**УДК:** 616.12-07: 616.127-005.8-071-08:616.13

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## THE ROLE OF THE PEPTIC ULCER DISEASE IN DEVELOPING OF COMPLICATED COURSE OF POSTINFARCTION CARDIOSCLEROSIS

**Summary.** *This article is devoted to establish the role of the peptic ulcer disease in developing of complicated course of postinfarction cardiosclerosis. 155 patients with chronic postinfarction cardiac aneurism with the average age of 52,71 ± 1,8 years were compared with 290 patients suffered from postinfarction (Q-positive) cardiosclerosis uncomplicated by chronic postinfarction cardiac aneurism. Gender- and age-related descriptions were same in both groups. Reliable differences in frequency of chronic postinfarction cardiac aneurism combined with the peptic ulcer disease are exposed. The differences are depending on age, gender, type on aneurism kinetic, somatotype, which can come forward as nosotropic preface of kinetic chronic postinfarction cardiac aneurism type. Findings are allow to forecast the chronic postinfarction cardiac aneurism in patients with the peptic ulcer disease in order to determine the differentiated approach to the therapy for this particular category of patients.*
**Key words:** *postinfarction cardiosclerosis, complications, the peptic ulcer disease.*

## Introduction

The state of the left ventricle after the myocardial infraction determines in a large measure the survival rate of patients with ischemic heart disease. Starting from the 90th of XX century the study of postinfraction disfunction of myocardium, i.e. postinfraction heart, became one of the priorities in the study of links "reason - consequence". Appearance of the conception of postinfraction heart in this context is associated with postinfraction dilatation of the left ventricle and complex of adaptation and later - with disadaptation processes related to it [Potashev, 2009]. Patients with complicated course of postinfraction cardiosclerosis, the category of which includes first of all the patients with chronic postinfraction heart aneurysm (CPHA) is a difficult population with unfavorable immediate and remote prognosis in a clinical plan.

Traditionally any factors which increase the load on heart and result in increase of endocardiac pressure are considered a precondition for formation of CHPA: for example, hyperpiesis or failure to observe of the regimen of calmness in the early period of myocardial infraction, diabetes mellitus, in case of which as a result of cardial neuropathies very often there is a painless form of myocardial infraction, dyscrasia and rheological properties of blood. In addition, among risk factors of formation of CPHA most researchers distinguish the depth and area of necrosis, repeated myocardial infraction, which increase the area of affection of the cardiac wall, late diagnostics of myocardial infraction and as a result late hospitalization of such patients, male sex and young age of patients. In the persons of young age it is assisted by better contractile function of unaffected myocardium and absence of developed collaterals in the myocardium. According to the statistics the ratio of men and women with CPHA is 7:1. However, if you examine the frequency of formation of aneurysm after Q-infraction within the limits of one sex, then the frequency is approximately identical (in 35 % of men and 31 % of women). Due to this the bigger number of postinfraction aneurisms among men in the population is related to the bigger percentage of sickness rate of the myocardial infraction among men [Euroaspire II Study Group, 2004].

The formation of CPHA is a dynamic and pathogenically complex process depending on many factors : level of occlusion of coronary artery, state of collateral bed, degree of affection of coronary arteries outside the infraction area, independent or medicinal renewal of blood stream in the affected arteries. However, coronaroventriculographic researches of the last decade show a large percentage (up to 10%) of patients with CPHA with unchanged coronary vessels which makes us look for other factors of aneurysm formation, i.e. factors of unatherosclerotic genesis.

Regardless of the fact that atherosclerosis and its consequences are the "main" diagnosis of the XXI century, the complexity of the chronic pathology became a clear sign of contemporaneity. High frequency of CPHA among patients with myocardial infraction arouses certain interest in relation to the frequency of presence of concomitant pathology of internal organs in this contingent of patients, the possibility of influence of this or other concomitant nosology on the course of main disease and etc. In particular, among the unstudied combinations there is a connection of CPHA with pectic ulcer disease which occupies one of the leading places in prevalence both in Ukraine and on the planet Earth [Babak, 2007].

