologic symptoms of inflammation process.

This type of hypersensitivity pneumonitis requires special anti-allergic therapy with the strong effect to be effective. Below find the table with differential and diagnostic criteria of allergic and contagious inflammatory involvements of respiratory system (by Yu.F. Dombrovskaya, 1978).

**Table 13**  
**Differential diagnostics criteria for allergic and infection-induced inflammatory involvement of respiratory system**

Clinical and paraclinic signs of disease	Allergic involvement	Infection-induced inflammatory process
Allergic diseases hereditary load	In most cases, persistent	Rare
Persistent recurrent nature of disease	Apparent	Less apparent
Regular physical changes in lungs	Not reported	Often reported
Roentgenologic changes in lungs	Shows immediate response	Manifested for long period
Temperature response during process deterioration	Not available, as a rule	Reported more frequently
Positive skin patch test with histamine	Clearly manifested	Not available or expressed mildly
Positive skin provocative tests with non-infectious allergens	Reported regularly	Not available

Effect from antimicrobial therapy	Not reported	Apparent
Increased concentration of histamine and other biologically active substances in blood	Regularly	Non regularly
Decrease in GPI	Regularly	Non regularly
Eosinophilia	Apparent	Non-apparent
Presence of allergic diseases of other organs and systems	Frequent	Rare

### Pulmonary eosinophilic infiltrate

Pulmonary eosinophilic infiltrates are too rare in children, especially with bronchial asthma. This event runs without clinical symptoms and, as a rule, it is accidentally diagnosed during X-ray imaging. Among extrapulmonary symptoms, the eosinophylic infiltration is the typically significant (up to 50% and more) increase of eosinophil cells in peripheral blood; eosinophilia is mainly observed when the intensity of roentgenologic changes is identified. At this high level of involvement, eosinophiles likely accumulate in the foci of local allergic response in lungs. Pulmonary eosinophilic infiltrate is vitally different from hypersensitivity pneumonitis in that the cardiopulmonary clinical signs of the disease never develop with that apart from eosinophilia.

It was noted that the recurrent nature of allergic bronchopulmonary involvement sometimes determines the error diagnosis of chronic pneumonia with all ensuing consequences (unreasonable antibiotic therapy, re-administration of physiotherapeutic procedures, bicillin as preventive measure).

All mentioned measures are not only ineffective but they can cause ancillary sensibilization.

Atopic rearrangement often favors infection inclusion and development of secondary bacterial process. Nevertheless, clinicoradiologic and laboratory investigations allow distinguishing between atopic and infection-induced inflammatory condition which is significant for therapy.

In the context of the book we mentioned the basic and common respiratory allergosis in children and adults. I hope that the data

summarized in the table for differential diagnostics will be of help for practitioners. It should be also noted that the effective treatment of respiratory allergosis allows avoiding transition to bronchial asthma, the severe form of allergy.

### Bronchial asthma

Respiratory allergosis therapy is the most complicated challenge that our modern medicine faces today. The description of particular allergic diseases should be started with bronchial asthma. This is not simple. Bronchial asthma is the serious and dangerous disease followed by the asthma attacks. In practice we meet more frequently bronchial asthma cases as compared to other allergy forms and it ranks first among respiratory allergosis on health-seeking behavior.

Bronchial asthma (asthma bronchiale, in Greek asthma is wheezing, shortness of breath) is the allergic disease characterized by recurrent episodes of wheezing caused by diffuse impairment of bronchial permeability that is associated with localization of the allergic process in bronchial tree tissues. The Joint Committee of American Collegium of Pulmonologists and American Thoracic Society termed the bronchial asthma as "disease characterized by variable airway obstruction and hyperreactivity of airways to various stimuli. This syndrome is characterized by the suppression of forced expiration, the manifestation rate of which changes either voluntarily, or as the result of the therapy performed".

In 1991 the National Heart, Lung, and Blood Institute of America (NHLBI) acknowledged that bronchial asthma is characterized:

- By complete or partial reversible airway obstruction;
- Inflammation;
- Increased responsiveness (hyperreactivity) of bronchi.

As one of the severest diseases, bronchial asthma is mentioned in ancient documents and works by Homer and Herodotus, Galen and Celsius, Ренй-Тһйophile-Hyacinthe Laennec and Abu Ali Ibn Sina (Avicenna).

G.I. Sokolskiy offered the classic description of bronchial asthma clinical pattern one hundred years ago, whereas Abu Ali Ibn Sina described



in details this disease based on scientific and practical materials, 1000 years ago. His hypothesis remain valuable up to our days due to practical opinion. Today every practitioner, while studying the *Canon of Medicine*, the standard medical text, finds lots of valuable information applicable presently.

Below are some doctrines and recommendations on bronchial asthma treatment offered by Ibn Sina: "Asthma is the lung disease when the person suffering it breathes as frequently as the person out of breath due to performing physical activity. This disease, when it occurs in aged people, can hardly be treated, since it cannot get to the period of maturity, and how it can be feasible when the disease is hard to cure even in younger people? In most cases, bronchial asthma worsens when the person is prone.

...This refers to the category of long illnesses, and is characterized with acute episodes like epilepsy paroxysms and convulsions. In asthma, the lungs and surrounding area are affected, since thick juice (mucosa) clog arteries, their small divergences and papula, sometimes the mucosa is in the lung tube, and sometimes – in the areolar substance of lungs and in hollow zones".

The Esculapian gave the explicit explanation of the asthma occurrence cause: "Occasionally, in rare cases, [asthma] occurs due to the dry lungs which results in their shrivel and shrinkage, and in some cases – it is due to the cold in lungs. It may occur due to the affection of initial position of respiratory tract...

From time to time [asthma] may occur due to the abundance of smoke, if it remains in lungs and settles there; and in particular circumstances, it can be caused by winds that stay in air passages and embarrass the respiration".

While describing the symptoms of bronchial asthma, Ibn Sina gave the particular term for it similar to the modern pathogenesis of the disease. He says: "If asthma is caused by juices or fluid in the respiratory tube itself, then the constrain is observed with intake of breath followed by expectoration, wheezing, retention of the material stuck, feeling of heaviness and sputum expectoration coming out of area closely located [to the respiratory tube]. With juices [clogged] due to the catarrh, the asthma onset is abrupt, otherwise it develops gradually". It seems that Avicenna considered two forms of bronchial asthma: allergic (atopic) and infection-induced allergic asthma. Further he states when describing the bronchial asthma therapy: "Asthma, respiration constrain and delayed breathing should be treated. [Asthma] that is caused by fluids is treated in the

following way: the fluid in lungs of such patients is carefully and regularly eliminated; if you reveal that the lungs are affected by the fullness [of fluid], you must evacuate it by means of loosening. Medications used for that should be resolving and facilitate the maturity of the disease, though not so heating since it could bring to the material dried and thickened... Therefore, you should remember to ensure material moistening and getting it to the maturity state, whether it is thick and viscous...".

The doctrines of the scientist are up of date in modern medicine. In severe bronchial asthma, especially at the status asthmaticus II and III Stages, rales are not auscultated in lungs. This is a very dangerous and life-threatening symptom. With the adequate therapy there is a mass of dry and moist rales in lungs, the sputum is possible to expectorate and the crisis is over, the patient is safe and out of status asthmaticus. When the sputum is expectorated, the air passage is cleared from thick juices, as Avicenna stated. This is the period when antihistamine drugs should in no way be administered since they intensify the viciousness of excessive juices, that is sputum, while the patient required taking only expectorants, preferably based on plants. Ibn Sina avoided recommending diuretic agents for such patients and he stated that: "Diuretics and other agents that affect urination appear harmful in bronchial asthma, since they hardly excrete the most liquid part of the fluid out of body".

As a matter of fact, in status asthmaticus condition particular liquid (it is described below) is provided 2 to 3 times a day, though intravenous injection (20 drops per minute) which contributes to dilute the sputum.

While providing recommendations to pediatricians, Ibn Sina says: "When the pediatric patient is treated, the drug should be mixed with breast milk; medium-potentiated drugs [by potency] are sufficient [for children]...".

Ibn Sina provided with very valuable recommendations on prescription of medicinal drugs: "As for the other medicinal products, they should be changed [from one drug to another] to avoid abuse and body addiction to it. Furthermore, there is interaction between medicinal drugs and bodies [individual] to follow compliance which is only possible to gain during practical work, and when [various drugs] tested, the most beneficial should be recommended".

All doctrines supposed by Avicenna many centuries ago are proved in modern medical practice. For example, a wide administration of glucocorticoid therapy dramatically expands hormone-resistant or hormone-dependent forms of bronchial asthma. Other therapy techniques are not effective for such patients, and in them the bronchial asthma runs

in a severe form, with various complications that may result in death. As you see, hormone-resistance or hormone-dependency in modern medicine in general, and in clinical allergology in particular, appear to become a great malady. And this is why we are mainly specialized in non-medicinal therapy in our clinic.

While treating bronchial asthma, Ibn Sina used a great number of complex and simple medicines that comprise the variety of medicinal herbs. The scholar strikes with his genius and uniqueness that he considered a wide spectrum of bronchial asthma onset causes while recommending treatment regimens. There is no doubt that therapeutic modalities recommended by Ibn Sina are still highly valuable nowadays. And this is what exactly we proved in practice.

### Clinical classification of bronchial asthma

A.D. Ado and P.K. Bulatov suggested the clinic-pathogenetic classification of bronchial asthma as a disease in 1964. According to its classification, asthma may also be classified as infectious allergic (intrinsic) asthma or non-infectious allergic induced (extrinsic), based on whether symptoms are precipitated by allergens (atopic) or not (non-atopic).

Infectious allergic asthma (intrinsic) is associated with sensitization due to bacterial allergens. Non-infectious allergic (extrinsic, no infections involved) asthma is caused by non-infectious allergens. In present conditions the most common form of bronchial asthma is non-infectious, that is atopic form of bronchial asthma. The allergens involved include pollen, household dust, epidermal, dietary, medicinal, and chemical. The mixed type asthma should also be considered, triggered by allergens as well as conditions like extreme cold and by chemicals, since atopic form of bronchial asthma is often considered infectious allergic asthma or the combination of pollen allergy with household atopic bronchial asthma is reported. The occurrence of such combined allergy is not season-dependent, and the duration is often on an annual basis. The American physicians distinguish "potentially terminal bronchial asthma" as the clinical form of the disease. We suppose that it is practically impossible to outline this form of bronchial asthma, and besides, such format may confuse the practitioner. While determining the treatment regimen, the

health care worker can confuse the status asthmaticus with the terminal form.

In view of the wide and unreasonable use of hormones the problem of bronchial asthma and its clinical course turned into the huge challenge in the modern clinical allergology. The hormone-resistant and hormone-dependent forms of bronchial asthma are considered as individual nosology. In these forms of bronchial asthma the research scholars and clinicians have to commit to attain positive results in treatment and to startle patients out of this condition.

Finally, non-allergic form of bronchial asthma should be specifically emphasized. In this form of the disease all tests are mainly negative and IgE antibodies are not involved.

Non-infectious allergens that cause atopic form of bronchial asthma include:

- Airborne – plant pollen, household and manufacture dust, feather to fill in pillows, epidermal (epidermis particles), chemical production products, and cosmetic products, medicinal agents, particles of insect bodies, spores of non-pathogenic fungus;
- Enteral – foodstuff, pharmaceuticals;
- Parenteral – vaccines and serum, pharmaceuticals (antibiotics, vitamins and so on);

Airborne allergens appear to present the greatest significance in etiology of all types of atopic form of bronchial asthma in children and adults.

