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Risk Factors and Etiological Issues of Chronic Simple (Nonobstructive) Bronchitis

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Abstract:

Clinical and epidemiological examination of the population confirmed the risk factors of chronic non-obstructive bronchitis such as active and passive smoking, air pollution, occupational dust, infections: frequent respiratory infections such as bronchitis, pneumonia, genetic predisposition, age, gender can contribute to the development of chronic bronchitis. The role of persistent and chronic viral infection in the formation of chronic non-obstructive bronchitis has been confirmed. The interaction of risk factors (how various risk factors interact with each other to increase the risk of developing chronic bronchitis) has not been fully studied.

Keywords: *Chronic simple (non-obstructive) bronchitis, risk factors and etiological, persistent and chronic viral infection.*

Introduction

Relevance. The share of chronic TB in the structure of respiratory diseases (RD) of non-tuberculous origin among the entire urban population is 28.9%, and among the adult population it is slightly higher - 32.6% [3]. It should be taken into account that the prevalence of chronic bronchitis according to the data on visits is almost two times lower than according to the data of mass population surveys.

What is the proportion of simple (non-obstructive) bronchitis in the general population of these patients and the risk factors for the development of this disease?

Material and methods. In a specialized polyclinic, a clinical, epidemiological and virological examination of patients with chronic bronchitis (CNB) was conducted - 246 people. Virological testing was performed by taking brush biopsy cells from the mucous membrane of the nasopharynx and bronchi. To assess the activity of the viral infectious process, the immunofluorescence method was used (immunoglobulins labeled with fluorochrome were used to detect antigens of the influenza

virus, parainfluenza, respiratory syncytial virus (Rs) and adeno (Ad) viruses). Statistical analysis of the obtained data was carried out using the following calculations: the arithmetic mean of the studied indicator and its standard error (M+m), square deviation (δ), confidence limits at a probability of 95: 99; 99.9% of positive samples. The significance of differences was determined using the Student's t-test.

Discussion of the obtained data. Chronic (simple) bronchitis is a diffuse lesion of the mucous membrane of the bronchial tree, caused by prolonged irritation of the airways by volatile pollutants of domestic and industrial origin and/or damage by a viral-bacterial infection, characterized by the restructuring of the epithelial structures of the mucous membrane, the development of an inflammatory process, accompanied by hypersecretion of mucus and a violation of the cleansing function of the bronchi. This is manifested by a constant or periodically occurring cough with the separation of sputum, not associated with other bronchopulmonary processes or damage to other organs and systems; with simple (non-obstructive) bronchitis, mainly large (proximal) bronchi are affected. It is necessary to distinguish between primary chronic bronchitis - as an independent nosological form, a disease sui generis, and secondary bronchitis - as a consequence of other diseases and pathological conditions (tuberculosis, bronchiectasis).

In the structure of chronic non-tuberculous respiratory diseases, identified for the first time during mass special studies of the population of large industrial cities of our country, the proportion of chronic bronchitis is almost 90%, and only 25% of those examined had signs of bronchial obstruction, i.e. chronic simple (non-obstructive) bronchitis predominated (in 3/4) [7].

According to our data [3], when studying this issue in a contingent of residents (rural areas), chronic bronchitis without bronchial obstruction (CNB) constituted 7.34% of the total number of the examined population, 62.4% of the total number of identified patients with chronic non-tuberculous bronchial obstruction and 66.7% of the number of patients with chronic bronchitis. These data coincide with those previously reported in the literature [7].

Among patients with chronic non-obstructive pulmonary disease, men accounted for 70.1% and women for 29.9%. The prevalence of this form of the disease was 73.37 ± 7.1% overall and significantly exceeded that among people engaged primarily in mental labor - 30.7 ± 2.1, including among men - 109.87 ± 9.7% and among women - 41.2 ± 2.1%, $p < 0.05$.

The highest prevalence of chronic non-obstructive pulmonary disease among men was observed at the age of 50-59 years (218 ± 18.1%), among women - at the age of 40-49 years (79.9 ± 5.1%). It is characteristic that the frequency of chronic bronchitis among men was significantly higher in all age groups, which is a reflection of a certain pattern - more frequent incidence of chronic bronchitis in the male population.