The aim of our work was to establish the influence of peptic ulcer disease on the course of postinfraction cardiosclerosis complicated by CPHA.

## Material and methods

In the period from 1998 till 2012 on the basis of the cardiological department No. 1 of Vinnitsa Town Clinical Hospital No. 1 and therapeutic department of the Central Clinical Hospital of the station of Vinnitsa we examined 155 patients suffering from CPHA in age from 36 up to 85 (middle age 52,71±1,80 years) and 290 patients of the comparison group with postinfraction cardiosclerosis after Q-infraction not complicated by CPHA of the analogical age category. CPHA diagnosis was verified on the basis of the international standard criteria. In 59 patients the diagnosis of CPHA was verified on the basis of the autopsy data. The anthropometric measurements were performed by V.V.Bunak method (1939, 1941) in P.P. Shaparenko's modification (1989); research of the component composition by I. Mateyko's method with further determination of body build. Determination of somatotype was performed by two methodologies. The first is to determine the somatotype by to the shoulder and height index by the method of V.N.Shovkunenko, A.M.Geselevych, (1925) in the modification of B.A. Nikitiuk and A.I.Kozlova (1990). The scheme of somatotyping became the second methodology of determination of somatotype applied by us by the relative content of basic components of body mass y A.V.Shalaurov and A.G.Shchedryna (1991) in the modification of V.G. Nikolayev (2007), which foresees a selection of 9 discrete

somatotypes. The received values of percent content of fat, bone and muscular tissues are converted into points using a normative table of V.G. Nikolayev with the use of method of sigma deviation. The normative indexes of healthy persons of Podillia region of the analogical age-related group were used as standard anthropometric indexes of healthy people [Shaparenko, 1994]. All calculations were made with the use of the computer program MATHCAD 12 Professional with the use of parametric criteria [Mintser, 2003]. The authenticity of differences between groups was determined by Student's t-criteria in cases of many observations of the analyzed parameters and with correct distribution of values. In samples with abnormal data distributions the pair group comparisons were made by Mann-Whitney non-parametric method. Wilcoxon's criterion was used during analysis of dependable samples. The result of statistical study with margin of error (p) less than 0,05 corresponding to the criteria acknowledged in medical and biological researches was considered reliable. Correlation ratios were estimated by the method of linear correlation for parametric data.

## Results. Discussion

The conducted analysis of the frequency of concomitant pathology of internal organs for patients with CPHA and in the comparison group (postinfraction cardiosclerosis uncomplicated by CPHA) shows that the frequency of peptic ulcer disease in the main group made 26,8% and considerably prevailed over the frequency in the comparison group (10%). Besides, the frequency of peptic ulcer disease in the comparison group corresponds to statistical and epidemiological data in relation to its prevalence in the world population [Degtiarev, 2000]. Up to a certain point, it can be explained by a considerable prevalence of illnesses of digestive organs among the population [Grygoriev, Yakovenko, 2004]. Modern scientific literature on this matter is also represented by researches in relation to the high degree of infection with Helicobacter pylory of patients with ischemic heart disease [Perederiy and others, 2006], what results in the high risk of complications of the ischemic heart disease in such patients [Fadeyenko, 2004]; the patients with peptic ulcers which do not suffer from ischemic heart disease also suffer from night episodes of painless ischemia [Chernaya, 2004]. Data of numerous clinical and experimental researches shows high pathogenic meaning of the immune component in the development of atherosclerosis and its clinical symptoms. For determination of pathogenic meaning of the bacterial infection in the development of atherosclerosis and its clinical symptoms. For determination of pathogenic meaning of bacterial infection in the development of atherosclerosis in a number of patients with ischemic heart disease (HOPE research, 3168 participants) using immunochemical coloration we determined the presence of Helicobacter pylory in different areas which is characterized by the development of atherosclerotic affection (bacillary and coronary arteries, thoracal and abdominal departments of aorta) [Khairy et al., 2003]. In persons with joint seropositivity to Helicobacter pylory the level of C-reactive protein was high and the risk of development of the ischemic heart disease (2,6 times) and acute myocardial infraction (2 times) was accordingly higher.