With the purpose to manage the adequate and correct medical assistance to patients, practitioners should be aware of the principles of bronchial asthma clinical classification. Baseline data of this classification are given in the Table 14. These data are proved in the practical activity of the clinic.

Health care professionals should be strict in consideration that the course of the disease may modify. For example, in many cases when rhinitis is concurrent with conjunctivitis of pollinosis etiology, the patient may experience congestion in the throat and coughing which evidences on that the allergic process seizes the lower parts of the respiratory system and the risk of bronchial asthma episode onset may appear.



Clinical classification of bronchial asthma

Form	Stages				
	Pre-asthma	Mild	Moderate to severe	Severe	Stage II
Atopic (pollen-induced, household dust-caused, epidermal, dietary, medicinal, chemical)	All kinds of pollinosis, without bronchial asthma symptoms, those of respiratory diseases, atopic dermatitis	Mild asthma attacks that resolve without use of $\beta_2$ -adrenoceptor agonists or they can be easily managed. Remission goes beyond the contact.	Asthma attacks 2 to 3 times a week. Remission goes beyond the contact with the offensive allergen. Possible bronchopulmonary complications.	Severe asthma attacks on a daily basis, sometimes 3 to 4 times a day. Remission beyond the contact with the offensive allergen is possible, as well as the status asthmaticus	Severe asthma attacks. Status asthmaticus. Rare remissions. Chronic pulmonary insufficiency of grade II-III. Other complications are possible.
Infectious allergic	All long-term and chronic pulmonary diseases and ENT-organ diseases	Asthma attacks with exacerbation of pulmonary chronic process. $\beta_2$ -adrenoceptor agonists arrest the bronchi spasms. Remissions go beyond exacerbation of chronic nidus of infection. No complications.	Frequent asthma attacks with exacerbation of chronic pulmonary diseases and ENT diseases. Chronic pulmonary insufficiency of grade I is possible.	Secondary to exacerbation of chronic non-specific lung diseases. Rare remissions. Frequent status asthmaticus. $\beta_2$ -adrenoceptor agonists are effective temporarily, either effect is no possible to achieve.	Expiratory dyspnea is permanent. Frequent status asthmaticus, chronic bronchopulmonary diseases of grade II-III. Pulmonary heart disease is possible.

Mixed	Depending on combination type, pollinosis, respiratory allergosis and dermatosis or chronic infection of bronchopulmonary system may occur	Depends on combination type I or II	Depends on combination of bronchial asthma	Severe. The disease severity depends on the combination type	Irrespective of combination type, the bronchial asthma is severe, with frequent status asthmaticus. Cardiovascular insufficiency is possible in all forms
Hormone-dependent and hormone-resistant	Frequent asthma attacks, small efficiency due to $\beta_2$ -adrenoceptor agonists, the treatment with glucocorticosteroids brings to hormone-resistance or hormone-dependence	During administration of glucocorticosteroids the asthma attacks are rare or missing	Upon the hormone effect weakens the moderate severity is observed	Severity is similar to that of bronchial asthma type I or II	Similar to bronchial asthma type I or II
Non-allergic	Frequent infections of air passages	Depends on the type and severity of air passage infection	Depends on the infection type	It runs with body temperature, frequent attacks are possible	Cardiopulmonary complications are potential

## General clinical survey

Despite there is versatile forms of bronchial asthma (inflectional allergic, atopic, etc.), all these forms are common in clinical manifestation. For example, the common are the principal symptoms of all bronchial asthma forms, as breathlessness, sense of shortness of breath, cough with sputum expectorated, wheezing which can be identified even at certain distance. The intensity of symptoms in various patients depends on the type, origin, and severity of the disease. With respect to elaboration of the differential diagnostics and especially with the purpose to choose the effective therapeutic modalities four periods of bronchial asthma are outlined: pre-episode, acute bronchial asthma, post-episode and intercritical.

**Pre-episode period**, depending on the form of asthma, last for several hours to 2-3 days, and sometimes for weeks. The patients experience dry cough, paroxysmal sneeze, itching in nasal cavity, and nose stiffness. They complain on loss of appetite, headache, weakness and fatigue. The body temperature is always within a normal range, and low-grade fever is reported in too rare cases. Sometimes, especially in atopic forms of bronchial asthma, the pre-episode period is missing, and asthma episodes occur abruptly.

Such abruptness is not typical in case of children, especially of younger age. First of all, the central nervous system disturbance is reported in them manifested as decrease in appetite, sleep disturbance, general anxiety, and hyperirritability. When examined, the larynx mucosa coat is edematous, as well as edema develops in tonsils; hyperemia of pharynx is also observed. These symptoms often remind the symptoms of the acute catarrh of upper respiratory tract.

Pre-episode period of asthma in 73% patients under the clinical monitoring was reported as short-term, lasting for several minutes to 2-3 hours, and it was missing in 27% patients when the second period of the disease onset was observed.

With inflectional allergic forms of bronchial asthma the pre-episode period is quite long, that starts gradually with intensified symptoms of body intoxication. Along with the abovementioned symptoms, patients suffer from significant discomfort, instable nervous system performance, coughing that worsens in the evenings or at nights. Rales are auscultated in lungs, and sometimes the cough with small amount of sputum expectorated.

It is interesting that during atopic bronchial asthma the clinical signs of concurrent allergic diseases intensify, especially it refers to dermal diseases. This is often observed in children with constitutional abnormalities: all forms of diathesis potentiate, and especially it refers to the exudative diathesis.

**Period of asthma episode (acute bronchial asthma)** also depends on the form and severity of allergic response.

The first asthma episode onset is quite versatile. Some investigators tend to refer the "triggering mechanism" with the increase of sulfur dioxide gas, sulfur dioxide, carbonic oxide and smoke concentration in the ambient air. (E.V. Putintsev, 1974; J. Goldsmith et al, 1970).

The correlation of bronchial asthma exacerbation with various climatic conditions and seasons of the year is identified by the investigators J. Goldsmith *et al* (1970), J. Perezan (1972), H. Hyde (1972), E. Derrick (1972). They suppose that the incidence of asthma episodes predominantly rely on concentration of allergens in the ambient air, which, in its turn, is specified by the weather.

In patient, first bronchial asthma episodes develop due to versatile factors, including acute respiratory diseases, acute pneumonia, various odors, alimentary factor, cleaning premises, spring onset, contact with house pets, DPT (diphtheria and tetanus toxoids and pertussis vaccine), tonsillectomy, rhinitis, conjunctivitis, whooping cough, allergodermatosis (eczema), pharmaceuticals, emotional upset.

According to data provided by A.D. Ado *et al* (1973), N.V. Adrianova (1973), more than the half (53.5%) of adult patients with atopic bronchial asthma tend to relate the onset of the disease with respiratory infections. The authors commit to explain this as follow: in atopic asthma the infectious process only promotes penetration of a huge amount of airborne allergens into tissues to which the patient is hypersensitized, going through the affected mucosa coating. This is not the "immediate" cause of the disease, but only the factor that favors transition of the subclinical form of non-infectious allergy to clinical.

The clinical pattern of the acute atopic bronchial asthma varies from patient to patient and has some common features. In 83 ( $68.6 \pm 4.22$ ) patients with pollen-induced asthma, the episode period starts abruptly and violently. In the beginning of the episode asphyxia and cough are rare, but they are frequent at the end of the episode. Expectoration of the small amount of muculent viscous sputum was reported during moderate 48 ( $39.7 \pm 4.44$ ) and severe 17 ( $14.0 \pm 3.11$ ) courses of the disease. Wheezing



sounds and murmuring rales are auscultated at distance during the asthma episode. The asthma develops almost always at the night in adults and children, at about 24:00 p.m. and 02:00 a.m., and it is rare in the early morning, at between 04:00 a.m. and 05:00 a.m.

The behavior of asthma episodes to occur at night is known to clinicians for a long time, and they explain it as due to the increased tone of nervus vagus at nights (Moncorge, N.F. Golubev, *et al*). In the early start of the episode goose breathing occurs, and sometimes – stentorous. The patient seems to be completely healthy in atopic form of bronchial asthma when asphyxia is not reported. But when the asthma episode starts abruptly, the health condition of the patient worsens. In severe cases the patient positions is in the forced position leaning to the bed or chair. The clear cyanosis of lips develops. When examined physically, the slight box percussion sound and a range of diffused dry rales and wheezing are determined at distance. In most cases the high respiratory rate decelerates.

During atopic asthma the episode ends also abruptly (abrupt start and abrupt end are typical). All physical changes in lungs resolve, patient can sit at ease and smile as if nothing happened.

During infectious allergic bronchial asthma the episodes can last for weeks, with the slow starting and slow ending of it. Physical events in lungs are also continuous and slow, and they resolve in several days. Frequent asthmatic condition and complications are mostly reported in infectious allergic form of bronchial asthma. If the episode is more than 24 hours in duration, the health condition may get better in the daytime, but it worsens at nights.

Shortness of exhalation is the most typical and principal feature of respiration disturbance during asthma episode. Breathlessness is expiratory, the episode onset mechanism is caused by bronchoconstriction which appears due to spasms of bronchi muscles, swelling of bronchi mucosa and increase in the amount of mucous gland secretion, the viscous secretion reduces the bronchi lumina and covers some bronchioles.

Filling of air tubes lumens is often incomplete, and sometimes it is unilateral, that is it's possible to breath with force, while breathing out is extremely difficult with effortless act of respiration. Given this mechanism of asphyxia development, the special program of respiratory gymnastics is elaborated which is described below.

**Post-episode period** of bronchial asthma depends on the form and severity of its atopic origin. During this period the patient smoothly recovers, rales disappear as well as other clinical symptoms.

In infectious allergic form the recovery is too slow. Rales and other manifestations of the disease remain for a longer period.

**Intercritical period of bronchial asthma.** Every bronchial asthma episode influences the general health state and may provoke a number of functional disturbances. The longer is the episode, the stronger is the harm caused to the organism. Adults and children suffering from asthma experience loss of appetite and sleep disturbance. In most cases, such children show developmental delay. They are pale, hyposthenic and non-mobile.

Health recovery upon the episode period occurs differently in various patients specified in different frequency. When the time interval between the episodes is quite long, the patient recovers easily. The skin gets pink and healthy, the turgor of tissue improves.

When the intercritical period is short (1-2 weeks), full recovery of system and organ function is for short-term, either. Lucid intervals are often observed in intrinsic form of hormone-resistant and hormone-dependent patients. The immune system deficiency is reported in such patients on a regular basis. Such condition in most cases is typical for preschool and school age children. The significant duration of episodes in children aged 13-15 results in delay of secondary sex characteristics development.

On studying the functions of endocrine glands prior, during and post-treatment, we revealed that they actively participate in pathogenesis of bronchial asthma. Frequent asthma episodes, long-term illness, and continuous participation of respiratory organs in the "battle-field" (Moncorge's phenomenon) result in considerable changes in the chest, and such deformations are known as keeled chest or cobbler's chest (pectus excavatum).

Deformations of the chest are often observed in school-aged children. The barrel-shaped thorax develops due to continuous pulmonary emphysema.

Patients suffering from intrinsic hormone-dependent form of the disease show functional, and then organic changes in upper respiratory airways.

Therefore, based on monitoring data we obtained, it is possible to design clinical criteria for differential diagnostics of atopic (extrinsic) and intrinsic bronchial asthma (Table 15) which will be helpful for any practitioner in day-to-day activity.

