

## ENGLISH VERSION: ALLERGIC DISEASES AND METABOLIC SYNDROME: SOME ASPECTS OF THE COMBINED COURSE\*

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*To study the features of the clinical course of allergic diseases in combination with abdominal obesity, which is associated with metabolic syndrome examined 45 patients with AS aged 19 to 65 years. Materials and methods. By age composition dominated by those aged 30 - 40 years (38%) (men accounted for 51% (23 patients), and women - 49% (22 patients)). At the time of the survey patients were in clinical remission stage and stopped receiving allergy medications 72 hours, the patients had severe comorbidity. The diagnosis is established based on diagnostic criteria ARIA (2008) (Allergic Rhinitis and its Impact on Asthma (ARIA) 2008 Update (in collaboration with the World Health Organization) for diagnostic algorithm adopted in Ukraine and approved by the Ministry of Health of Ukraine. On the basis of outpatient department four city clinic hospitals and allergy department of the Poltava Regional Hospital were held instrumental examination and inspection of allergy. Allergic survey conducted by the conventional method by setting skin prick-tests (LLC "Immunologist", Vinnitsa, Ukraine). Obesity - considered as a risk factor and component of metabolic syndrome. Anthropometric studies were performed by standard methods. Determined the: body weight, height, body mass index by the method Quetelet II. The degree of centralization zhyrovidkladennya assessed at a rate which is the ratio of the circumference of the waist size (OT) and hip circumference (OS). According to WHO recommendations, abdominal obesity is diagnosed in men in the index OT / OB more than 0.9, the women - more than 0.8. Results. Allergic diseases in 76% of cases are hereditary nature mainly by the mother (36%), mostly starts in childhood and teens (88%) and 44% is accompanied by other allergic diseases. In patients with AS in the structure of comorbidities SARS dominated (58%), including complicated broncho-pulmonary pathology (35%) and diseases of the gastrointestinal tract (44%). From the standpoint of assessment of individual risk of disease to the constitutional characteristic features of AS patients include overweight and centralization zhyrovidkladennya in male patients. Given the figures obtained depending on sex differences to note the importance of the constitutional component of the mechanisms of ventilation disorders in asthma and AR combined with abdominal obesity.*

Key words: allergic diseases, metabolic syndrome, syntropy, abdominal obesity.

Currently the problem of complex diseases is of invaluable significance [1], and it is one of the most difficult ones for professionals of different specialties. Nosologic syntropy is very important for the science and practical medicine as the study of comorbidity displays that various body systems may help to reveal the mechanisms of formation and development of disease pathogenesis.

Comorbidity (from Latin: *co* – “together”, *morbus* – “disease”) is the coexistence of two or more diseases (polymorbidity) in one patient, which are pathogenetically related or overlapping in time (chronological comorbidity). Comorbidity includes both random combination of diseases of different etiology in one patient and nosologic syntropy, i.e., development of naturally caused (determined) combinations of diseases. A.A. Krylov defines syntropy as “... a kind polymorbidity when diseases are peculiarly “attracted” to each other, seeking to unite or set the stage for one another” [2]. Underlying syntropy is always possible to identify by common or similar etiological and / or pathogenic factors. Studies on comorbidity are especially relevant with respect to the so-called “diseases of civilization” – allergic diseases (AD) and metabolic syndrome (MS).

Over the past decade, the frequency of allergic diseases has increased significantly, especially in developed countries and countries with complex environmental situation. Allergic diseases, including such common diseases as bronchial asthma, allergic rhinitis from year to year become more urgent and serious problem [3]. The prevalence of BA in different countries ranges from 1 to 18%. There are around 300 million patients with asthma

in the world [4]. According to epidemiological studies conducted in different countries, the prevalence of seasonal allergic rhinitis (SAR) ranges from 1 to 40%, perennial allergic rhinitis (PAR) – from 1 to 18% [5]. In recent years, the viewpoint that AR and asthma are manifestations of a single respiratory disease has been increasingly expressed [6]. Some scholars, stressing the close relationship of AR and asthma, suggest using the term “allergic rhinobronchitis” that reflects the relationship between these nosologies [7]. It is known that 32-64% of AR patients suffer from BA, whereas 75% of BA patients have AR [8].

The prevalence of metabolic syndrome among the adult population reaches around 25-35% and begins to acquire epidemic character that is primarily due to the high prevalence of obesity worldwide. Obesity contributes to the development of hypertension, coronary heart disease, diabetes mellitus (DM) type 2, heart failure, cardiac arrhythmias, stroke, other pathology (cholelithiasis, deforming osteoarthritis, sleep apnea syndrome, colon cancer, prostate cancer, uterine cancer, ovarian cancer, breast cancer), marked positive relationship between body weight and total mortality [9]. There is evidence that not only the total amount of fat, but also visceral (abdominal) fat is an independent predictor of inflammation [10,11,12].