CNB was most common among such professions in agricultural production as, for example, machine operators (198.4 ± 13.6‰), mechanized workers (172.9 ± 11.3‰), pig farmers (169.9 ± 14.8‰r), elevator workers (126.6 ± 10.3‰), cattlemen (95.4 ± 6.2‰), field farmers (51.8 ± 4.2‰). Significantly less frequently, chronic pulmonary disease was detected among schoolchildren (3.5 ± 0.1%) and housewives (16.2 ± 1.0%).

Thus, chronic simple (non-obstructive) bronchitis is a very common disease, which, however, has no social significance, since it does not affect, in most cases, the professional performance and life expectancy of such patients.

According to scientists of the scientific program for clinical and epidemiological research of the population at experimental bases in various regions:

“The current practice of inaccurate division of multiple causes of death into initial (main), intermediate and immediate makes the official mortality rates from chronic nonspecific lung diseases quantitatively unreliable and devoid of epidemiological relationships with diseases actually

involved in thanatogenesis. More than half of the mortality rate in column 108 of Form No. 5 of the Central Statistical Office "Chronic bronchitis and emphysema" is formed due to chronic bronchitis and emphysema, which does not create the preconditions for premature death.

Patients with chronic obstructive pulmonary disease die from causes common to the entire population at the same age as people without this disease" (7).

In the occurrence and development of simple (non-obstructive) bronchitis, exogenous and endogenous risk factors play a significant role - the leading ones among them are, apparently, exogenous ones These are mainly airborne, i.e. *volatile damaging pollutants and non-indifferent dust*s. They should be classified as obligate pathogenic factors, because they have an irritating (mechanical and chemical) effect on the bronchial mucosa.

In first place in importance should be given *to the inhalation of tobacco smoke* by the smoker himself or the inhalation of smoke from other smokers; in the first case we are talking about "*active" smoking*, in the second – about "passive" smoking.

The most harmful thing is smoking cigarettes, not pipes or cigars. The most harmful thing is smoking cigarettes, not pipes or cigars. Of course, the total duration of smoking also matters. In all cases, tobacco smoking reduces the natural resistance of the mucous membrane to volatile pollutants, complicates mucociliary clearance, and facilitates the pathogenic action of respiratory viruses and microbes [9,10].

The *second place* among risk factors should be occupied by *volatile pollutants of industrial nature and non-indifferent dusts.* These are products of incomplete combustion of coal, oil, natural gas, sulfur oxides, etc. All of them, to varying degrees, have an irritating or directly damaging effect on the bronchial mucosa. For the implementation of the latter, the duration of the pathogenic effect is important, i.e., production experience and the peculiarity of production, i.e., the pathogenic properties of the inhalant [10,11]. Of practical importance is the *summation of pathogenic risk factors*, such as smoking and working in dusty conditions.

The *indicated pathogenic factors rarely act as etiological factors; they usually reduce the tolerance of the bronchial mucosa to the pathogenic action of respiratory viruses and microbes, which act as etiological factors*, in fact clinically manifesting the premorbid condition [2, 13].

Among the etiological factors, *respiratory viruses and mycoplasma infections* (influenza viruses, adeno-RS viruses, mycoplasma pneumonia, etc.) are of decisive importance, and among *bacterial agents, pneumococcus, Haemophilus influenzae, and Maraxella catarrhalis* are of primary importance [1,4,5,6].

In CNB, exacerbation of the chronic inflammatory process in most of our observations (84.2%) was associated with respiratory viral infections.

However, monoinfection was predominant (in 2/3 of cases), viral associations were recorded in 41.5% of patients; however, as a rule, they were two-component rather than multi-component. The duration of detection of viral Ags from the onset of exacerbation ranged from 2 to 5 weeks. Moreover, viruses and viral AGs were detected predominantly in the upper and middle sections of the respiratory tract (in brush biopsies of the nasopharyngeal mucosa and large segmental bronchi, and not in subsegmental bronchi and BALF). Characteristic for patients with simple bronchitis was the detection of a viral infection during the period of exacerbation, and not during the period of clinical remission. Its period in the majority (82.0%) of patients was free from respiratory viral infection (12).