*Table 15*

**Differential diagnostics of extrinsic and intrinsic bronchial asthma**

Measures	Bronchial asthma forms	
	Extrinsic	Intrinsic
Allergic response nature	Immediate-onset allergy	Combination of immediate-onset and delayed-onset allergy
Exposure due to gender identity	Male, predominantly	Male, predominantly
Genetic background	More specific	Less specific
Premonitory symptom period (pre-episode)	Short. Duration is from several minutes to 2-3 hours. Sometimes this period is missing.	Intense. Duration is from 1 to 3 days, sometimes longer
Asphyxia: onset	Clearly identified, often occurs abruptly. Violent.	Often occurs gradually and slowly. Less violent.
Cough	Less frequent at the episode onset, and more frequent at its end.	Similar at all periods
Sputum	The most amount occurs in moderate and severe cases	Mass of mucopurulent sputum
Bronchial spasmolytics	Resolve quickly	Ineffective and resolve symptoms slowly
Episode termination	Clearly distinguished and it ends abruptly	Less clear distinguished. Long-lasting.
Seasonality	Intense in pollen-induced asthma, lasts for 8-9 months	Year-round
Physical data	Often missing or appear 1 to 2 hours prior onset	Regular
Rales	During the episode dry, sibilant murmuring rales are observed at the distance. Moist rales are often absent.	Various combination of different dry, murmuring and wheezing rales with different diffused moist rales
Status asthmaticus	Rarely observed (to 8 %)	Frequently observed (to 21 %)

Post-episode period	From 1-2 hours to 2-3 days, sometimes it is missing	From 3-5 days to several weeks
Concurrence with other allergic diseases	Concurrent run of allergic rhinitis, conjunctivitis and allergic itching dermatosis (neurodermatitis, eczema, urticarial) is more distinctive). During the episode the clinical signs of concurrent allergic diseases strengthen	Less distinctive
Tongue	Geographic tongue (glossitis areata exfoliate) is more often in children with genetic burden. During pre-episode period the condition of geographic tongue worsens in children with diathesis, during the post-episode period it smoothly improves	Dry, with minor coat. Geographical tongue is not distinctive. It is not observed in adults.
Remission period	Clear remission within several minutes to several years with avoidance of causative allergen	In most cases, remission period lasts for 1 month
Complications	Rare	Frequent
Specific immunotherapy	More effective	Less effective

**Clinical pattern of individual forms of bronchial asthma**

The clinical pattern of bronchial asthma is closely related to causative non-bacterial allergens, the exposure duration and sensibilization degree.

In view of the incidence rate of atopic bronchial asthma and cases of combination with other allergic diseases, the course of the primary disease and the therapy tend to challenge increase in severity. Such combination of various forms is outlined in works by E.S. Mutin, L.A.



Goryachkin, *et al* (1972), J. Weizenbeck (1970), D. Findeizen (1971), T. Roberts (1972).

Through our observations, atopic bronchial asthma of frequently combined with such allergy conditions as rhinitis, conjunctivitis, urticarial, eczema, neurodermatitis, medicinal and dietary allergy. As a rule, during the asthma episode the clinical signs and course of concurrent allergic diseases potentiate.

It should be specifically noted that in children suffering from atopic bronchial asthma with genetic burden 39 of them under observation ( $32.2 \pm 4.74$ ) were reported to have geographical tongue. This condition worsens in such children prior to the episode onset and during the attack, and the coating decreases as soon as the episode resolves. This finding could be used as one of the most important signs of future asthma episode, in our opinion. This is the parameter that is proved and applied in our daily activity in the clinic.

### Atopic pollen-induced bronchial asthma

The clinical pattern of the atopic bronchial asthma caused by pollens is versatile and distinctive; it is related to climatic and geographic conditions of the patients' destination.

For example, in the context of climatic and geographical condition in Central Asia, and in Uzbekistan in particular, the duration of this form of asthma makes 8-9 months.

In cases of pollen-induced bronchial asthma the symptoms of pollen intoxication are too distinct: nausea, loss of appetite, pain in the cardiac level and in abdomen, headache, blue shadows under eyes like "goggles". Some patients inform on the menstrual cycle disturbance.

Among other patients, 83 of them ( $68.6 \pm 4.22$ ) suffering from pollen-induced bronchial asthma reported on the abrupt exacerbation of clinical symptoms during spring, summer and autumn periods, often in combination of the asthmatic component and signs of naso- conjunctival involvement: paroxysmal sneezing, excessive discharge from nose and eyes, itching and burning in the nasal cavity. Episodes develop abruptly and violently and run too bad. All patients report on sudden onset of episodes, and in the beginning the cough occurs rarely, while it gets frequent in the end of the episode.

In 48 ( $39.7 \pm 4.44$ ) patients with moderate asthma and in 17 ( $14.0 \pm 3.11$ ) patients with severe asthma a small amount of mucous sputum was

expectorated. Sibilant rale and wheezing were recognized at the distance. Diffused moist rales were reported in 9.9% patients.

Despite the health condition and duration of the atopic bronchial asthma caused by pollens, patients who were not exposed to hormone therapy, tolerated the treatment regimens in our clinics and recovered quicker.

### Atopic epidermal bronchial asthma

Living in the society, we are exposed to various external factors and have to face various manifestations of the bronchial asthma.

**A case study.** A school-aged boy was taken to the clinic. His mother seemed to be close to the boy emotionally since they spent all the time together. The skin patch tests were performed for the boy with the extremely positive (++++) results. Her hair appeared to be the offensive allergen for him. The indirect test of mast cell destruction for the hair allergen was also extremely positive (+++). The boy was weak, changed his mood often and cried. Anti-asthmatic drugs had a temporary effect only.

The first course of specific immunotherapy with the human hair allergen in dilution  $10^{-11}$  was performed. The boy was discharged from the hospital under conditions to stay with his grandmother. On the 2<sup>nd</sup> day since the boy parted with his mother his health condition improved dramatically, asphyxia episodes resolved and bronchial spasmolytics were discontinued on the 3<sup>rd</sup>-4<sup>th</sup> days. Physical events in lungs also disappeared. On the 8<sup>th</sup> day, the boy was visited by his mother which resulted in dramatically worsening of his health condition, followed by asphyxia. On the 5<sup>th</sup> day the mother agreed to part with the child for the sake of his health, and the boy was left with his grandmother. Episodes resolved, and the boy was arranged to allergic tests to perform. The boy received the course of specific immunotherapy with the positive human hair allergen for two years. The disease was cured on the 3<sup>rd</sup> year.

Clinical diagnosis is as atopic epidermal bronchial asthma, severe. It is seen in the case study that along with the stress the regular contact with the offensive allergen brings to the severe run of atopic epidermal bronchial asthma.

Therefore, the peculiarities of the clinical run of the epidermal atopic bronchial asthma conclude that they depend on the contact with

the causative allergens. Due to the long-term contact, all clinical forms of this asthma are manifested as severe and regular. Elimination, that is avoidance of the contact with the causative allergen, helps resolving all clinical symptoms.

As for this form of bronchial asthma, climatic and geographical location and seasons are of no significance.

### **Mixed atopic bronchial asthma**

During the mixed (epidermal, pollen, dietary and household) atopic bronchial asthma, the organism shows sensibilization concurrently with above mentioned non-bacterial allergens. In such case, the asthma attack occurs throughout the year.

This form of asthma is often combined with the allergy caused by household dust and pollen (pollen-induced, household dust-induced atopic bronchial asthma) and in such patients the clinical symptoms are manifested as rhinitis and conjunctivitis. The patient suffers from two combined episodes, that is asphyxia and paroxysmal sneezing, and excessive discharge from the nose. If it is combined with dermal manifestations (allergodermatosis), the patient may experience asphyxia along with itching increased.

Exacerbation of one clinical form with allergic response is potentiated by other forms of allergic disease clinical signs.

Thus, the mixed form of atopic bronchial asthma in the combined version runs too badly and the life of the patient depends only on the emergency aid from the health care professional.

### **Atopic bronchial asthma caused by household dust**

Atopic bronchial asthma caused by the household dust runs differently, with unique clinical manifestations. The episode often occurs at the domicile (household dust), and it does not occur in other places (at relatives' houses, for example). During the period of allergology anamnesis compilation, patients often complain, that they experience asphyxia as soon as they enter their houses. This form of bronchial asthma shows warning signs within several minutes to 30 minutes, and sometimes they never show. The attack starts sharply and it is quite severe.

The severity of atopic bronchial asthma caused by household dust depends on the sensibilization degree of the person.

In most cases, high degree of sensibilization is characterized by asphyxia increase upon the contact with the offensive allergen (at home), often at 01:00 – 02:00 a.m., and sometimes at 04:00-05:00 a.m. The attacks are severe and violent.

Apart from above mentioned symptoms, atopic bronchial asthma caused by household dust is known for the more peracute and severe manifestations in the winter season, since it can be related to the patient's sensibilization to household allergens and closer contact especially during that period; symptoms and signs are more intense when the patient shows sensibilization to household dust at his or her own house. This can be easily identified through the diagnostic skin tests.

Lately the medical journals on immunology in Russia and abroad distinguished the so-called **brittle asthma** termed as a type of asthma distinguishable from other forms by recurrent, severe attacks and resistant to therapy. This is one of the unstable subtypes of "difficult asthma" which is so difficult to treat and monitor, along with symptoms and signs, despite the optimal therapy chosen.

The journals provide discussions on the treatment regimens, with recommendations to use higher doses of glucocorticosteroids combined with additional therapies. However, the wide application of the strongest glucocorticosteroids likely resulted in occurrence of nosological hormone-dependent and hormone-resistant forms of asthma. Such patients are not recommended higher doses of hormonal therapy, since, on the contrary, they should be treated from hormone-dependency and hormone-resistance.

Thus, due to wide application of glucocorticosteroids a new and rather severe form of asthma appeared: bronchial asthma, a hormone-resistant form of asthma, is that they call brittle-asthma.

There is no published data and literature on this form of asthma, its clinical pattern, the course of disease and severe consequences, though the figure of affected patients increase and this is a great challenge for the modern medicine today, in general. Given that, and based on the results of long-year practice, hormone-resistant and hormone-dependent form of bronchial asthma may be outlined with the description of the clinical picture, the course of the disease and therapy applied.

In hormone-dependent bronchial asthma, and upon completion of hormone therapy, the remission period (respective of the hormone effect duration) lasts for 2 to 3 months, after repeated hormone therapy the



period of remission reduced up to 15 days. With continuing hormone therapy the period of remission is 2-3 days. Upon this period the patients suffer a short pre-episode period that lasts from several minutes to 1-2 days. This period starts from excessive discharge from nose, then the troublesome cough appears with non-expectorated sputum followed by the severest asthma attack.

For such form of bronchial asthma all selectively acting  $\beta_2$ -adrenoceptor agonists (Asthmopent, Alupent (Orciprenaline), Salbutamol, Bricanyl, Berodual (Fenoterol+Ipratropium bromide) and others) are not effective, and even 2.4 % solution of aminophylline I.V. does not resolve bronchospasms. Only the particular hormone dose to which the patient is used to, arrests the asthma attack.

Sometimes, over the particular time, this dose becomes ineffective, either. In such cases, the health care professional, and sometimes the patient, tend to increase the dose. When the particular hormone administered by the patient becomes ineffective to arrest the asthma attack, the doctor has to recommend stronger hormones.

For example, preliminary the patient received hydrocortisone, relatively soft hormone in action. After a while the drug becomes ineffective to arrest bronchospasms and the physician prescribes the stronger prednisolone. This is the sign of hormone-resistant bronchial asthma.

In due course, patients of this group suffer acute respiratory diseases, asthmatic condition and versatile severe complications. In individuals, the glucocorticoid therapy has extremely significant influence on the asthma course.

