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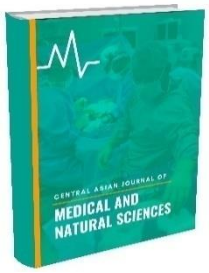

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Current views on the Mechanisms of Development of Bronchial Asthma and Chronic Obstructive Pulmonary Disease

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Abstract: COPD and AD are independent chronic diseases of the respiratory system, especially prevalent in the world. Certain differences in the principles of AD and COPD are present in the disease clinic and prevention and therapy, with some of them having a common principle [6,8,9,16,20]. Certain issues are poorly understood in therapeutic practice, in the work of even informed and specialist this creates additional difficulties[22,23]. In medical practice, patients often present with symptoms of chronic obstructive pulmonary disease and other chronic diseases of the respiratory system, which often misleads physicians and complicates treatment. Pathologies differ in terms of cytological examination, but there are some differences in clinical typing of diseases [10]. Therefore, the aim of our study was to investigate the combination of AD and COPD in worldwide studies in recent years.

Key words: immunological mechanism, occupational aggressive effects, reagents, interleukin-8, 6, tumour necrosis factor.

Introduction. Bronchial asthma (BA) and chronic obstructive pulmonary disease (COPD) have been a major medical problem in recent years. According to the World Health Organisation (WHO), by 2030, BA and COPD will be one of the main characteristics of mortality [1,4,23]. Today, COPD affects about 230,000,000 population worldwide, of which 11.8% of men and 8.5% of women over 40 years of age [3,7,11].

COPD continuously kills more than 3 hundred people in Europe and almost 3 million people worldwide [23]. According to the "Global Pathology Damage Study", this pathology will move to the 3rd place by 2020, and in 2030. -It will become the fourth leading cause of mortality [2,5,8,12,15]. According to the world literature, lethal cases of AD make up 250 thousand people per year. According to the results of studies, the pathology will increase by 2025 in 100-150 million people at the rapid pace of urbanisation [9,19,20].

COPD and AD are independent chronic diseases of the respiratory system, especially prevalent in the world. Certain differences in the principles of manifestation of AD and COPD exist in the disease clinic and prevention and therapy, with some of them having a common principle [6,8,9,16,20].

Certain issues are poorly understood in therapeutic practice, in the work of even informed and specialist this creates additional difficulties[22,23].

Bronchial asthma is a chronic inflammatory disease of the respiratory tract. The main cause of the disease is chronic allergic inflammation of the bronchial wall, as well as bronchial hyperreactivity to various stimuli. The main symptoms are partial or reversible bronchial obstruction accompanied by an attack-like cough, wheezing, tightness in the chest, dyspnoea at various specific allergic and non-specific stimuli.

In the international guideline, prolonged inflammation of the respiratory system lies at the origin of bronchial asthma. Inflammation in AD is a combination of immunological and non-immunological mechanisms of its occurrence. This pathology must be associated with diseases that have a threshold effect, additional polygenic type. Multifactorial diseases are characterised by the presence of clinical polymorphism of symptoms. However, there is a certain number of clinically healthy individuals in the population, who have a lower threshold level of violation of the concept of biological defects as the first stage of AD formation and development.

External factors play an important role in the aetiology of the disease: - air pollution, - occupational aggressive effects, - increased contact with allergens ("allergen life"), - viral infections, smoking (including passive smoking), etc.

Immune reactions of types I, III and IV are involved in the formation of bronchial obstruction in AD. Compared to others, the leading role is played by (anaphylactic) types of hypersensitivity mechanisms involving IgE and G4 [11,17,21].

The main factors in the pathogenesis of AD are chronic allergic inflammation, which develops under the action of a combination of different mediators released as a result of a reactin-mediated reaction. CD4+ T lymphocytes play an important role in sensitisation of the body. Activation and proliferation of Th2 CD4 + T lymphocyte subpopulations occurs under the influence of allergenic pathogens.

In addition, CD4 + T lymphocytes secrete cytokines (IL-4, IL-6, IL-10, IL-13) as well as total and specific IgE. Each entry of an allergen into the body leads to the release of mediators like histamine, leukotrienes C4, D4, E4 by the cells, and they lead to the development of an allergic response. Allergic response is manifested by asthma attacks and impaired bronchial patency [10,12,16].

Chronic obstructive pulmonary disease (COPD) is a pathology manifested by a prolonged decrease in respiratory patency, which is aggravated and is a manifestation of long-term damage to the respiratory tract and lung parenchyma in response to pathological effects of damaging gaseous substances. Prolonged pathological states define the disease and bring some significance to the disease clinic and prognosis.

COPD is a certain difficulty for patients at present. The prevalence of COPD remains very high, but it remains heterogeneous according to the region of residence. The main arguments are lifestyle differences. The prevalence of COPD in persons over 45 years of age was more than 10%, with a higher prevalence in men than in women [6,12,13]. In a study conducted in the Russian Federation and including more than 7 thousand patients (mean age 43 years), the main manifestation of COPD accounted for more than 20% among all respiratory pathologies [12,17].

COPD is characterised by an increase in the number of neutrophils, T-lymphocytes, macrophages and in different parts of the airways and lungs. In patients with COPD, inflammatory cell overgrowth occurs in the proximal and distal portions of the DP. Eosinophilia may be observed in some patients. In addition, many literatures suggest that the initiation and progression of chronic airway inflammation in COPD is mediated by mediators such as interleukin-8, 6 and tumour necrosis factor α [18,19]. The significance of COPD and AD is called for scrutinising the combination of these diseases in a single

patient [5,7,9]. In the GINA and GOLD study, a number of data were reported on the syndrome of combining AD and COPD [9,11]. According to the document of GOLD and GINA working groups, the problem of diagnosis and refined diagnosis in bronchial asthma and chronic obstructive pulmonary disease is discussed [9]. Data on the prevalence of COPD and AD in a single patient are different and variable due to differences in the diagnosis of pathologies and deprivation of the "gold standard". The incidence of the diseases ranges from 12 to 55% among patients with COPD and 13-61% in AD [4,7,19]. The presence of both pathological conditions leads to various deficiencies in the diagnosis and treatment of these pathologies in all populations. [4,8].

Conclusions: Thus In medical practice, patients often present with symptoms of chronic obstructive pulmonary disease and other chronic respiratory diseases, which often confuses physicians and complicates treatment. (Vanessa M. McDonald, PeterG., Gibsonetal. 2014). Pathologies differ in terms of cytological examination, but there are a number of differences in clinical disease typing [10].

Therefore, the aim of our study was to investigate the combination of AD and COPD in worldwide studies in recent years.

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