The statement that in pathogeny of the ischemic heart disease a decisive role belongs not to the infection itself, but to the intensity of the corresponding inflammatory reaction was confirmed by the results of the prospective study which lasted for 3 years and included 890 patients with expressed affection of coronary vessels. It was proven that the prevalence of the ischemic heart disease, frequency of development of acute myocardial infraction and fatal outcome were higher for persons with high antibody titer to infection agent and increase of the number of causative agents, which was determined at the same time and got the name of "the general pathogenic load", directly correlated with increase of the risk of development of final cardiac points (death or repeated development of acute coronary syndrome). Clinical studies repeatedly confirmed that the influence of infectious process on atherosclerosis is largely determined by the presence of the joint influence of a number of pathogens, but not by the properties of one of them. The presence of a reliable correlation connection between the general pathogenic load and prevalence of coronary atherosclerosis was confirmed by a number of studies during the last years. Meta-analysis of their results shows that in case of seropositivity to 4-5 infection agents the risk of development of ischemic heart disease became 1,8 times higher, to 6-8 causative agents - 2,5 times higher [Epstein, 2002].

The biggest number of patients with CPHA and concomitant peptic ulcer disease were in the age range of 51-60 years. Among the female patients with CPHA nobody suffered from peptic ulcer. It made us look for other factors, including factors of unatherosclerotic genesis, and namely anthropometric indexes which can contribute to the mechanisms of CPHA development, on the one hand, and in order to explain gender peculiarity of peptic ulcer disease and the influence of this concomitant pathology on the course of CPHA, on the other hand. Taking this into account, the determination of somatotype as an external, most accessible for study and measuring, relatively resistant in ontogenesis and genetically determined subsystem of general constitution gives opportunity to show main peculiarities of dynamics, ontogenesis, metabolism, general reactivity of organism and biotypology of a person [Shchedryn, 2003].

The somatotype in patients with CPHA and peptic ulcer disease represented a bone and fat or "indefinite" type. These patients had certain low percent of muscular component and certain high content of bone component ($p<0,05$). The muscular component in the group of patients suffering from digestive illnesses made 35,8±3,5%, the bone component made 18,9±2,4%, in the group of healthy persons they made 43,6±4,9 % and 15,1±1,2% respectively.

Reports about constitutional susceptibility to the peptic ulcer disease appeared in 20-30th of the past century. It

was considered that asthenics are the most susceptible to ulcer formation, and constitutional peculiarities of structure of the vegetative, nervous or endocrine system or constitutionally conditioned instability of the mucous membrane of stomach to the hydrochloric acid are the reasons of ulcer formation. The results of other studies [Beloborodov et al., 1995] showed that somatotypological authentication of patients gave more grounds to evaluate them from the point of view of difference in clinical symptoms, course and seasonality of intensification, age at the beginning of development of the illness, etc. The progressive course, seasonal intensification and young age of patients are related to adynamic somatotype. At the same time non progressive course, absence of the seasonal intensification and older age at the beginning of illness are related to hypersthenic somatotype.

The results of the anthropometric study of one of numerous nosological combinations in our study, i.e. a group of patients with CPHA and peptic ulcer disease, somewhat changed the idea about somatotype of such patients. In this group there were representatives of all types of body build (by the method of V.N.Shovkunenko and coauthors), with large percent of brachymorphic type (16,6 %). 23,3% of these patients were of dolichomorphic type, 60,1% of patients were of mesomorphic type.