### **Non-allergic bronchial asthma**

When the correlation IgE-antibody is not involved in the bronchial asthma occurrence, some physicians terms such asthma non-allergic (Paul A. Greenberger, 2000). Diagnostic tests, including skin patch tests give the negative result.

Non-allergic bronchial asthma can be caused by chronic diseases of organs and systems, for instance, gastric ulcer and duodenal ulcer, chronic cholecystitis, purulent rhinitis or sinusitis and others.

This form of bronchial asthma also occurs during physical tension, as the result of stimulation and administration of drugs of acetosalic acid

(salicylic) group. Several forms of occupational asthma also refer to this category that occur without involvement of any non-bacterial allergens, as well as viral diseases, various non-specific factors - tobacco smoke, strong smell of various dyes and paints, gasoline, perfume, eau de cologne and others.

The principal cause of the disease should be eliminated when this form of asthma is treated.

### **Treatment of respiratory allergosis and bronchial asthma**

Treatment of respiratory allergosis and bronchial asthma is the most challenging in modern medicine. It is recognized generally, that the therapy chosen should be complex to include both medicinal and non-medicinal procedures, with duration of 3 to 5 years, on the whole, and of step-by-step nature. The principal component of such therapy is the exact customization with regard to all peculiarities of the disease course in every single case, maintenance of all adopted procedures and instructions regarding immune system recovery. Taking all these into consideration, below find recommendations for all practitioners:

- After the patient is thoroughly examined and the disease is adequately diagnosed, the practitioner should draw an explicit plan of treatment and recovery taking into consideration the prevalence of such severe diseases as bronchial asthma and respiratory allergosis among other allergic diseases;
- The patient with bronchial asthma should be informed on the main points of his or her disease and therapy stages, and that this requires great patience both from the physician and the patient;
- The fact that the patient's nervous system may be too unstable regarding respiratory allergosis and bronchial asthma should be especially considered, and this requires individual approaches to elaborate in management of such patients;
- The patient should be rendered an assistance to get rid of such social habits as smoking, alcohol abuse and others;
- While the bronchial asthma is diagnosed, the hormone-resistance and hormone-dependency of the patient should be identified, either;

- When the susceptibility to hormone-resistance or hormone-dependency is identified in the particular patient, this should be considered during therapy and the measures should be taken to eliminate this;
- When prescribing pharmaceutical drugs, the health care provider should explain to the patient on the drug features and mode of administration, since adequate medication prescription and administration of medical drugs are of great importance, as Avicenna stated;
- In the context of the therapy regimen, consideration should be given to all concurrent allergic and non-allergic diseases and, when applicable, the concurrent therapy should be provided;
- Day-to-day monitoring of drug administration by patients should be properly arranged, especially in case of children, adolescents, as well as geriatric patients;
- The health care provider should arrange the influenza prevention measures for patients with bronchial asthma;
- The patient is required to keep a journal during the intervals between the therapy courses. Prior to the treatment, the patient is required to attend the school on allergology with the purpose to be actively involved in process of treatment along with the physician. During the lessons the allergist should inform the patient, in accessible form, the following issues:
  - On the matter of allergy and diseases termed as allergic;
  - On bronchial asthma if the patient suffers from this disease, and the importance of its peculiarities consideration;
  - On compliance to all medical instructions and possibility to cure from this disease. The common perception that allergy cannot be treated should be explained thoroughly;
  - On availability of two kinds of treatment regimens for allergic diseases, including bronchial asthma. First therapy is symptomatic, when measures are taken to relieve manifested allergic symptoms. This therapy includes antihistamines administration. Use of hormonal agents (parenteral and spray mode), histoglobulin, calcium-based drugs is also symptomatic therapy to effect only the pathophysiological stages (final 3<sup>rd</sup> stage) of the disease. The risk and damage of self-treatment, without allergology specialist consultation, should be explained;
  - On self-treatment, voluntary administration of antihistamine drugs which is dangerous and risky to potentially result in

severer consequences as bronchial asthma and other forms of respiratory allergosis;

- On the core of allergic disease and therapeutic modalities;
- On pathogenic course of the disease, antibody-reagins, causes of the diseases, namely the immunological stage of allergic diseases;
- On biologically active substances (histamine, serotonin, bradykinin, acetylcholine, and others) and their role in occurrence of allergic diseases, on medicinal therapies;
- On allergens (pollen-induced, household dust-induced, epidermal, dietary, medicine-induced, and so on);
- On principles of allergen-specific immunotherapy and the frequency of the procedure to be performed;
- On duration and stages of therapy courses.

The above mentioned measures involve the patient in activities that commit to his or her full recovery assisted by the allergist.

### **Bronchial asthma treatment**

The practitioner should commit to render assistance to the patient to resolve inflammation process, edema, spasm of air passage smooth muscle, and restoration of their permeability.

The goal of the treatment is to restore immunological disturbances and attain full recovery or stable remission. The health care professional should take measures to attain full recovery of the immune system:

- To diagnose adequately and timely the principal and concurrent diseases;
- To determine the treatment duration since the date the bronchial asthma is fully diagnosed by clinical parameters, taking into consideration all peculiarities of its manifestation and complications;
- To strictly adhere to the individual approach to every single patient;
- To use only non-medicinal and specific therapeutic modalities;
- To ensure continuous and adequate treatment.



## Medicinal treatment

It is not always feasible and reasonable to use only non-medicinal methods of treatment. This is proved in practice, unfortunately. Among a range of medicinal drugs used to arrest attacks the following drugs are applied: adrenoceptor agonists that promote activation of  $\alpha$ - and  $\beta$ -adrenoreceptors,  $\alpha$ -adrenoreceptors provide the effect of vasoconstriction, intestine relaxation, and contraction of the uterus, renal duct, pupillary dilatation, and inhibition of insulin secretion.

$\beta$ -receptors are divided into 2 groups of adrenoreceptors:  $\beta_1$  and  $\beta_2$ .  $\beta_1$ -adrenoreceptors stimulate the cardiac activity and cause chronotropic and inotropic effect. They also induce lipolysis.  $\beta_2$ -adrenoreceptors work to relax the bronchi smooth muscles, those of the urinary bladder and vessels. They stimulate skeletal muscles (tremor), glycogenolysis in the liver and muscles.

To arrest the bronchial asthma attacks,  $\alpha$ - and  $\beta_2$ -adrenoreceptors are often applied. The most selective and effective is  $\beta_2$ -adrenoreceptor among others.

The bronchial asthma attacks can be urgently arrested by using  $\alpha$ -adrenoceptor agonists and antispasmodic drugs. Most frequently used are adrenalin and ephedrine as injections. Adrenalin should be administered in injections subcutaneously, intramuscular and topical (onto the mucosa coating), and sometimes intravenously. The adrenalin concomitantly promotes relaxation of bronchi smooth musculature, though it may cause the reverse effect and result in spasm occurrence with the long-term bronchial asthma. Therefore, if the patient suffers bronchial asthma for the considerable time, adrenalin should be recommended with care. The duration of its action is short, that is it is fast to impact the organism, but the effect is transient.

Ephedrine is used as ephedrine hydrochloride subcutaneously, intramuscularly and intravenously, as well as it is used as a topic agent. Its effect is slower but longer as compared with the adrenalin. And taking this into consideration, ephedrine may be injected along with adrenalin as a single injection by one and the same syringe with the purpose to obtain the urgent and longer effect.

Among the stimulators of  $\beta_2$ -adrenoreceptors a wide range drugs are used as sprays, such as Alupent (Metaproterenol), Asthmopent, Berodual, Salbutamol, Bricanyl, Berotec (Fenoterol). Among these drugs of great significance are Berotec, Berodual, Salbutamol and Bricanyl.

In its structure and action, *Berotec* is more selective stimulator of  $\beta_2$ -adrenoreceptors and influences stronger and longer to resolve bronchospasms with less side effect (tachycardia) and other disturbances of the cardiovascular system.

*Berodual* is the combined spray containing  $\beta_2$ -adrenoceptor agonist, fenoterol and anticholinergic drug - ipratropium bromide. This is especially indicated to arrest acute attacks and laboring breath during bronchospasmodic syndrome. It may be used to treat chronic obstructive bronchitis, pulmonary emphysema and other bronchopulmonary diseases that run with bronchospasms. The common dose for adults and school-aged children is 1-2 doses of the spray for 3 times a day.

Such drugs as Intal (Cromolyn Sodium Inhalation Aerosol), Tilade (Nedocromil), Zaditen, Ketotifen are used widely to prevent asthma attack, and out of them Intal proved to be used for a wide spectrum. The action of this drug lies on its ability to inhibit the labrocytes degranulation (mast cells) of the air passages mucosa coating, and retain the release of allergic mediators out of them that promote occurrence of the bronchospasm (bradykinin, MRT, histamine and others). The effect of the drug is likely associated with obstruction of receptors that are specific for inflammation mediator, as well as choline- and adrenoreceptors of lymphocyte cells *клеток*. Cromolyn sodium does not have features of common H1-receptor inhibitors.

This effect is clearly seen when used as inhalation, whereas it is not effective when taken orally. The drug has the preventive effect in patients with bronchial asthma (prior to asthma attack). The adequate and long-term use of this drug allows shortening the time and intensity of attacks; it also decreases the demand in bronchodilators and corticosteroids. It is not, though, used to arrest acute asthma attacks.

*Cromolyn sodium* is most effective for younger patients without any chronic changes in lungs. The drug is available as dry powder capsules for pulmonary drug delivery by using inhaler Spinhaler (pocket version).

Lately Intal is available as aerosol spray inhalation. It is recommended to take 2 doses (two inhalations) for 4 times a day.

As for capsules, the dose of Intal (1 capsule) is taken 4 times a day using Spinhaler inhaler. While on Intal, patients may suffer coughing and transient bronchospasm; the cough is relieved by taking a glass of water, just after the inhalation procedure, and if bronchospasm reoccurs, the short-term inhalation with bronchidilators is applied.

By its chemical structure, *Tilade* is similar to *Intal*, as well as in the effect. It has the anti-inflammatory and bronchodilatory action. The

drug is used for preventive measures and treatment of various forms of bronchial asthma, asthmatic bronchitis, bronchospasm episodes induced by the cold, physical load, and so forth.

It is available in aerosol sprays containing 56 or 112 single doses of the drug (2 mg each dose). Usually 2 doses (2 inhalations) are used 2 times (up to 4 times) daily.

*Ketotifen* or *Zaditen* cause anti-allergic effect blocking the release of histamines and other mediators (MRSA) from mast cells and inhibits the factors of platelets enhancement caused, and accumulation of eosinophils in air passages.

The drug is used to treat, but predominantly, to prevent attacks of bronchial asthma, allergic bronchitis, pollinosis, allergic rhinitis, and allergodermatosis. The daily dose for adults is 0.001 g (1 mg) capsules or tablets 2 times a day, in the morning and in the evening, taken with meal. 1/3 (1/2)-1 tablet 2 times a day is recommended for children respective of the age and body weight.

*Aminophylline*. The effect of this drug is mainly due to dimethylxanthine containing in it. Aminophylline promotes to relax smooth muscles of the bronchi and blood vessel, decreases the pressure in pulmonary artery system, improves the pulmonary blood flow. This drug also has a diuretic effect and inhibits platelets aggregation.

It is used to treat bronchial asthma and resolve bronchospasms of various etiology, and hypertension in the lesser circulation. Oral, intramuscular, intravenous and microclyster procedures are recommended.

Practitioners use the aminophylline solution in clinical practice for a long time. It is taken 30-40 minutes prior food intake. The recipe of aminophylline solution is given below.

