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DYNAMICS OF IL-8 LEVEL AND TGF-β 1 OF ACTIVE FORM IN BLOOD SERUM UNDER INFLUENCE OF EXCESSIVE BODY MASS IN PATIENTS WITH PURULENT-DESTRUCTIVE FORMS OF CHRONIC NONSPECIFIC PULMONARY DISEASES

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ДИНАМИКА УРОВНЯ IL-8 И АКТИВНОЙ ФОРМЫ TGF-β1 В СЫВОРОТКЕ КРОВИ ПОД ВЛИЯНИЕМ ИЗБЫТОЧНОЙ МАССЫ ТЕЛА У БОЛЬНЫХ С ГНОЙНО-ДЕСТРУКТИВНЫМИ ФОРМАМИ ХРОНИЧЕСКИХ НЕСПЕЦИФИЧЕСКИХ ЗАБОЛЕВАНИЙ ЛЕГКИХ

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РЕЗЮМЕ

У больных гнойно-деструктивными формами ХНЗЛ изучен системный уровни IL-8 и активной формы TGF-β1 и установлено, что постоянным лабораторным признаком течения этой группы заболеваний у лиц мужского пола является их возрастание в сыворотке крови. При ожирении у больных гнойно-деструктивных форм ХНЗЛ нарушением цитокинового гомеостаза углубляется за счет существенного возрастания уровней провоспалительного цитокина IL-8 и активной формы TGF-β1. Включение в комплексную терапию гнойно-деструктивных форм ХНЗЛ у лиц мужского пола с ожирением курса акарбозы (глюкобай) оказывает антифибротическое влияние: способствует снижению уровня активной формы TGF-β1 в сыворотке крови.

ДИНАМІКА РІВНЯ IL-8 І АКТИВНОЇ ФОРМИ TGF-β1 У СИРОВАТЦІ КРОВІ ПІД ВПЛИВОМ НАДЛИШКОВОЇ МАСИ ТІЛА У ХВОРИХ ІЗ ГНІЙНО-ДЕСТРУКТИВНИМИ ФОРМАМИ ХРОНІЧНИХ НЕСПЕЦИФІЧНИХ ЗАХВОРЮВАНЬ ЛЕГЕНЬ

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У хворих гнійно-деструктивними формами ХНЗЛ вивчені системний рівні IL-8 і активної форми TGF-β1 і встановлено, що постійною лабораторною ознакою плину цієї групи захворювань в осіб чоловічої статі є їхнє зростання в сироватці крові. При ожирінні у хворих гнійно-деструктивних форм ХНЗЛ порушенням цитокинового гомеостазу заглиблюється за рахунок істотного зростання рівнів провоспалительного цитокина IL-8 і активної форми TGF-β1. Включення в комплексну терапію гнійно-деструктивних форм ХНЗЛ в осіб чоловічої статі з ожирінням курсу акарбозы (глюкобай) робить антифибротичний вплив: сприяє зниженню рівня активної форми TGF- β1 у сироватці крові.

Key words: IL-8, TGF-β1, chronic nonspecific pulmonary diseases.

The special hopes of a problem solution of purulent-destructive forms of chronic nonspecific pulmonary diseases (CNPD) (besides of antibacterial therapy and surgical methods of treatment) last decade they bind to deeper understanding of principal causes of disease progressing – efficacy of anti-infectious protection, chronic inflammation, pneumofibrosis and emphysema of pulmonary tissue [1, 4].

That is why any concomitant (background) chronic pathology of internal organs in relation to CNPD forming conditions for progressing of inflammation and overdevelopment of connective tissue introduces the special importance for practical pulmonology. To such diseases also obesity is concerned, which development forms the special pathogenetic conditions for progressing of chronic nonspecific inflammatory process in bronchopulmonary system at the expense of deepening of imbalance of cytokine potential first of all [6]. In its turn, development of subclinical system of inflammatory reaction takes a powerful place in pathogenesis of all forms of CNPD and is the important pathogenetic mechanism of cytokine-mediated both regional (respiratory organs), and systemic manifestation of disease [3, 5].

In the light of the above-stated role studying associated with obesity of imbalance of adipokine homeostasis in pathogenesis of purulent-destructive forms of CNPD is represented to us rather perspective direction because it is a basis for working out of new ways of the differentiated pathogenetic therapy of specified associative pathology.

Research main objective was the scientific substantiation of expediency of use and assessment of clinical efficacy of application of systemic therapy of obesity in complex treatment of purulent-destructive forms of chronic nonspecific pulmonary diseases including preoperative preparation. In the present work we introduce studying results of dynamics of cytokines

level in blood plasma under the influence of systemic therapy of obesity in such patients.

MATERIAL AND METHODS

There were 98 male patients with purulent-destructive forms of CNPD under observation, which were subjected to surgical treatment. In all examined persons at entering to a pulmonary-surgical hospital the disease exacerbation is registered including clinical-endoscopic signs of the secondary purulent bronchitis.