The study [Aruin et al., 1998] showed that men of mesomorphic somatotype are characterized by the prevalence of endogastritis and gastritis with the affection of glands without atrophy which in 45% of the cases results in the peptic ulcer. Brachymorphic somatotype is associated with chronic atrophic gastritis which shows itself in the considerable decline of number of accessory and main cells in the distal and proximal departments of mucous stomach membrane and also expressed depression of gastric acid formation. The studies [Nikolayev et al., 2007] proved that the representatives of all somatotype suffer from peptic duodenal ulcer, and dolichomorphic somatotype does not prevail among patients who suffer from this pathology which is confirmed by the character of display of clinical symptoms and also functional and morphological changes of the mucous membrane of stomach. Complicated course of peptic duodenal ulcer (gastric bleeding, deformation of duodenal cap) was more frequent in persons of dolichomorphic and mesomorphic somatotype. Numerous ulcers, erosive gastroduodenitis, signs of cardia insufficiency were more frequent in patients of brachymorphic somatotype. Study of secretory function of stomach showed a high level of acid production in both phases of gastric secretion in all examined patients, however the highest level in the basal period was determined in persons of dolichomorphic and brachymorphic somatotype, and in the stimulated period only in brachymorphic somatotype.

Concerning the component body build, the study [Beloborodov et al., 1995] showed that patients with peptic duodenal ulcer differed from healthy people in the greater body mass and higher indexes of fat and bone mass. Regardless of the fact that the indexes of muscular mass were identical with those of healthy people, the functional state of the muscular system was certainly reduced according to the data of hand and backbone dynamometry. These conclusions corresponds to the results we received concerning high content of bone and fat component in patients with CPHA and peptic ulcer and reliable reduction of muscular component.

However, the establishment of somatotype as well as the study of correlation between the parameters of the whole organism and separate organs or human body parts acquire a practical meaning.

All patients with combination of CPHA and peptic ulcer disease had prevailing deviations from the standard indexes of healthy persons of Podillia in those anthropometric parameters which characterize transversal and circumference sizes, and namely transversal size of thorax, shoulder width, pelvis width, thigh width, neck circumference, chest breasts, shoulder circumference and wrist circumference ($p<0,05$). Also the difference of patients with CPHA and peptic ulcer disease was considered reliable by comparison to the standard indexes of healthy persons of Podillia in increase of the parameter "head height " and reduction of the parameter "neck length". Bone and muscular components represent the degree of human physical development. The body mass of people with low physical activity increases due to fat component. The patients with CPHA due to functional state belong to the category of patients with deficit of motive activity. Therefore determination of extraordinarily low content of muscular component in composition of body mass in all patients with CPHA and peptic ulcer disease can be viewed as a pathogenic precondition of an aneurysm origin.

The study of retractive ability of myocardium, the integral index of which is the ejection fraction, became the next step in the analysis of clinical course of CPHA in connection with peptic ulcer disease. The biggest number in percentage ratio of patients with peptic ulcer disease (15,5%) ulcer was observed among the patients with CPHA, in which the ejection faction made 31-40%. This group of patients belonged to dyskinetic type of motive activity of aneurysm according to the data of EchoCG.

Postinfraction aneurysms of the front septoapical localization with primary affection of intraventricular septum prevailed among the patients with CPHA and peptic ulcer disease. The received data showed that the highest expression of occlusal process in this category of patients was observed in the front intraventricular artery (82,59%). 7,4% patients had unchanged atherosclerotic coronary arteries which confirms the role of factors of unatherosclerotic genesis that may contribute to the mechanisms of CPHA development.

Thus, the prognostic risk group which we singled out during the study, and namely 51-60-years-old men with peptic ulcer disease and somatotype characterized by reduction of muscular and increase of bone components,

as well as by the dyskinetic type of motive activity of aneurysm, represents in many ways the pathogeny of CPHA and peptic ulcer disease which is often interconnected and intercomplicating.

## Conclusions and prospects of further developments

1. The received results allow to single out a risk group unfavourable in the prognostic plan among the patients with CPHA complicated by the course of postinfraction cardiosclerosis. It consists of 51-60-years-old men with peptic ulcer disease and dyskinetic type of motive activity of aneurysm.

2. Somatotype in patients with CPHA and peptic ulcer disease is represented by bone and fat or "indefinite" type with certain low percent of muscular component and certain high content of bone component which can be viewed as a precondition of aneurysm formation.