For children	For adults
Rp. Euphyllini 1.5	Rp. Euphyllini 3.0
Sirupus Althaeae 20.0	Sirupus Althaeae 40.0
Spiritus Vini 12% - 200.0	Spiritus Vini 12% - 400.0
MPS. 1 teaspoon or 1 dessert-spoon	MPS. 1 tablespoon
3-4 times a day 30-40 minutes before meal (according to age)	3-4 times a day 30-40 minutes before meal

Intravenous injection of 2.4% aminophylline solution is recommended.

1 ml of the drug is recommended for children per each year of life. Adults and children of senior age (older than 12 years) should take 10 ml, not more.

This should be emphasized that the spirit-based aminophylline solution provides good results to relieve spasms of smooth musculature, even in infants. Aminophylline removes bronchospasms easily; althaea root syrup dilutes the sputum viscosity and enhances its expectoration. When 12 % spiritus is added to the solution, aminophylline is 100% diluted and absorbed in the gastro-intestinal track. This drug should be taken in fasting conditions, desirably, 49 minutes before meal.

## Hormonotherapy

As we mentioned above, the greater number of patients suffering respiratory allergosis and bronchial asthma, the higher and more extended is the level of using hormonal drugs. Hormonotherapy is rapid to effect, though such therapy consequences, especially for asthmatic people, may be extremely severe.

Glucocorticosteroids are obviously potential anti-inflammatory and anti-allergic drugs. However, it is extremely difficult to recover the immunological strength post-dosing, to obtain full recovery or the stable remission of bronchial asthma, at least.

The most serious consequences of long-lasting hormonotherapy, according to our observations, are the following:

- considerable debilitation of the immune system, first of all, due to decrease in production of antibodies, etc.;
- primary functional suppression that later moves to the morphological changes in adrenal gland cortex that goes up to atrophy thereof;
- negative intervention of glucocorticoids in the calcium exchange towards to intensifying its excretion and decrease in its absorption in the body which often results in osteoporosis and increases the risk of bone fractures;
- occurrence of erosion and consequent development of gastrointestinal tract ulcers due to long-lasting per os administration of glucocorticoids;
- predisposition to bleedings due to disturbances in the system of blood coagulation;
- occurrence of Cushing's syndrome. One of the reasons of acute adrenal gland insufficiency is withdrawal of corticosteroid



hormones. In severe forms of this syndrome panmesenchial reaction is observed followed by febrile state and generalized inflammatory processes (including orrhomeningitis and pulmonary infiltrations), that may transform to panarthritis and systemic lupus erythematosus;

- enhancement of hormone-resistance and further hormone-resistance in a range of pediatric patients and adults who suffer bronchial asthma. It decreases the efficiency of other therapeutic modalities;
- abnormality of internal secretion gland function, especially the function of pancreatic gland and occurrence of severe diabetes mellitus resulted by the systemic administration of glucocorticosteroids.
- Manifestation of the obvious suppression of Hypothalamic-Pituitary-Adrenal system due to long-term hormonal therapy in children with bronchial asthma. Such children are known to show developmental and intellectual delay.

Therewith, due to common and unreasonable reference to hormonal therapy a new form of bronchial asthma occurred – hormone-resistance and hormone-dependent asthma known for specific and severe clinical course, so called brittle asthma. It's of no good and not at all rational to live with such circumstances appeared in the sphere of hormonal treatment of respiratory allergosis and bronchial asthma. It's high time to work out new and advanced conception for the use of glucocorticoids based on the following aspects:

- If the patient has never been treated by hormones, then glucocorticoids should not be recommended even for diagnostic purposes (as it is widely practiced abroad). The therapy should be emphasized on medicinal drugs that are able to arrest asthma attacks. (Paul A. Greenberger, MD, 2000)
- Selective  $\beta_2$ -adrenoceptor agonists are effective to arrest asthma attacks. For the further treatment, medicinal and non-medicinal treatment methods can be recommended;
- When and if appropriate, the practitioner should clarify the function of the Hypothalamic-Pituitary-Adrenal system in the patient with bronchial asthma. Even though minor inhibition is identified, the medicinal drugs that stimulate the functions of internal secretion glands should be recommended;
- There are statements in all available literature sources to report on that the status asthmaticus is the immediate indication to use hormonotherapy. However, it is proved in clinical practice that there is no need in hormonal therapy during the status

asthmaticus condition, during the period of compensation or development of resistance (first period), when the patient shows no hormone-dependence;

- In case when clinical manifestations of severe bronchial asthma are obvious and there is life-threatening situation to neglect glucocorticoids, the hormone therapy should be started with the drugs of mild effect, for example, hydrocortisone. In its action, hydrocortisone is similar to the hormone that is released in the adrenal gland. In such emergency cases prednisolone is recommended intravenously, by dropping infusion, whereas hydrocortisone is injected intramuscularly. This combination is rather effective, and it also allows quick discontinuation of the hormonotherapy;
- Hormones should be administered for a short period of time, for at least, 5 to 7 days, with the highest dose to take by the patient on the Day 1. When the effect of the drug is estimated as 50% beneficial for the patient, the hormone should be discontinued. Hormonal therapy should be discontinued using the auxiliary drug that stimulates the function of Hypothalamic-Pituitary-Adrenal system;
- When there is no way to avoid hormones in treatment, the health care professionals should avoid prescribing glucocorticoids known for stronger actions, for example, dexamethasone, which is eight times as stronger, and it inhibits the Hypothalamic-Pituitary-Adrenal system more intensely;

Thus, the conclusion is as follows. Upon examining the consequences of hormone-resistant and hormone-dependent forms of bronchial asthma, the treatment is ascertained and recommended free from hormones; use of hormones is afforded only in life-threatening cases. The principles of prescription and discontinuation of glucocorticoids should be strictly complied with. The health care professional should compile the medical history of the patient, including the hormone-based medicinal drugs taken before, and the status of hormone-resistance or hormone-dependency in the patient. If yes, such drugs may be prescribed, as Hydrocortisone, Prednisolone, Triamcinolone, Kenalog, Polcortolone, Dexamethasone. Among these glucocorticoids, Hydrocortisone is the closest to the cortisol produced in human adrenal gland. This should be considered while prescribing glucocorticoids for treatment.

*Hydrocortisone* is mainly available as preparation for parenteral

use, and rare as oral drug. Presentation – suspension in vials 5 ml (1 ml contains 0.025 g Hydrocortisone acetate).

*Prednisolone* is used in treatment of diseases of wide spectrum, not only bronchial asthma. Tablets are taken orally usually starting with 0.02-0.04 g (20-40 mg) per day.

In emergency cases which required immediate increase of corticosteroid level in blood (acute dysfunction of adrenal glands, shock, asthmatic condition, bronchial asthma attacks, and so on), prednisolone hemisuccinate is used, being the Prednisolone preparation for injection (powder).

*Methylprednisolone* (urbason) is injected as daily dose of 0.5-1.2 g with further reducing the dosage to 0.3-0.15-0.1 g per day in case of asthmatic status. In severe cases of allergic reaction 0.1-0.2 g of the drug is used.

*Triamcinolone* - Kenalog, Polcortolone is for oral use. The daily dose is 0.002, 0.004, 0.008 (2 -4-8 mg) divided into 2-4 doses. When necessary, the dose is titrated, and it is gradually decreased as soon as the therapeutic effect is achieved, at the rate of 0.002 g per day to reach the common dose of 0.001 g (1 mg) a day.

*Triamcinolone acetate* - Kenalog became widely used due to its relatively low absorption, as anti-inflammatory, anti-itching and anti-allergic drug for topical use. Taking features of the drug into consideration, the drug can be effectively used during clinical manifestations of bronchial asthma and in treatment of hormone-dependent patients combined with allergodermatosis.

Dexamethasone is related to other glucocorticoids, in its action, though it is seven times stronger than Prednisolone. As for the strength, 0.05 mg Dexamethasone is equal to approximately 3.5 mg Hydrocortisone, 17.5 mg Cortisone, that is 35 times stronger than the effect of Cortisone. The drug is used as tablets 0.0005 and 0.001 g (0.5 and 1 mg) and as the 1 ml solution for intramuscular and intravenous injection.

Repository glucocorticoid medication to treat bronchial asthma, even in cases of hormone-resistant and hormone-dependent forms, are not prescribed. The use of repository medication of this hormone is associated with the obvious suppression of Hypothalamic-Pituitary-Adrenal system and all side effects arising in this relation.

The list of aerosol spray drugs of glucocorticoid group can be recommended in basic hormone-dependent form of bronchial asthma, to include Beclomethasone, Budesonide, Fluticasone and combined preparations of Budesonide + Formoterol, Salmeterol + Fluticasone, Budesonide + Salbutamol.

Table 16

International non-proprietary name	Commercial name
Beclomethasone	<p><b>Aldecine</b> - aerosol spray for inhalation dosed 50 mcg /dose – 200 doses (spray container), in the kit with the applicator for mouth and nasal cavities.</p> <p><b>Beclason</b> aerosol spray for inhalation available in 50 mcg /dose, 100 mcg /dose, 250 mcg /dose - metered-dose inhaler of 200 inhalations (spray bottles).</p> <p><b>Beclason Eco</b> – metered-dose inhaler 50 mcg/dose, 100 mcg/dose, 250 mcg/dose - 200 inhalations (spray bottles).</p> <p><b>Beclason Eco Easy Breathe (BEEB)</b> – metered-dose inhaler 50 mcg/dose, 100 mcg/dose, 250 mcg/dose - 200 inhalations (spray bottles aluminum with optimizer in the set).</p> <p><b>Beclat</b> – capsules with powder for inhalations, 400 mcg (plastic containers).</p> <p><b>Beclonet 250</b> – solution for inhalations 250 mcg/dose - 200 inhalations (sprayer bottles).</p> <p><b>Becloforte</b> – metered-dose inhaler, 250 mcg/dose - 80, 200 inhalations (spray bottles).</p> <p><b>Becotide</b> – metered-dose inhaler, 50 mcg/dose – 200 inhalations (spray bottles).</p> <p><b>Clenil</b> – solution for inhalation 50,250 mcg/dose - 200 inhalations (aluminum bottles), with inhaler in the set.</p> <p><b>Cycloson, Cyclocaps</b> – capsules for inhalation 100, 200, 400 mcg (blisters, in the set with the Cyclohaler inhaler).</p>
Budesonide	<p><b>Benacort</b> – powder for inhalation, 0.2 mg/dose (Cyclohaler inhaler) 100, 200 inhalations, solution for inhalation 0.25, 0.5 mg/ml, (dark glass bottles) 2.2 ml.</p> <p><b>Budecort</b> – spray inhaler, metered-dose, 100, 200 mcg/dose (spray bottles, aluminum, with the dosimeter), inhaler in the set.</p> <p><b>Pulmicort</b> – suspension for inhalation 0.25, 0.5 mg/ml, (single-dose container, polyethylene) 2 мл.</p> <p><b>Pulmicort Turbuhaler</b> – powder for inhalation, 100 mcg/dose (turbuhaler) - 200 inhalations, powder for inhalation 200 mcg/dose (turbuhaler) - 100, 200 inhalations.</p>



Budesonide	<b>Cycortide, Cyclocaps</b> – capsules with powder for inhalation 200, 400 mcg (blisters) completed with Cyclohaler inhaler.
Fluticasone	<b>Flixotide</b> – metered-dose spray inhaler 50, 120, 250 mcg/dose - 60, 120 inhalations (aerosol spray bottles, aluminum, with dosimeter).
	<b>Combined medication</b>
Budesonide + Formoterol	<b>Symbicort Turbuhaler</b> – glucocorticoid for topic use + bronchodilator - $\beta_2$ - adrenoceptor agonist selective – powder for inhalation 160 mcg+ + 4.5 mcg/dose, 80 mcg + 4.5 mcg/dose (plastic inhaler) 60, 120 inhalations.
Salmeterol+ Fluticasone	<b>Seretide</b> (salmeterol xinafoate 36.3 mcg (equal to 25 mcg salmeterol), fluticasone propionate 50/125/250 mcg – 1 dose) glucocorticoid for topic use +bronchodilator $\beta_2$ - adrenoceptor agonist selective – metered-dose aerosol spray 50 mcg/dose+25 mcg/dose – 20 inhalations (aluminum inhalers with dosimeter). <b>Seretide Multidisc</b> (salmeterol xinafoate 50 mg/ fluticasone 100, 250, 500 mcg – bronchodilator - $\beta_2$ - adrenoceptor agonist selective + glucocorticoid for topical use.