All examined patients have been subdivided into following groups: the 1st group – 36 patients with CNPD (19 patients with chronic pulmonary abscess, 9 patients with bronchoectatic disease, 8 patients with pulmonary cystic disease) and with a body mass index (BMI) 18,5-24,9; the 2nd group – 32 patients with CNPD (17 patients with chronic pulmonary abscess, 9 patients with bronchoectatic disease, 6 patients with pulmonary cystic disease) and with BMI ⩾30,0. For studying of complex influence on CNPD current of systemic therapy of obesity the 3rd group of patients has been selected, which have compounded 30 patients with CNPD (15 patients with chronic pulmonary abscess, 8 patients with bronchoectatic disease, 7 patients with pulmonary cystic disease) with BMI⩾30,0, whom a 12-week course of inhibitor of alpha-glucosidase acarbose (glucobye) is included in the medical complex: within the 1st week – on 50 mg once a day before meal (during a supper), since the 2nd week – on 50 mg 2 times (during a breakfast and a supper) and since the 3rd week – on 50 mg 3 times a day before meal at good tolerance of treatment. At a choice of a dose of drug it was considered by us that according to multicenter research APRIL of essential difference in dynamics of all studied indexes between the groups of persons, who received acarbose 150 mg and 300 mg are not noted [2].

There were 19 healthy donors of male in the conforming age range (healthy persons) as a control group. Content of IL-8 in blood serum is defined by immuno-enzymatic method with use of commercial sets (Open Company "Cytokine", St.-Petersburg). The content of the active form TGF-β1 in blood serum is defined by a method of immuno-enzymatic analysis with test-system use "TGFв1E_{max}® ImmunoAssay System" (Promega, USA). Optical density of a finished product of a fermentative reaction by photometric is defined.

RESULTS AND DISCUSSION

Results of investigation of IL-8 level and level of the active form of TGF-β1 in blood serum in patients of the 1st, 2nd and 3rd groups at entering to a hospital and after carried out treatment are introduced in a tab.1.

Table 1

Level of IL-8 and TGF-β1 in blood serum in patients of the 1st, 2nd and 3rd groups at entering to a hospital and after carried out treatment, pg/ml

Groups	Statistical indexes	IL-8		TGF-β1	
		at entering	after treatment	at entering	after treatment
1st group	M ± m n p p_1 p_2	46,24 ± 1,97 36 < 0,001 – –	44,11 ± 1,61 31 < 0,001 < 0,5 –	361,01 ± 15,58 36 < 0,001 –	324,31 ± 11,68 31 < 0,01 < 0,1 –
2nd group	M ± m n p p_1 p_2	64,44 ± 2,62 32 < 0,001 – < 0,001	63,26 ± 2,75 29 < 0,001 < 0,5 < 0,001	412,97 ± 17,35 32 < 0,001 – < 0,05	346,58 ± 15,67 29 < 0,001 < 0,01 < 0,5
3rd group	M ± m n p p_1 p_2	62,98 ± 2,47 30 < 0,001 – < 0,001	58,87 ± 2,60 30 < 0,001 < 0,5 < 0,5	421,54 ± 17,14 30 < 0,001 – < 0,01	324,92 ± 15,70 30 < 0,01 < 0,001 > 0,5
Healthy persons	M ± m n	25,47 ± 0,97 19		272,44 ± 10,77 19	

Note: p – reliability of differences in comparison with an index in healthy persons, p_1 – reliability of differences in comparison with an index at entering in the same group of patients, p_2 – reliability of differences in comparison with an index in patients of the 1st group at the conforming research stage.

It is determined by us (tab.) that at entering to a hospital in patients of the 1st group increase of pro-inflammatory cytokine IL-8 level on 81,5 % (p<0,001), in patients of the 2nd and 3rd groups – accordingly on

153,0 % and 147,3 % (p and p_2<0,001) is revealed. At the second research stage (after carried out treatment) the researched index in patients of the 1st, 2nd and 3rd groups are not essentially changed. The specified facts testify that including a course of acarbose (glucobye) in complex therapy of purulent-destructive forms of CNPD at obesity in males with obesity does not render essential influence on the level of proinflammatory cytokine IL-8.

It is determined that increase of the active form TGF-β1 level in blood serum in patients of the 1st, 2nd and 3rd groups is also a constant laboratory sign and statistically authentically depends on presence in patients with obesity (index increase). It is also revealed that under the influence of carried out therapy the researched index is authentically decrease in patients of the 2nd and 3rd groups (accordingly on 16,1 %, p_1<0,01 and on 22,9 %, p_1<0,001), and reaches value of an index in patients of the 1st group.

The specified facts testify that including in complex therapy of purulent-destructive forms of CNPD at obesity in males with obesity of acarbose (glucobye) course allows to render antifibrous influence (on the active form TGF-β1 level in blood serum).

CONCLUSIONS

1. The constant laboratory sign of purulent-destructive forms of CNPD in males is increase of a systemic level of proinflammatory cytokine IL-8 in blood serum in comparison with group of healthy persons. Current of purulent-destructive forms of CNPD at obesity is characterized by deep disturbance of cytokine homeostasis – increase in comparison with similar patients with normal BMI level of proinflammatory cytokine IL-8.

2. Including a course of acarbose (glucobye) in complex therapy of purulent-destructive forms of CNPD in males with obesity renders antifibrous influence: reduces a level of the active form TGF-β1 in blood serum.

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