3. The patients with CPHA and peptic ulcer disease had certain prevailing deviations from the standard indexes of healthy persons in those anthropometric indexes which characterize transversal and circumference sizes, parameters of "head height ", "neck length " which can be used as prognostic criteria in the clinical course of postinfraction cardiosclerosis complicated by CPHA.

4. There were reliable differences established in the frequency of combination of CPHA and peptic ulcer disease depending on sex, age, type of the motive activity of aneurysm, somatotype, which can be viewed as a pathogenic precondition of formation of CPHA of dyskinetic type.

The received data allows to prognose the course of postinfraction cardiosclerosis complicated by CPHA in patients with the peptic ulcer disease and to determine a differentiated approach to the therapy for this category of patients in the future.

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***Солєйко О.В.***

**ВПЛИВ ПЕПТИЧНОЇ ВИРАЗКИ ШЛУНКУ ТА ДВАНАДЦЯТИПАЛОЇ КИШКИ НА УСКЛАДНЕНИЙ ПЕРЕБІГ ПОСТІНФАРКТНОГО КАРДІОСКЛЕРОЗУ**

**Резюме.** *Стаття присвячена з'ясуванню впливу пептичної виразки шлунку та дванадцятипалої кишки на ускладнений перебіг постінфарктного кардіосклерозу. До обстеження було включено 155 пацієнтів із хронічною постінфарктною аневризмою серця (середній вік 52,71 ± 1,8 років) та 290 пацієнтів групи порівняння з постінфарктний кардіосклерозом після перенесеного Q-інфаркту міокарда, не ускладненого хронічною постінфарктною аневризмою серця, аналогічної вікової категорії. Виявлені достовірні відмінності в частоті поєднання хронічної постінфарктної аневризми серця та пептичної виразки шлунку та дванадцятипалої кишки залежно від статі, віку, типу рухової активності аневризми, соматотипу, як можуть виступати патогенетичною передумовою виникнення хронічної постінфарктної аневризми серця дискінетичного типу. Отримані дозволяють прогнозувати хронічну постінфарктну аневризму серця у пацієнтів із пептичною виразкою шлунку та дванадцятипалої кишки та в подальшому визначати диференційований підхід до терапії таких хворих.*

**Ключові слова:** *постінфарктний кардіосклероз, ускладнення, пептична виразка шлунку та дванадцятипалої кишки.*

*Солейко Е.В.*

**ВЛИЯНИЕ ПЕПТИЧЕСКОЙ ЯЗВЫ ЖЕЛУДКА И ДВЕНАДЦАТИПЕРСТНОЙ КИШКИ НА ОСЛОЖНЕННОЕ ТЕЧЕНИЕ ПОСТИНФАРКТНОГО КАРДИОСКЛЕРОЗА**

**Резюме.** *Статья посвящена изучению влияния пептической язвы желудка и двенадцатиперстной кишки на осложненное течение постинфарктного кардиосклероза. В исследование было включено 155 пациентов с хронической постинфарктной аневризмой сердца (средний возраст 52,71 ± 1,8 лет) и 290 пациентов группы сравнения с постинфарктным кардиосклерозом после перенесенного Q-инфаркта миокарда, не осложненного хронической постинфарктной аневризмой сердца, аналогичной возрастной категории. Выявлены достоверные отличия в частоте сочетания хронической постинфарктной аневризмы сердца и пептической язвы желудка и двенадцатиперстной кишки в зависимости от пола, возраста, типа двигательной активности аневризмы, соматотипа, которые могут быть патогенетической предпосылкой возникновения хронической постинфарктной аневризмой сердца дискинетического типа. Полученные данные позволяют прогнозировать хроническую постинфарктную аневризму сердца у пациентов с пептической язвой желудка и двенадцатиперстной кишки и определять в дальнейшем дифференцированный подход к терапии данной категории больных.*

**Ключевые слова:** *постинфарктный кардиосклероз, осложнения, пептическая язва желудка и двенадцатиперстной кишки.*

*Стаття надійшла до редакції 14.11.2012 р.*