The relationship between the change in living conditions and incidence of AD has been determined. It is shown that improved living conditions not only contribute to obesity, but also to the incidence of BA and AR [13]. This allows attributing AD to the “diseases of moderniza-

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tion”, the risk of which increases with improved nutrition and increased body weight and is characterized not only by weight gain [14].

It was also established that obesity promotes bronchial hyperresponsiveness that is caused by physical activity (both in asthma, and without it), and a relationship between chronic inflammation and accumulation of energy (such as fat) [15,16].

The aim of our research was to study the characteristics of the clinical course of allergic diseases in combination with abdominal obesity, which is associated with metabolic syndrome.

### Materials and methods

We examined 45 patients with AD aged from 19 to 65, with predominating age group of 30-40 (38%) (men – 51% (23 patients), and women – 49% (22 patients)). At the time of the examination patients were in clinical remission stage and stopped receiving allergy medications for 72 hours, the patients had severe comorbidity.

The diagnosis is established based on ARIA diagnostic criteria (2008) (Allergic Rhinitis and its Impact on Asthma (ARIA) 2008 Update (in collaboration with the World Health Organization) for diagnostic algorithm adopted in Ukraine and approved by the Ministry of Public Health of Ukraine. On the basis of outpatient department, four city clinic hospitals and allergy department of the Poltava Regional Hospital instrumental examination and inspection of allergy were held. Allergic examination was conducted via conventional method by setting skin prick-tests (LLC “Immunologist”, Vinnytsia, Ukraine).

Obesity was considered as a risk factor and component of metabolic syndrome. Anthropometric studies were performed by standard methods. We determined the body weight, height, body mass index by the Quetelet II method. The degree of fat deposition centralization was assessed at a rate which is the ratio of the circumference of the waist circumference (WC) and hip circumference (HC). According to WHO recommendations, abdominal obesity is diagnosed in men with the index WC / HC more than 0.9, in women – more than 0.8.

### Results and Discussion

The study of family history of allergy patients revealed a variety of allergy in the family in 76%. The presence of allergic disease in relatives and II degree of kinship of the mother was found in 35%, of the father – in 30%, of both parents – in 11% of patients. There was no data on the burdened allergological history in 24% of patients. The results are consistent with data showing a preferred relationship with allergic diseases of the mother [17].

Medical history revealed that the disease is associated with exposure to allergens mainly in children – 56% (25 patients) and in adolescence and young age respectively – 32% (14 patients) and 12% (6 patients), due to characteristics of the immune system in childhood [18].

In 44% of patients with AR the course has been associated with various nosological forms of allergic diseases. In 20% of patients with AR the concomitant diagnosis of BA was set, 6% manifested symptoms of AD, the full triad of atopy was found in 10% of patients, which is consistent with the data of foreign and Ukrainian authors [19]. Other allergic reactions (urticaria, allergic conjunctivitis) were reported in 12% of patients with AR.

Almost all of the patients identified medical history of concomitant somatic pathology. 58% of patients had frequent acute respiratory infections (ARI), with a characteristic prolonged course and complications of bronchopul-

monary system (bronchitis, pneumonia) – 35%, which is likely to play a significant role in developing and maintaining AR [20]. 18% of patients were diagnosed with curvature of the nasal septum. Pathology of the gastrointestinal tract (GIT) was found in 44% of patients: chronic gastro-duodenitis – 32%, peptic ulcer and duodenal ulcer – 20%, biliary dyskinesia – 23%, liver disease – 8% pancreatopathy – 10%.

According to the research and study of anthropometric factors of WC / HC showed that in obese men fat deposition centralization was significantly more pronounced as compared to women:  $1.05 \pm 0.03$  vs.  $0.910 \pm 0.063$  ( $p < 0.05$ ), which is associated with the constitutional gender differences.

### Conclusions

1. AD in 76% of cases are of hereditary nature mainly by the mother (36%), most cases outbreak in childhood and teens (88%) and 44% is accompanied by other allergic diseases.

2. In patients with AD, ARI dominated in the structure of comorbidities (58%), including complicated bronchopulmonary pathology (35%) and diseases of the gastrointestinal tract (44%).

3. From the standpoint of individual risk to the disease's constitutional characteristic features of AD patients one can attribute overweight and fat deposition centralization in male patients.

4. Given the figures obtained depending on sex differences it is necessary to note the importance of the constitutional component of the mechanisms of ventilation disorders in BA and AR combined with abdominal obesity.

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