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обследованных) - неудовлетворительную гигиену, а в остальных 30,0% (9 из 30 обследованных) – плохую гигиену ротовой полости.

Что же касается контрольной группы, то показатели были следующими: у 2 пациентов из 10 была хорошая гигиена полости рта (20,0%), у 6 пациентов - удовлетворительный уровень (60,0%), а в остальных 2 пациентов - неудовлетворительный уровень гигиены полости рта (20,0%). Пациентов с плохим уровнем гигиены полости рта в данной исследуемой группе не было. Анализируя показатели индекса Грин-Вермилльона видно, что при углублении патологического процесса наблюдается ухудшение состояния гигиены полости рта.

Итак, можно сделать следующие выводы: уровень гигиены у больных есть достаточно низким, что связано с недостаточными знаниями при выборе индивидуальных средств гигиены и несвоевременной их заменой. У больных с генерализованным пародонтитом II степени и гипертонической болезнью II стадии уровень гигиены полости рта ниже, чем в соматически здоровых: чем хуже гигиеническое состояние, тем более выражены изменения в тканях пародонта. Можно предположить, что повышение артериального давления влияет на состояние ротовой полости и создает высокий риск возникновения и усугубляет течение заболеваний тканей пародонта.

Ключевые слова: генерализованный пародонтит, гипертоническая болезнь, состояние гигиены полости рта.

T.I. Vivcharenko, M.M. Rozhko

Evaluation of Oral Hygiene in Patients with Generalized Periodontitis of II Degree and Stage II Hypertension

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Abstract. Generalized periodontitis is the most common form of periodontal pathology, especially in the second half of life. Nowadays, the problem of periodontal disease is relevant due to its high prevalence, tendency to progression, multifaceted influence on the dentoalveolar system and the whole organism as well as uncertain treatment. Therefore, there is a need to find optimal ways of prevention and treatment of this disease. Close relationships between periodontal pathology and systemic diseases, such as hypertension, which affects every 2nd -3rd adult were determined.

The objective of the research was to determine the status of oral cavity hygiene in patients with generalized periodontitis of II degree and stage II hypertension.

Materials and methods. The study included 30 patients with generalized periodontitis of II degree and stage II hypertension being treated in the Ivano-Frankivsk Regional Clinical Cardiology Dispensary; the average age ranged from 35 to 54 years (the main group). The control group included 10 patients of the same age without generalized periodontitis and somatic pathology.

The status of oral cavity hygiene was determined using the Green Vermillion index. The diagnosis of periodontal disease was made on the basis of the classification proposed by M.F. Danilevskiy. The obtained results were subjected to variation-statistical analysis using statistical package "Stat Soft 6.0"; classical methods of variational statistics were applied; mean values and their reliability were evaluated.

Results. The results of examination showed poor oral hygiene in almost all patients. The analysis of hygienic indices showed the following results: in patients of the main group, the Green Vermillion index was 1.99 ± 0.13 points ($p < 0.001$) which corresponds to unsatisfactory level of oral hygiene. In patients of the control group, this index was 1.10 ± 0.17 points which corresponds to satisfactory level of oral hygiene. According to the index, 9 (30.0%) patients of the main group had satisfactory oral hygiene, 12 (40.0%) patients had poor oral hygiene, and in 9 (30.0%) patients, poor oral hygiene was observed.

In the control group, 2 (20.0%) patients had good oral hygiene, 6 (60.0%) patients had satisfactory oral hygiene and in 2 (20.0%) patients, unsatisfactory oral hygiene was observed. There were no patients with poor oral hygiene. The analysis of the indicators of the Green Vermillion index showed that in case of the pathological process exacerbation the oral hygiene status in patients deteriorated.

Conclusions. The level of oral hygiene in patients of both groups was low due to incorrect selection of personal hygiene products or their untimely replacement. In patients with generalized periodontitis of II degree and stage II hypertension, the level of oral hygiene was lower than in somatically healthy persons: the worse status of oral cavity hygiene – the more pronounced changes in the periodontal tissues. We can suppose that high blood pressure affects the status of the oral cavity, creates a higher risk and exacerbates the periodontal diseases.

Keywords: generalized periodontitis; hypertension; status of oral cavity hygiene.

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L.O. Voloshyna

Main Features of Impaired Fibrinolytic and Proteolytic Activity of Blood Plasma in Patients with Osteoarthritis Depending on Comorbidity

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Abstract. The objective of the research was to study the features of impaired fibrinolytic and proteolytic activity of blood plasma in patients with osteoarthritis (OA), depending on the age levels of comorbidity.

Material and methods. The age features of comorbid processes prevalence in 120 patients with OA were clinically studied, fibrinolytic and proteolytic activity of blood, levels of fibrinogen and C-reactive protein were also studied using biochemical methods.

Results. Comorbidity in patients with OA at the age under 50 was established low. The level of comorbidity increases to at the age of 51-60, after 60 years the phenomenon of comorbidity is more significant by frequency and severity. The diseases of the cardiovascular system dominated, including metabolic syndrome, diseases of the digestive tract and kidneys were less frequent. Cardiovascular risk (CVR) levels were high after the age of 50, gastrointestinal risk was less frequent. Fibrinolysis minor disorders were observed in patients with low comorbidity, namely fibrinolytic and proteolytic activity of blood as a

part of high CVR progressively deteriorated and the level of fibrinogen and C-reactive protein increased in the patients at the age after 50 (especially 60) on the background of high comorbidity levels.

