

*Materials of Conferences***CLINICAL ASPECTS OF PNEUMOCONIOSIS AND CHRONIC OBSTRUCTIVE LUNGS DISEASE (COLD) AT ELDERLY AND SENILE AGE**

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Dust lungs diseases are one of most widespread forms of professional pathology, representing today medical and social problem. In spite of the irreversibility of the development of the pneumoconiosis and chronic obstructive lungs disease, there is a number of patients having sufficient everyday activity functional level of the respiratory system to get elderly and senile age.

The purpose of the investigation is to reveal factors providing the length of elderly and senile age patients life on the basis of the data about the prevalence and character of clinical evidence of professional pathology of lungs and analysis of clinical history.

In 2006-2007 in Kursk professional pathology center 276 people with the professional disease of the respiratory system were dispensarized. They included 120 patients (43,5%) of senior age. The group of gerontal patients consisted of 108 patients of elderly age, 12 – of senile age. The primary diagnosis was delivered for them in 1975-1985. They were foundry department workers, iron ore quarry workers, coal mine workers who had been working in dustiness from 10 to 17 years. The clinical aspect of pneumoconiosis primary diagnosis corresponded to Ips/ps on X-ray examination, the irritative bronchitis characterized with the light obstructive disturbances. At present time variants of professional disease of bronchial and lungs system in the group of gerontal patients are COLD- at 62 % of patients, COLD combined with pneumoconiosis - with 19,2 % of siked . It should be mentioned that combination of the two professional diagnosis was verified with 50% respondents of the senile age. Clinical and X-ray picture of pneumoconiosis corresponded to A,3r,3t,em/A,3q,3t, em. Clinical and functional disturbances of the COLD were at the rate of II-III stage. Chronic pulmonary heart with elderly patients was formed in 40,8% of the events, and with 50% of the senile patients.

At the analysis of clinical history of all the patients with the professional lungs pathology it is possible to select some factors, provided longer length of geront's lives, in spite of the evident development of pneumoconiosis and COLD on the background of the lungs involution. These are early disease diagnosis, rational job with the conservation of labor motivation and social activity, unceasing and long medical rehabilitation on the base of profpatology center recommendations, high social patients responsibility in re-

spect of the conservation of their own health (changing lifestyle, giving up of smoking, compulsory observance recommendation of the physician, etc.)

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**EXPRESSION OF HLA-DRA,-DMA AND CIITA GENES IN BURN INJURY PATIENTS WITH SYSTEMIC INFLAMMATION RESPONSE SYNDROME**

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Severe thermal injury causes immune dysfunctions and frequently accompanied by developing of septic conditions, which characterized by decreased monocyte human leukocyte antigen-DR measurements.

Expression of HLA-DR on immune cells is regulated by specific genes. HLA-DM and CIITA genes have a strong influence on molecules of adaptive immune response. It is known, that genes of DM locus provides correct transport of HLA II molecules from endoplasmic reticulum and stable connection alpha-beta heterodimers with specific peptides. CIITA (class II transactivator) controls cellular specificity and expression of MHC II genes.

**The aim** of our research is to estimate expression of HLA-DRA,-DMA and CIITA genes in burn injury patients with SIRS-III (Systemic Inflammation Response Syndrome).

**Patients and methods:** Samples from 8 patients with burn injury and 10 healthy donors were investigated.

Expression of messenger RNA(mRNA) HLA-DRA, -DMA and CIITA genes was measured by quantitative polymerase chain reaction in real-time with reverse transcription (qRT-PCR real-time) using specific primers (Pachot A, 2005). Comparisons between groups were made using a nonparametric Mann-Whitney U test.

**Results:** We observed significant differences ( $p < 0,05$ ) of genes (HLA-DRA, -DMA, CIITA) expression levels from patients and controls. Patients with severe burn injury had significant lower levels of genes expression in comparison with healthy donors. As genes HLA-DMA and CIITA have a strong influence on immune response (they are essential to ensure MHC II protein structure, transport, and peptide loading), their low expression in patients with severe thermal injury with SIRS-III could lead to deficient expression HLA-DR molecules on immune cells and

could be a reason of developing immunosuppression. Decreasing expression levels of these genes can be used as a marker of developing immunodepression.