A study of the spectral composition of viral infections in chronic CNB diseases revealed a clear predominance of influenza (influenza AH3N2), adenovirus and mycoplasma infections. The frequency of respiratory syncytial virus (RSV) infection, which is characterized by damage to the

deepest parts of the respiratory tract, was low (0.21) and was not statistically different from that in patients with acute forms of bronchitis (0.18). Only 1/3 of patients with initially diagnosed RSV infection had repeated cases. However, almost all patients with CNB were characterized by prolonged release of the respiratory tract from virus-specific AG, which often lasted up to 1.5 months from the onset of viral infection and was accompanied by clinical signs of sluggish inflammation (weakness, lethargy, sweating, increased cough with scanty sputum, shortness of breath; in contrast to healthy subjects and patients suffering from OB, with CNB, repeated influenza infection occurred significantly more often (after 1-1.5 years). Bronchoscopy revealed bilateral catarrhal endobronchitis and hyperinjection of the bronchial mucosa.

In long-term adenovirus infection (groups A or B), mucosal atrophy and cyanosis were more frequently observed, while in RS infection, signs of moderate catarrhal inflammation and a more frequent increase in the number of eosinophils in bronchial washings and BALF were observed (12).

As for the pathogenic role of unfavorable climatic and weather factors, their independent significance in the development of the disease is apparently somewhat exaggerated. In any case, targeted studies of a homogeneous population in various climatic and geographical zones of the country have shown that the disease occurs with the same frequency in both warm and relatively cold climates [7]. This, naturally, does not exclude the adverse consequences of inhaling cold air in the conditions of the far north, especially for a person who is not accustomed to these conditions and not adapted to them. In such situations, pathology of the nasopharynx also plays a role, which is already related to endogenous risk factors, with deterioration - disruption of breathing through the nose with the actual shutdown of the protective function of normal nasal breathing, for cleansing, humidifying and warming the inhaled air. These factors should be taken into account when working with medical commissions that determine the possibility of working on a relatively long business trip in a cold, humid climate. Because under these conditions, unfavorable climatic and weather factors can play a pathogenic role.

The main endogenous risk factors are:

- being male;
- age over 40 years;
- repeated acute respiratory viral infections, acute respiratory infections, pneumonia, acute bronchitis — more than 3 times a year;
- hyperreactivity of the bronchial mucosa to irritant and allergic effects;
- family predisposition to bronchopulmonary diseases.

Endogenous risk factors, unlike exogenous ones, have not been studied sufficiently, although they have recently attracted increasing attention (Table 1).

This refers primarily to the so-called biological defects.

Table 1. Endogenous risk factors for chronic bronchitis (including "biological defects") at different structural levels

Level	*Risk factors*
Organismic	• Changes in the nasopharynx with impaired nasal breathing; • Dysfunction of the autonomic nervous system with a predominance of the parasympathetic division; • Extra-adrenal glucocorticoid insufficiency; • Insufficiency of the T-system of immunity and synthesis of

	SGLT.
Organ	• Impaired bronchial clearance; • Imbalances (quantitative and qualitative) of protective enzymes of the bronchial
Cellular	• Hyperproduction of mucus by goblet and other cells of the bronchial epithelium; • Changes in hemodynamics with disturbances in the microcirculation system; Disturbances in the functional activity of AM** and neutrophils.
Subcellular	• Changes in the receptor apparatus; Instability of lysosomal membranes.

The leading risk factors for simple bronchitis were smoking, contact with airborne pollutants, chronic foci of infection (diseases of the nasopharynx and oral cavity), repeated acute bronchitis and acute respiratory infections.

Among the 4683 patients with CNB examined by him, 3397 smoked in the past or at the time of examination, i.e. more than 2/3, including 96.2% of men and 3.8% of women. The prevalence of chronic obstructive pulmonary disease among male and female smokers was significantly higher than among non-smokers (respectively: 129.1 ± 12.0% and 14.5 ± 1.1%, $p < 0.05$ and 64.0 ± 11.0% and 7.6 ± 0.05%, $p < 0.05$).

The prevalence of chronic obstructive pulmonary disease in general among the smoking (rural) population was significantly higher than among non-smokers, amounting to 124.0 ± 19.7%<> and 21.3 ± 1.1%o, respectively, $p < 0.05$.