### Treatment of hormone-resistant and hormone-dependent forms of bronchial asthma

Treatment of hormone-dependent and hormone-resistant forms of bronchial asthma is a great challenge that requires patience and efforts from the clinical allergist and the patient with such form of asthma. Due to the decrease of glucocorticoid dose and with discontinuation of these medications the condition of the status asthmaticus may occur at any time as well as acute insufficiency of adrenal gland. Therefore, we suppose that patients belonging to this group should be under regular monitoring of the health care professionals and the latter should be aware of how the internal secretion glands function and the way to recover the condition if there is dysfunction of that.

With the purpose to eliminate the conditions of hormone-dependence and hormone-resistance, the following measures should be taken:

- As the health improves, the treatment modality should be smoothly changed towards using glucocorticoids in aerosol sprays and thus, withdrawing use of glucocorticoids parenteral and per os. If the patient suffers asthma attacks, aerosol forms of glucocorticoids are used together with  $\beta_2$ -adrenoceptor agonist;
- Decreasing the dosage of aerosol glucocorticoids, the medication should be prescribed that stimulate adrenal gland cortex;
- The patient should be smoothly moved to non-medicinal therapy (aeroionotherapy along with the respiratory gymnastics, etc.);
- To help the patient relieve from hormone-resistance and hormone-dependency with the help of acupuncture that proved to be the effective therapeutic technique.

As soon as the patient is no longer hormone-resistant and hormone-dependent, and as all glucocorticoids are discontinued, the allergy tests may be performed with following SIT procedure.

**Discontinuation of systemic glucocorticoids.** The primary challenge to prevent the syndrome reoccurrence and glucocorticoid withdrawal effect, the patient is prescribed aerosol glucocorticoids with  $\beta_2$ -adrenoceptor agonists.

The dose of aerosol glucocorticoids is adjusted individually, taking into account the severity of bronchial asthma. When Salbutamol is prescribed among other  $\beta_2$ -adrenoreceptors, Beclason (aerosol glucocorticoid) is followed in 15 minutes dosed as 0.05; 0.1; 0.2 and 0.25 mg/dose; 80 and 200 inhalations (depending on the disease severity and age of the patient). The combination of Budesonide and Formoterol can also be recommended.

**Prescription of adrenal cortex excitors.** As the general health condition of the patient improves, the dosage of aerosol glucocorticoids should be adjusted to lower doses; and in such Glycyram and Ethimizol are prescribed.

*Glycyram* is the monosubstituted ammonium salt of glycyrrhizic acid extracted from the roots of common licorice. It has moderate anti-inflammatory effect related to some stimulating action to the adrenal

cortex; it also influences as the mild expectorant. The medication is prescribed to shorten and completely discontinue glucocorticoid therapy.

*Ethimizol* is known for its stimulating effect on the inspiratory center and it activates the adrenocorticotrophic function of the pituitary body which results in increase in the glucocorticoid level in the blood. As the respiratory and endocrine glands stimulant, *Ethimizol* is used as anti-inflammatory and anti-allergic medication in hormone-resistant and hormone-dependent conditions. To treat such forms of asthma, oral administration of 0.1 g for 3 to 4 times a day after meal is recommended. The treatment course lasts for 20-30 days. If side effects appear, the single dose should be decreased to the dose of 1/2 tablet for 5-6 times a day, avoiding evening hours.

Therefore, the clinical allergist should have the treatment scheme in place relating to hormone-resistant and hormone-dependent forms of bronchial asthma. Aerosols like Intal or Tilede can also be used to prevent asthma attacks.

**Transition of patients for non-medicinal therapy.** As the health condition improves, such patients may be transitioned to non-medicinal therapy. Aeroionotherapy with respiratory gymnastics may be started with. The acupuncture procedure is recommended as soon as administration of glucocorticoids is lowered, since acupuncture procedures using corporal and auricular points appear to be the strongest stimulant of endocrine gland function. The positive effect is reached with stimulation of the auricular point, though.

The peculiarity of auriculotherapy is that three acupoints in the auricle are stimulated on the daily basis. Below find the daily procedure tabulated for auriculopuncture to treat hormone-resistant and hormone-dependent bronchial asthma.

Table 17

**Daily auriculopuncture to treat hormone-resistant and hormone-dependent forms of bronchial asthma**

English names of points	Names and numbers of points of the Chinese School
Adrenal gland	Shen-Shan-Xian (MAT-T 13)
Pharynx and larynx	Yang Hou (MA-T3 15)
Endocrine glands	Nei Feng Mi (MA-IC3 22)
Brain stem	Nao Gan (AP 25 V)
Pituitary gland	Naochuiti (AP 28 VI)
Occiput	Zheng (MA-AT 29)
Asthma point	Ping Chuang (AP 31 VI)
Grey Substance Point	Pi Zhi Si Qui (AP 34 VI)
Chest	Zun (MA-AH11 42)
Sympathetic Nervous System (Vegetative Point)	Jiaogan (MA-AH7 51)
Point of Central Nervous System (Spirit Gate)	Shen Men (AP.55 X)
Asthma	Chuan Xiao (AP 60)
Diaphragm (Point Zero)	He (AP 82 XIII)
Bifurcation Point (Oppression Point)	Zhi Dian (AP 83 XIII)
Kidney	Shen (MA-SC 95)
Lung	Fei (MA-IC1 101)

**Day 1**

MA-T 13 Acupuncture Point - Sheng Shang Xian (Adrenal Gland), AP 15 II Yang Hou (pharynx and larynx), AP 25 V (Brain Stem).

**Day 2**

MA-IC3 22 IV Nei Feng Mi (Endocrine glands), MA-AT 29 VI Zheng (Occiput), Ping Chuang (AP 31 VI) (Asthma Point).

**Day 3**

AP 28 VI Naochuiti (Pituitary gland), AP 34 VI Pi Zhi Si Qui (Grey Substance Point), MA-AH11 42 VII Zun (Chest).



#### Day 4

Shen-Shan-Xian (MAT-T 13) (Adrenal Gland), Jiaogan (MA-AH7 51) (Sympathetic Nervous System), Shen Men (AP 55 X) (Point of Central Nervous System).

#### Day 5

Nei Feng Mi (MA-IC3 22) (Endocrine glands), Chuan Xian (AP 60) (Asthma), Shen (MA-SC 95) (Kidney).

#### Day 6

Naochuiti (AP 28 VI) (Pituitary gland), Fei (MA-IC1 101) (Lung), Shen Men (AP 55 X) (Point of Central Nervous System).

#### Day 7

Shen-Shan-Xian (MAT-T 13) (Adrenal Gland), Yang Hou (MA-T3 15) (Pharynx and larynx), Ping Chuang (AP 31 VI) (Asthma Point).

#### Day 8

Nei Feng Mi (MA-IC3 22) (Endocrine glands), He (AP 82 XIII) (Diaphragm), Chi Qian (AP 83 XIII) (Bifurcation Point).

In such form of bronchial asthma, the time interval between the treatment courses and the stage when the patient is relieved from hormone-resistance and hormone-dependence may be short, every ten days in length.

The abovementioned treatment methods repeat every ten days. As soon as the patient is relieved from hormone-dependence and hormone-resistance, that is after discontinuation of all glucocorticoid therapies, after 2-month interval, the causative allergen is identified due to non-medicinal therapy and SIT procedure is performed. This technique is performed for 3-4 years and it proved to be efficient and beneficial for the patient.

Therefore, patients can be relieved from hormone-resistant and hormone-dependent forms of bronchial asthma without using higher doses of glucocorticoids.

The ASIT procedure performed concurrently with non-medicinal therapy, especially acupuncture, improves the efficiency of the latter twice as much.

Most investigators estimate the results of ASIT according to 5-grade scale: considerable improvement or cure - 5; improvement - 4;

insignificant improvement - 3; no changes in the health condition - 2; worsening of the condition or occurrence of new symptoms - 1.

During the clinical estimation of the results the frequency and strength of the most common symptoms are recorded: sneezing, nose stiffness, itching, discharge from nose, as well as the length of exacerbation, performance efficiency, and drug administration.

ASIT is recommended to perform annually against pollen and other non-bacterial allergens, strictly under protection of medicinal and non-medicinal therapeutic modalities.

The treatment results were defined based upon the prospective follow-up and data from patients' diary which the patients were recommended to keep within 3 years.

Below is the example of ASIT procedure for pollinosis using the short-cut method. The procedure was performed in 74 (59.2%) patients and the electrophoretic procedure was performed in 51 (40.8%). The efficiency of the specific immunotherapy made 89.6%, that is 112 patients out of 125 showed excellent, good and satisfactory results: excellent results were recorded in 54 patients ( $43.2 \pm 4.4$ ), good results - in 33 ( $26.4 \pm 3.9$ ), satisfactory results - in 25 ( $20.0 \pm 3.5$ ), non-satisfactory results - in 13 ( $10.4 \pm 2.7$ ). The efficiency of the short-cut and electrophoretic methods was justified by clinic and scientific investigations.

The comparison of the treatment results (excellent against good results, satisfactory against non-satisfactory) was statistically reliable ( $P < 0.001$ ). All patients who received the therapy procedures, are under monitoring within 3, 5, 10, 15 and even 20 years. They all completely recovered and capable to work. Each patient is exposed to all above mentioned therapies within 3 years. It may take up to 5 years in case of severe hormone-dependent and hormone-resistant forms of bronchial asthma. Recurrent allergology tests and ASIT procedures are performed every year.

Applying this method of treatment, we are proud to report on recovery in 85-90% of our patients. We strongly recommend that you use this method of treatment that is successful to treat all forms of allergic diseases in any climatic conditions.

## Acupuncture (Zheng Therapy) to treat respiratory allergosis and bronchial asthma

For the sake that the therapeutic effect of acupuncture and moxibustion is delivered through reflective points and the central nervous system. That manages the activity of our organism on the whole. It is not limited in the area of a particular acupoint or a nerve, but it is often wholesome for the internal organs located at a distance of the punctured point.

*Chun Lian, 1959*

This kind of non-medicinal therapy appears to be one of the most effective methods of treatment and it ranks first among other therapeutic modalities. However, there are some difficulties when using this method, either. On his own, the acupuncturist is not capable to get familiar to all existing spheres of medicine where this technique is applied: allergology and immunology, hematology, otorhinolaryngology, ophthalmology, etc. insofar if any specialist in the particular medical niche has a vast and profound knowledge on the subject and is aware of any little secrets and nuances, the acupuncture technique is able to be applied to create the miracle for humans.

In our clinic the acupuncture procedure was first introduced in 1982 in the sphere of clinical allergology. It's so many years passed since then and it is proved in practice that non-medicinal method of therapy is the effective methodic to treat all kinds of allergic diseases, including bronchial asthma.

