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### **DIFFERENTIATED ELECTROCARDIOGRAPHY TO IMPROVE DIAGNOSTICS**

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Cardio-vascular diseases, ischemic heart disease and arterial hypertension in particular, are one of the most important problems in modern medicine. Regression of left ventricular hypertrophy is known to be associated with decrease of cardio-vascular mortality. The study of left ventricular hypertrophy development is a topical issue as well as estimation of methods to detect it.

With the purpose to make a quantitative estimation of left ventricular hypertrophy more objective electrocardiograms of 202 patients with stable angina, arterial hypertension and heart failure were processed on computers followed by their digitizing and construction of the first derivative of differentiated T wave as a model suggested by E.S. Halfen.

Increase of maximal rate correlation (MRC) of differentiated electrocardiogram is proved to be dependent on the signs of heart failure. Effect of diastolic arterial pressure on MRC index is reliable with aggravation of signs of left ventricular hypertrophy for the lateral side of the left ventricle and decrease for membranous area of the left ventricle. Thus, systolic and diastolic arterial pressure cause remodeling of the left ventricle contrary to the view concerning independence of left ventricular hypertrophy on systolic arterial pressure.

The use of differentiated electrocardiogram enables to improve diagnostic value of making electrocardiography in patients with cardio-vascular pathology. Examination of MRC index is rather effective concerning effects of available left ventricular hypertrophy, arterial hypertension, stable angina and heart failure.

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### **CLINICAL FEATURES OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE COMBINED WITH ISCHEMIC HEART DISEASE**

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WHO statistics suggests that chronic obstructive pulmonary disease (COPD) ranks 4<sup>th</sup> place in the world among causes of death, and its prevalence worldwide reaches about 210 million patients. The Ministry of Public Health of Ukraine determines the prevalence of COPD in the country is about 3000 per 100 thousand people and growing every year. Approximately 61.7% of patients with ischemic heart disease (IHD) have comorbidity with COPD. In developed countries, COPD and cardiovascular diseases take the leading place among causes of mortality, and in recent years the clinical importance of comorbid conditions has increased. In its turn, the presence of comorbidity in patients with COPD causes more severe course of the disease and has more unfavorable outcomes. Acute cardiovascular events are a common cause of death in patients with COPD, while in patients with COPD reduced FEV<sub>1</sub> by 10 % increases cardiovascular mortality by 28 %.

The leading factor contributing to the development of cardiovascular disease in patients with COPD is endothelial dysfunction, influencing the rise of the vascular tone, pathological vasoconstriction to stimuli, platelets aggregation, proliferation and migration of smooth muscle cells, expression of adhesive molecules, and adhesion of monocytes. These conditions lead to the development of target organs failure, progression of hypertension, atherosclerosis progression and tendency to thrombosis.

The aim of the work was to assess the severity of respiratory function disorders and the effectiveness of the therapy in patients with combined pathology of COPD and IHD.

Under supervision there were 40 patients with COPD (mean age of 69.4±5.6 years). All patients were hospitalized due to acute exacerbations of COPD (infectious – 69%, non-infectious – 31%). IHD was diagnosed in 70% of patients, COPD without concomitant cardiac disease – in 30% of patients.

During the hospital period of treatment bronchodilation therapy included tiotropium bromide 18 mcg/day by inhalation. Twice before and after treatment assessment of clinical symptoms was carried out: severity of dyspnea (MRC scale), cough (scores), bronchial patency (spirometry), state of the cardiovascular system (ECG). 1<sup>st</sup> group consisted of 28 patients (70%) (COPD, associated with IHD) 2<sup>nd</sup> group – COPD without IHD, 12 patients (30%). Duration of COPD in patients of the 1<sup>st</sup> group lasted 10.3±2.2 years, in 2<sup>nd</sup> group - 8.8±1.6 years, duration of IHD – 8, 4±2.8 years.

Spirometry data revealed the presence of bronchial obstruction in all the patients (FEV<sub>1</sub> in patients of the 1<sup>st</sup> group was 61.3±5.6%, 2<sup>nd</sup> group - 68.3±6.3% predicted; Tiffeneau Index in patients of the 1<sup>st</sup> group was up to 24.9%, 2<sup>nd</sup> group - up to 25.3% less than normal range). In cases of comorbidity bronchial obstruction was prevalent in large caliber bronchi (MEF 25% - 41.2±5.3%), patients with COPD without IHD presented with more pronounced violation of the patency of small bronchi (MEF75% - 52.3±4.8%). The VC value was less than 80% of the proper levels in 50% of patients of the 1<sup>st</sup> group and in 25% of patients of the 2<sup>nd</sup> group. Bronchial obstruction was reversible in 27.5% of patients from the 1<sup>st</sup> group and in 50% of patients from the 2<sup>nd</sup> groups.

The course of in-patient treatment resulted with subjective improvement in the severity of dyspnea. The prominence of bronchial obstruction was significantly decreased (rise of FEV<sub>1</sub> by 10.3% and Tiffeneau index by 11.4% in patients of the 1<sup>st</sup> group; 12.4% and 14.2% relatively in patients of the 2<sup>nd</sup> group) without considerable changes of