Conclusions. Thus, in the formation and development of simple (non-obstructive) chronic bronchitis, it is necessary to distinguish between risk factors (usually predisposing) and causing (etiological) factors. Persistent and chronic viral infection plays an important role in this process. The summation of the action of risk factors is of practical importance, it intensifies and accelerates the pathogenic effect. It is important to note that chronic bronchitis is a disease that can be prevented. Avoid smoking, smoke and polluted air, maintain a healthy lifestyle to reduce the risk of developing this disease.

References:

1. Ишанкулова Д. К. Однонаправленность этиопатогенетических изменений у больных острым и хроническим бронхитом как реальность хронизации воспалительного процесса в бронхах //Journal of Cardiorespiratory research.
2. Инновационный прогресс в исследованиях внутренней медицины. Материалы международной научно-практической конференции. Сам. – 2021. – С. 23-24.
3. Дилором К. И. (2022). ЭФФЕКТИВНОСТЬ ПРОТИВОВИРУСНОГО ЛЕЧЕНИЯ БОЛЬНЫХ ОСТРЫМ ЗАТЯЖНЫМ И РЕЦИДИВИРУЮЩИМ БРОНХИТОМ. *Евразийский журнал медицинских и естественных наук*, *2*(5), 253–258. извлечено от https://www.in-academy.uz/index.php/EJMNS/article/view/1650
4. Кокосов А. Н., Александрова Н. И., Ишанкулова Д. К. Классификация, принципы лечения и профилактика хронического бронхита //Хронический бронхит. – 1991. – С. 9.
5. Кокосов А.Н. Хронический бронхит и обструктивная болезнь легких. С-Пб. 1997. С 133-135.

6. Кокосов А.Н., Александрова Н.И., Степанова Н.Г. и др. Хронический бронхит: клинические аспекты проблем в нашем представлении/ Хронический бронхит и легочное сердце, - Л.: ВНИИП, 1983.- С 34-37.
7. Ishankulova D. K. O'TKIR CHO'ZILGAN BRONXITNING SURUNKALI BRONXIT SHAKLLANISH BOSHQICHI SIFATIDAGI KLINIK XUSUSIYATLARI //Евразийский журнал медицинских и естественных наук. – 2022. – Т. 2. – №. 6. – С. 493-497.
8. Ishankulova D. K. The Formation of Mucociliary Insufficiency in the Bronches on the Role of Respiratory Viral Infection //Journal of Pharmaceutical Research International. – 2022. – Т. 34. – №. 34A. – С. 1-7.
9. Ishankulova D. K. The effects of respiratory viral infection in combating Avicenna's legacy. – 2023. American Journal of Social and Humanitarian Research, 3(1), 378–383. https://doi.org/10.31150/ajshr.v3i1.825
10. Ishankulova, D. K. ., & Nizomov, B. U. . (2022). Evaluation of the Efficacy of Treatment with Resistol in Patients with Acute Respiratory Virus Infection. *Vital Annex: International Journal of Novel Research in Advanced Sciences*, *1*(5), 331–333. Retrieved from https://innosci.org/IJNRAS/article/view/534
11. Ishankulova Dilorom Kamarovna. (2022). classification, principles of treatment and prevention of chronic bronchitis. Results of National Scientific Research, 1(9), 426–436.
12. Kamarovna I. D. Influence of the Premorbid Background on the Clinical and Immunological Picture of Patients at the Stage of Formation of Chronic Bronchitis //Central Asian Journal of Medical and Natural Science. – 2023. – Т. 4. – №. 4. – С. 158-163.
13. Nasirova A. A. et al. Features Of Immunological Indicators In Patients With Chronic Obstructive Lung Disease And Bronchial Asthma //Solid State Technology. – 2020. – Т. 63. – №. 6. – С. 6873-6880.
14. A., Ruziyeva A., et al. "Verification of Dyspnea According to External Respiratory Function in Patients with Bronchial Asthma." *International Journal on Orange Technologies*, vol. 3, no. 2, 2021, pp. 48-51, doi:10.31149/ijot.v3i2.1279.