Therewith, when the complex therapy is used to treat respiratory allergosis, including bronchial asthma, pollinosis, all forms of allergodermatosis, severe forms of medicine-induced and dietary allergy, and even life-threatening allergic conditions, the acupuncture technique is extremely efficient.

Chapter I (Non-medicinal methods to treat allergic diseases) describes the history of origin and methods, mechanism of action, ten

acupuncture techniques, indications and contraindications in accordance with the Bu-Xie law and other information. While getting introduced to this information, the allergist may want to use them in practice later on.

When respiratory allergosis and bronchial asthma should be managed, the results we obtain are as follow:

- Abrupt improvement of the overall health condition and no asthma attacks;
- Promotion of sputum dilution and its expectoration. As a rule, patients report on breathing easiness after 2 or 3 sessions of acupuncture procedure;
- Absence of murmuring and wheezing sounds in patients while breathing on the 6<sup>th</sup> or 7<sup>th</sup> day of treatment given that the patient has never received hormones and does not suffer chronic non-specific pulmonary disease. This patient can managed to perform allergic test;
- In all cases strengthening and improvement of immune system of the patient is reported after the procedure of acupuncture;
- The opportunity to successfully perform specific immunotherapy concurrently with the acupuncture technique as the consequence of treatment efficiency;
- Procedures performed to treat bronchial asthma and provision of ultimate immune system recovery due to Chen therapy applied by the scheme approved.

When treating respiratory allergosis and bronchial asthma, among the ten acupuncture techniques the most common used procedure is direct or simple puncture, the puncture with the twisted needle, puncture leaving the needle in tissues for certain time and intermittent puncture.

The method of acupressure (without needles) is often used to treat infants younger than 3 years old.



Table 18

**Corporal points commonly used to treat respiratory  
allergosis and bronchial asthma**

Meridian	Name of the point and meridian number	Meridian	Name of the point and meridian number
Lungs	Zhong Fu (LU-1) Yun Men (LU-2) Tian Fu (LU-3) Xia Bai (LU-4) Chi-Ze (LU-5) Lie-Que (LU-7) Yu-Ji (LU-10) Shao-Shang (LU-11)	Stomach	Qi She (St-11) Que Pen (St-12) Qi Hu (St-13) Wu Yi (St-15) Ying Chuang (St-16) Zu-San-Li (St-36) Feng Long (St-40)
Large intestine	Hegu (LI-4) Quchi (LI-11) Fu Tu (LI-18)	Spleen-pancreas	Da Du (SP-2) San-Yin-Jiao (SP-6)
Heart	Tun Li (Ht-5)	Triple Heater	Zhong Zhu (TH-3) Wai Guan (TH-5)
Small intestine	Jian Wai Shu (SI-14)	Governing Vessel	Zhi Yang (GV-9) Ling Tai (GV-10)
Urinary Bladder	Fei Shu (UB-13) Po Hu (UB-42) Gao huang Shu (UB-43) Shen Tang (UB-44)		Shen Dao (GV-11) Shen Zhu (GV-12) Da-Zhui (GV-14)
Kidney	Yin Du (KD-19) Shu Fu (KD-27)	Conception Vessel	Jiu Wei (CV-15) Zhong Ting (CV-16)
Pericardium	Tian Chi (PC-1) Tian Quan (PC-2)		Dan Zhong (CV-17) Yu Tang (CV-18) Zi Gong (CV-19) Hui Gai (CV-20) Xuan Ji (CV-21) Tian Tu (CV-22) Lian-Quan (CV-23)

We mentioned above that the acupuncture procedure, as the part of complex therapy for bronchial asthma, promotes relief from smooth musculature spasms, it means that the homeostasis normalizes, all vital

functions of the organism improve, and the strength of allergic response weakens. All that facilitate cure from allergic diseases. Table 18 describes corporal points commonly used to treat respiratory allergosis and bronchial asthma.

Corporal and auricular points are used for treatment within 10 days on a daily basis. It starts with the so-called "door opening". The "door should be closed" on the last day of the procedure. The "door should not be left open" upon completion of acupuncture procedures. Lots of needles are not recommended to use during one session. Only the required points should be managed for each particular session searching for the best combination thereof.

Below find the combination of points for acupuncture use to treat respiratory allergosis and bronchial asthma.

### Acupuncture points index and description

#### Day 1

CV 22 Acupuncture Point - Tian Tu (Celestial Chimney). This point is effective to use when relieving such symptoms as cough, dyspnea, pneumorrhagia, sputum expectoration, bronchitis, bronchial asthma, laryngitis, pharyngitis, edema of the larynx mucosa coating and aphonia. The needle is inserted at 0.5 cm in depth.

LI-11 Acupuncture Point - Qu Chi (Pool at the Bend). This point is used to relief coughing. The needle is inserted to the depth of 2.5 cm.

ST 36 Acupuncture Point - Zu-San-Li (Leg Three Li). This is widely used to treat diseases, including allergic ones.

#### Day 2

St-11 Acupuncture Point - Qi She (Qi Abode); it refers to the Stomach Meridian. It is effective to treat bronchial asthma and other respiratory diseases. The good effect is achieved to relieve coughing, dyspnea, and allergic bronchitis signs. The depth of puncture is 1 cm.

St-12 Acupuncture Point - Que Pen (Empty Basin). The acupuncture is performed in parallel with stimulating the point St-11 for the best effect.

LI 4 Acupuncture Point - He Gu (Union Valley). It is commonly used to treat many diseases. The combination with above acupoints causes sedating and tonifying effect which is required to treat bronchial asthma.

### Day 3

St-13 Acupuncture Point – Qi Hu (Qi Door). This point is used to treat bronchial asthma, dyspnea, pleuritis, chronic bronchitis, and it also is good to relieve permanent cough. The depth of insertion is 1 cm.

CV-17 Acupuncture Point – Dan Zhong (Chest Center), the point of Conception Vessel Meridian. This is used to manage asthma attacks, lung edema, dyspnea, cough, bronchitis, pulmonary emphysema. The depth of insertion is 0.6 cm.

TH-5 Acupuncture Point – Wai Guan (Outer Pass). This point is used to treat all kinds of respiratory allergosis of air passages. The insertion depth is 2 cm.

LU-1 Acupuncture Point – Zhong Fu (Central Treasury). This point is stimulated to treat all kinds of respiratory allergosis and bronchial asthma. The depth of insertion is 1 cm.

### Day 4

LU-2 Acupuncture Point – Yun Men (Cloud Gate), this point is used to manage cough, dyspnea, bronchial asthma, chest stiffness. The needle is inserted at the depth of 1 cm.

LU 3 Acupuncture Point – Tian Fu (Celestial Storehouse)

LU 4 Acupuncture Point – Xia Bai (Guarding White)

LU 5 Acupuncture Point – Chi Ze (Cubit Marsh), sedating point and

LU 10 Acupuncture Point – Yu Ji (Fish Border)

All these points are Lung Meridian Points. They are used to manage bronchial asthma and respiratory allergosis.

### Day 5

LI 20 Acupuncture Point – Ting Xiang (Welcome Fragrance). The point is used to relieve dyspnea, nose stiffness. It

is also effective in cases of concurrent bronchial asthma and allergic rhinitis occur.

CV 22 Acupuncture Point – Tian Tu (Celestial Chimney). This point is used to manage dyspnea, bronchitis, bronchial asthma, laryngitis and pharyngitis.

LU 7 Acupuncture Point – Lie Que (Broken Sequence), the stabilizing point. Besides, this is the Heavenly Star Point.

### Day 6

LI 10 Acupuncture Point – Shou San Li (Arm Three Li). The depth of insertion is 1.5 cm.

LU 11 Acupuncture Point – Shao Shang (Lesser Shang). This is the point of emergency care.

Both points are used to manage difficult breathing and cough. They may be stimulated along with the point Yun Men of the Lung Meridian.

### Day 7

LI 20 Acupuncture Point – Ting Xiang (Welcome Fragrance). This point is located in the lateral depression of the nose. It is effective to manage dyspnea and nose stiffness.

LU-2 Acupuncture Point – Yun Men (Cloud Gate), this point is used to manage cough, dyspnea, bronchial asthma and tonsillitis.

St-12 Acupuncture Point – Que Pen (Empty Basin). This point is effective in treating bronchial asthma, cough and tonsillitis.

### Day 8

CV 22 Acupuncture Point – Tian Tu (Celestial Chimney).

CV 21 Acupuncture Point – Xuan Ji (Jade Pivot)

CV 20 Acupuncture Point – Hui Gai (Florid Canopy)

CV 19 Acupuncture Point – Zi Gong (Purple Palace)

CV 18 Acupuncture Point – Yu Tang (Jade Hall)

CV 17 Acupuncture Point – Dan Zhong (Chest Center)

CV 16 Acupuncture Point – Zhong Ting (Center Palace)

All points are Conception Meridian Points.

### Day 9

GV 14 Acupuncture Point – Da Zhui (Great Hummer)

GV 12 Acupuncture Point – Shen Zhu (Body Pillar)

GV 11 Acupuncture Point – Shen Dao (Spirit Pass)

GV 10 Acupuncture Point – Ling Tai (Spirit Tower)

GV 9 Acupuncture Point – Zhi Yang (Extremity of Yang)

All these points are used to treat allergic diseases, respiratory allergosis and bronchial asthma.

### Day 10

“Door is closed” (Qi energy is closed) when the points of the Dat 1 is repeatedly stimulated, adding one more KD 6 Zhao Hai point (Shining Sea), the command and binding point that increases the efficiency of all other corporal points.



## Auricular acupuncture

Mechanism of action of auricular acupuncture (ear acupuncture).

I believe that the principal action of auricular acupuncture is similar to the mechanism of general corporal acupuncture. Taking into account the structure of the auricle (mainly, the system of trifacial nerve of the cervical plexus, as well as with branches of the nervus vagus, glossopharyngeal nerve and facial nerves), it may be supposed that stimulation of afferent systems of the said responsive nerves indirectly through binding with the nervus vagus, other parasympathetic paths and system of sympathetic innervation may result in particular physiological effect. Zones and points of superior pain sensitivity in the auricle are of great diagnostic value for topical use.

Reticular formation of the brain stem and gelatinous substance of the trifacial nerve nucleus are those formations from which afferent impulses go through the trifacial nerve, nervus vagus and the 3<sup>rd</sup> cervical nerve from internal organs and body parts to acupoints and zones in the auricle and cerebral cortex. Therefore, the efficiency of acupuncture techniques is explained in that the auricle has strong nervous links with specific and non-specific stem formations and in oliencephalon. This is to explain not only local organ-specific reactions, but general non-specific impact of auricular acupuncture on the human body.

### Acupuncture and auricular points to treat respiratory allergosis and bronchial asthma

As soon as the corporal points are exposed to acupuncture procedure, that is on Day 11 of the treatment, the acupuncture procedure should be started with stimulation of auricular points which appear to be stronger than corporal points twice as much. There are 128 points located in every auricular surface. If matched skillfully, good results are anticipated in treatment of bronchial asthma and respiratory allergosis. Auricular therapy is performed for 8 days to start with "door opening" and end with "door closing".