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**INFLUENCE OF COMBINED EFFECT OF  
ASBESTOS DUST AND RADIATION IN  
DOSAGE OF 0,2 GY ON ENERGY  
METABOLISM IN LONG-TERM PERIOD**

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The study of remote effects of radiation damage influence is one of important lines of radiation medicine as it touches such socially meaningful problems like longevity, reproductive function, genetic effects of radiation on posterity, blastomogenic and non-blastomogenic effects, etc. The living body's bioenergetic disorder is of great importance in the pathology of X-ray sickness. It has been established that during the exposure the electron transport process in the cytochrome system, in chondriosomes of cells is broken and the process of oxidative phosphorylation disunites. The metabolic process regulation failure in cells can be not only the result, but also the most important component of pathogenetic mechanisms of radiation damage. The purpose of the present research has been the experimental study of cytochrome oxidase (CCO) and succinate dehydrogenase (SDG) energy metabolism enzymes' activity in tissues of adrenal bodies and immunocompetent organs and cells in the long-term period after a combined effect of radiation and chrysotile-asbestos dust.

For the realization of the purpose 3 sets of experiments on 40 nondescript white rat males weighing  $180 \pm 20$  g were carried out. I group – intact ( $n = 10$ ), II group – poisoned with chrysotile-asbestos dust ( $n = 15$ ) and III group – poisoned + X-rayed ( $n = 15$ ). For the simulation of experimental asbestosis the chrysotile-asbestos dust was administered to the trial rats' lungs (intratracheally) by the method of Gorodetskaya Ye.N. in the modification of Parashina V.I.. The III group animals were exposed to the radiation of 0,2 Gy one time 90 days before the investigation on the radiotherapy unit Agat-PM<sup>60</sup>Co. The animals were killed by an incomplete decapitation method in two months after the intratracheal administration. The animals were killed according to the International recommendations on carrying out medico-biological research using animals (WHO Chronicle, 1985). For the investigation lymphocytes were segregated from the peripheral blood and homogenates were prepared

from the liver, milt, and thymus, lymph glands of the small intestine and adrenal bodies. The research findings were analyzed by standard methods of variation statistics using Student's test criteria.

As the investigations showed, when affected with chrysotile-asbestos dust, the CCO and SDG enzymes' activity in the adrenal body decreased 1,6 times and 3 times ( $p < 0,001$ ) accordingly. In the III group animals subjected to the combined effect a sharp decrease of the SDG activity up to  $0,014 \pm 0,002$  ( $p < 0,001$ ) was registered, and the CCO activity didn't differ authentically from the control parameter. In its turn, these enzymes' activity decrease was also registered in the peripheral blood lymphocytes: in the II group the SDG activity decreases twice ( $p < 0,001$ ), and the CCO one – 1,4 times ( $p < 0,05$ ). Proceeding from the findings one can resume that in the above-mentioned cells the energy metabolism enzymes' activity decrease in the long-term period takes place, when subjected to the combined dust-radiation factor.

In the thymus at the asbestos dust affect the SDG activity increase 1,8 times ( $p < 0,01$ ) was registered, and the CCO activity decreased up to  $0,117 \pm 0,011$  ( $p < 0,01$ ). In the II group animals the CCO activity was fixed at the level of  $0,259 \pm 0,027$ , and in the control animals this factor was within the limits of  $0,198 \pm 0,012$  ( $p < 0,05$ ). From the side of SDG a tendency to increase compared to the control was depicted in the thymus. As the investigations showed, in the II group animals an authentic SDG activity increase was registered in the liver and lymphatic glands: 17 times and 8,5 times ( $p < 0,001$ ). In this case after asbestic poisoning the SDG activity increase was attended by the CCO activity decrease 1, 8 times ( $p < 0,05$ ) and 1,4 times ( $p < 0,01$ ) accordingly. There were no significant changes in the liver and lymph glands of the small intestine registered in the animals after the dust-radiation factor from the side of the CCO activity, its content almost conformed to the control values. The SDG enzyme's activity increase 4 times in the small intestine lymph glands and 10 times in the liver ( $p < 0,001$ ) was placed on record. The milt CCO activity in the animals after the dust pollution and combined effect didn't change authentically ( $p > 0,05$ ), and from the side of the SDG activity the 1,9 times decrease compared to the control value ( $p < 0,05$ ) in the II group, 2,1 times – in the III group ( $p < 0,05$ ) was registered.

The found out many-valued enzyme activity changes substantiate the supposition about a varied level of metabolic cost associated with specific and non-specific responses of the body at the combined effect of the factors. The high energy metabolism activity degree seems probable to be associated with the concentration of catecholamines, glucocorticoids and the dehydrogenase change rate in the Krebs cycle at the radiation injury of the body as one of the compensatory responses of the body to noci-influences. It was found out in the experiment that in the long-term pe-