**Auricular points most commonly used to treat bronchial asthma and respiratory allergosis**

Russian names of points	Chinese names of points and numbers
Adrenal gland	Shen-Shan-Xian (MA-T 13)
Pharynx and larynx	Yang Hou (MA-T3 15)
Endocrine glands	Nei Feng Mi (MA-IC3 22)
Brain stem	Nao Gan (AP 25 V)
Pituitary gland	Naochuiti (AP 28 VI)
Occiput	Zheng (MA-AT 29)
Asthma point	Ping Chuang (AP 31 VI)
Grey Substance Point	Pi Zhi Si Qui (AP 34 VI)
Chest	Zun (MA-AH11 42)
Sympathetic Nervous System (Vegetative Point)	Jiaogan (MA-AH7 51)
Point of Central Nervous System (Spirit Gate)	Shen Men (AP 55 X)
Asthma	Chuan Xiao (AP 60)
Diaphragm (Point Zero)	He (AP 82 XIII)
Bifurcation Point (Oppression Point)	Chi Qian (AP 83 XIII)
Kidney	Shen (MA-SC 95) Fei (MA-JC1 101)
Lung	

Description of the auricular point used to treat bronchial asthma and respiratory allergosis for 8 days

#### Day 1

Adrenal gland (MAT-T 13) Shen-Shan-Xian (Adrenal Gland) Tragus Zone II - when this point is stimulated, it causes anti-inflammatory, antiallergenic antishock, antipruritic, antirheumatic, resolving, anhemorrhagic, antiasthmatic, tonifying, vascular tone normalizing, fever-reducing, unstriated muscles relaxing, expectorative action. Stimulating this point, the patient may be relieved from hormone-resistance and hormone-dependency.

Yang Hou (MA-T3 15) (Pharynx and larynx)

Indications: acute and chronic inflammations, voice hoarseness, tonsillitis, bronchitis, bronchial asthma, and cough. Acupuncture procedure applied to this point causes expectorative effect.

#### Day 2

Nei Feng Mi (MA-IC3 22) (Endocrine glands)

Stimulation of this point causes antiallergenic, expectorative, anti-inflammatory, antipruritic effect. Acupuncture of the endocrine gland point is performed in all allergic diseases, as well as in cases of endocrine gland dysfunction. Given that, this point is widely used to treat hormone-resistant and hormone-dependent forms of bronchial asthma.

Nao Gan (AP 25 V) (Brain stem)

When stimulated, this point causes antishock, antiallergenic and sedating effect.

#### Day 3

Naochuiti (AP 28 VI) (Pituitary gland) and Nao Dian (Brain)

Needling therapy to this point gives good sedating, broncholytic and hypnogenic effect. It abruptly improves endocrine gland function impairment. This is good to use when treating hormone-resistant and hormone-dependent patients.

Zheng (MA-AT 29) (Occiput)

Needling of this point causes anti-inflammatory, sedating, analgesic, antitussic and breath regulating effect.

#### Day 4

Ping Chuang (AP 31 VI) (Breath Regulating - Asthma Point)

Indications: it regulates the inspiratory center and causes antiallergenic effect, and thus, it is used to treat difficult allergic and neurotic genesis, heaviness and spreading in the chest, allergic itch.

Pi Zhi Si Qui (AP 34 VI) (Grey Substance Point)

According to foreign acupuncturists, this point refers to the cerebral hemisphere cortex. Needling of this point gives sedating, analgesic, anti-inflammatory and resolving effect.

#### Day 5

Zun (MA-AH11 42) (Chest)

Acupuncture procedure is performed in cases of chest diseases.

Chuan Xiao (AP 60) (Asthma)

This point is used to treat respiratory organ diseases.

#### Day 6

Jiaogan (MA-AH7 51) (Sympathetic Nervous System/Vegetative Point)

This is often used to treat inflammatory diseases of lungs and bronchial asthma, since the sympathetic point causes anti-inflammatory effect.

Shen Men (AP 55 X) (Point of Central Nervous System) causes analgesic, sedating, anti-inflammatory effect, and in dry cough - it has antitussic effect. Needling of this point is not recommended in cough with excessive sputum expectoration. This is a master point to relieve pain in the chest, to treat bronchitis and bronchial asthma, and itching dermatosis.

#### Day 7

Shen (MA-SC 95) (Kidney)

Ancient Chinese physicians believed in the strong correlation between the ear and kidneys. They also supposed that kidneys are bound to the brain, bones and genitals. When needling, this point stimulates metabolism process.

Fei (MA-IC1 101) (Lung)

Needling of this point is used not only to treat respiratory diseases; it has obvious anti-inflammatory, antiallergenic and analgesic effect.

#### Day 8

He (AP 82 XIII) (Diaphragm (Point Zero))

According to P. Nogier, Point Zero is the considerable and vital point in the auricle.

Zhi Dian (AP 83 XIII) (Bifurcation Point (Oppression Point) the point of solar plexus by P. Nogier)

Being mater points in the auricle, these enhance and potentiate the acupuncture efficiency used by needling corporal and auricular points.

Thus, the course of treatment of respiratory allergosis and bronchial asthma by acupuncture methods lasts 18 days without intervals. On the



whole, eight treatment courses are performed for each patient. The first four courses are intensive with the time interval of 10 days, 1 and 3 months between them. The remaining four courses are preventive-purposed and they are performed twice a year, every half a year. This is the period to repeat allergy tests followed by the SIT procedure.

This scheme of treatment is descriptive and general. In 90% cases such therapy proved to be successful in practice, while 8-10% patients required shorter time interval between courses. Sometimes therapy courses are required every 10 days for several times to treat respiratory allergosis and bronchial asthma.

### **Aeroionotherapy in treatment of respiratory allergosis and bronchial asthma**

Since 2000, we proceeded to use aeroionotherapy along with respiratory gymnastics by the Chinese methodic Tai Chi Chuang as one of the therapeutic modalities to treat allergic diseases. For this purpose, we addressed to using Chizhevsky Chandelier (an air ionizer).

The history of using the Chizhevsky Chandelier is interesting and informatory. In the 20s of the previous century the outstanding biophysicist A.L. Chizhevsky from Russia could identify that the atmospheric electricity contains negatively charged oxygen ions that have a curative effect on human organism. He managed to obtain marvelous results in treating various diseases by using the device invented by him himself. The device produced negatively charged aeroions, and this is known as Chizhevsky Chandelier. Due to this invention and many more, A.L. Chizhevsky was acknowledged as Leonardo da Vinci of XX century during his life time by the world scientific society. During 60s-90s, M.S. Machabelli, M.D., Professor, determined that when any illness occurs in human body, the intravascular coagulation (thrombohemorrhagic), or Machabelli syndrome develops. This syndrome develops to the decrease in number of negatively charged elements in human cells. Saturating the ambient air with negatively charged oxygen ion, the Chizhevsky Chandelier suspends the process of intravascular coagulation development, preventing and treating various diseases. This device captured the headlines in the world and is effectively used to treat cardiovascular and infant diseases, respiratory, gastrointestinal and nervous system disorders, eye problems and other dysfunctions.

Due to the increase in number of patients with allergic diseases, non-medicinal therapeutic modalities are of greatest concern in all medical spheres. As soon as the article named "128 auricular points" was published, the Central Scientific And Research Laboratory of TashMI (Tashkent Medical Institute), the new clinic at TashMI and the editors office received a great number of messages from all parts of our republic, as well from Tadjikistan and Kyrgyzstan.

Here are some of them.

The Tursunov sisters from Bukhara wondered, whether ear lobe piercing can impair functions of organs related to 13 auricular points. There is no harm to have ears pierced to have earrings on, but the point is that only the auricular point where the piercing is done is stimulated when an earring is on. People should be aware that apart from 128 auricular points, there are 697 points on the body surface called corporal. In their turn, they are divided into 12 channels, known as meridians. When linking these 697 points with auricular points, the optimal effect may be achieved when treating various diseases.

For instance, a corporal point Zu San Li (ST 36) (Leg Three Li) located 3 cun below ST 35, one finger width lateral from the anterior border of the tibia, may beneficially affect the body to cure from 10 kinds of illness.

People from Bukhara, Samarkand, Namangan, Kashkadarya, Andizhan regions and Karakalpakstan show their great concern about the benefit of using acupuncture therapy to treat gastric ulcer and duodenal ulcer, various mental illnesses, arterial pressure and other impairments.

Acupuncture procedure is not indicated in cases as follow: acute pneumonia, active forms of tuberculosis, with decompensated diseases of cardiovascular systems and diseases of urogenital track, hemopathy, acute mental disorders, strong fatigability, alcohol addiction, pregnancy, various infectious conditions, as well as infants of the first year of life and geriatric patients over 75.

The necessity of acupuncture may be recommended by the practitioner to treat diseases complicated with poliomyelitis (Heine-Mediii disease), convulsions, transient stroke, widespread sclerosis, thyrotoxicosis, and glaucoma.

Patients should be also aware that needling therapy will not be so efficient, if the previous treatment included hormonal medications in greater volume when treating all kinds of allergic diseases, especially bronchial asthma.

As the specialist in allergic diseases, I would like to outline and bring to my colleagues, that they should be extremely careful when prescribing hormonal therapy to patients with allergic diseases, especially bronchial asthma. The prescription of such medication is reasonable only when there is life-threatening condition and only for the short-term period.

In medical practice, allergy is the new aspect that develops during the last decade. Due to a variety of causes and symptoms to manifest, this should be taken into consideration by practitioners of any and all medical specialties.

The acupuncture technique is extremely efficient to treat various diseases. However, below is the list of diseases to be managed by needling therapy that exert attention and are of concern in our readers.

**Eye disorders:** allergic conjunctivitis, blepharitis, keratitis, heterophthalmia, optic neuritis with moderate decrement in visual acuity.

**ENT-diseases:** acute and chronic rhinitis, Meniere's syndrome, degeneracy (neuritis) of acoustical nerve.

**Gynaecological diseases:** chronic endometritis, chronic salpingitis, emmeniopathy, climacteric syndrome.

**Obstetrics:** oxytocic activity, labor pain relief, attenuation of hypernormal laboring, postnatal subinvolution of uterus, general tonic therapy in maternity patients.

**Locomotive disorders:** proliferative arthritis I-II grade, chronic infectious allergic polyarthritis, arthropathia.

**Allergic diseases:** atopic or infectious allergy, bronchial asthma without pulmonary heart disease, allergic rhinitis, urticaria, Quincke's oedema, eczema, neurodermatitis, illnesses due to hypersensitivity to plant pollen, long-lasting diseases of bronchi, pneumonia.

**Gastro-intestinal disorders:** chronic gastritis with normal, decreased and increased secretion, gastric ulcer and duodenal ulcer, chronic non-calculous cholecystitis and dyskinesia of bile passages, chronic colenteritis and stomach dyskinesia.

**Cardiovascular system disorders:** hypertensive disease I grade, atherosclerosis (early stages of clinical manifestation), exertional angina, reflex angina pectoris.

**Mental disorders:** all signs of neurosis, involuntary urination at night, sexual disorders in men, skin itch, and many more.

The acupuncture seems to be ineffective in other mental disorder conditions (mental retardation, confusional insanity, etc.). The needling therapy is performed using corporal and auricular points when treating

mental disorders. I wish all health care providers in medical spheres found the necessity and demand in mastering the acupuncture art of treatment.

Parents often ask on the ways to treat bronchial asthma in children. This disease is treated by acupuncture auricular and corporal points, as well as by using more advanced techniques. The acupuncture procedure is more reasonable to perform concurrently with other therapeutic procedures.

Cold water treatment should be paid special attention. This includes daily gymnastics, swimming, and other sports activities. Bare foot waling is wholesome both for adults and children. Some acupuncture points are located on the sole and heel, as well as they are found in the auricle. They permanently impact the organism, and in particular the beneficial effect occurs when the points interact with the warm earth. The special points are also located in these spots which are stimulated when bare foot walking, which is extremely healthy, though rare people are bare foot even at home, unfortunately.

Thus, a human should pay a special concern about the health, treat with cold water from early childhood and do regular morning exercises.