Conclusions. The level of comorbidity and CVR increased in patients with OA with age, increase in disease severity and duration. These phenomena were accompanied by progressive disorders in fibrinolytic and proteolytic activity of the blood, increased levels of fibrinogen and C-reactive protein as one of the components of CVR.

Keywords: osteoarthritis; comorbidity; fibrinolytic, proteolytic activity levels.

Problem statement and analysis of the recent research

Osteoarthritis (OA) is one of the most common age-dependent diseases which affect joints, with an inflammatory component characterized by high level of poly- and comorbidity [6, 9]. Among them the most common diseases include the

diseases of the cardiovascular system and digestive tract causing high levels of cardiovascular and gastrointestinal risks, especially in connection with the use of antirheumatics [9, 11, 12]. Comorbidity and high cardiovascular risk (CVR) are now recognized as the main issues in modern medicine [11, 13, 14]. The leading role of comorbidity requires more thorough research and development of new strategic approaches to diagnosis, treatment and prevention of internal diseases [6, 10]. Academician V.M. Kovalenko considers the definition of pathogenic platforms for associated diseases to be relevant in the problem of comorbidity in order to influence actively their mechanisms and minimum use of drugs as a way to avoid polypharmacy [6]. Most of scientific researches on CVR predictors are based on the study of atherosclerotic vascular endothelial dysfunction phenomena, etc. [11, 14]. However, blood rheology including fibrinolytic and proteolytic activity of plasma plays an important role in the development of CV-events [2]. The causes of these disorders may include numerous comorbid processes inherent in patients with OA. In particular, such disorders were detected in patients with diabetes mellitus, hypothyroidism [1, 7], patients with COPD and asthma [5], patients with OA and gastropathy [4]. However, the problem of comorbidity in patients with OA has been insufficiently studied including changes in proteolytic and fibrinolytic properties of blood depending on the stage of OA and levels of comorbidity. The study of these interrelated processes will help to understand better the pathogenic relation and to improve treatment and prevention programs.

The objective of the research was to study the features of in fibrinolytic and proteolytic activity of the blood in patients with OA according to age levels of comorbidity.

Material and methods

Comprehensive examination of 120 patients with OA of I-III clinical-radiological stages in the exacerbation at the age of 37-76 years was conducted. Women dominated among the patients (97 - 80.8%). The diagnosis of OA was made under the Recommendations of EULAR (2010) and the order of MOH of Ukraine of 12.10.2006 №676 "Clinical Protocol for Provision of Medical Care to Patients with Osteoarthritis". Associated comorbidities were verified according to examinations and the relevant protocols supported by the Ministry of Health of Ukraine and by specialized professionals. Exclusion criteria included patients with secondary OA, patients with primary OA, myocardial infarction or stroke, severe lesions and functional disorders of internal organs, patients with cancer, oncohematological processes, active ulcer of gastroduodenal localization.

OA duration constituted 3-19 (12.1 ± 3.3) years, the duration of comorbidities constituted 2-7 (3.1 ± 0.62) years. All comorbid processes were in a state of unstable or stable remission (diabetes mellitus type II - a state of compensation). CVR level was determined by means of a calculator based on SCORE scale [4]. The level of comorbidity was defined by Charlson M.E et al. [15]. 30 apparently healthy individuals (AHI) of representative age (the control group) were also examined.

The fibrinolytic activity of blood plasma was studied according to azofibrin lysis (reagents from Danish Ltd, Lviv), followed by the further determination of the total fibrinolytic activity (TFA), non-enzymatic fibrinolytic activity (NFA) and enzymatic fibrinolytic activity (EFA) by calculation method ($EFA = TFA - NFA$). The research of blood proteolytic activity was conducted with the help of azaalbumin lysis (breakdown of low molecular weight proteins), azocasein (catalysis of high molecular weight proteins) and azocol (decrease in collagen) (reagents from Danish Ltd, Lviv) [2, 8].

Statistical data processing was conducted using the application software package: Microsoft Excel, Statistica 6.0. The arithmetic mean (M), mean error (m), the probability of differences between comparative groups was determined using Mann-Whitney test, Student's t-test. Correlation analysis was performed according to Pearson correlation coefficient. The differences were considered statistically significant at $p < 0.05$.

Results of the research and their discussion

Determination of the prevalence and a range of comorbidities in terms of age was the basis of the analysis. In this context, OA

patients were divided into three groups: under the age of 50, at the age of 51-60 and over 60 (Table 1).

According to Table 1, comorbidities were detected in 4.75% of the patients at the age of 50. Other patients had 2-3 comorbid processes at the early stages. Usually, one of them was cardiovascular system (CVS) disease (hypertension stage 1), other disease occurred before OA or NSAID-induced gastropathy. OA was detected at I-II clinicoradiological stage.

All patients at the age of 51-60 had 4-6 comorbid diseases. Moreover, they were clinically more significant. The patients repeatedly consulted relevant specialists about their exacerbations and took medicines prescribed by them. A wider range of cardiovascular system diseases was observed as well as frequent cases of diabetes mellitus type 2, obesity, cholecysto-pancreato-hepatopathy and bowel diseases in the digestive system. Genitourinary system disorders, OA mainly stage II and less frequently of III radiologic stages became more frequent.

OA manifested in polyosteoarthritis of stage I and mainly of stage II in patients older than 60. CVS comorbidities were not only more significant, but they had symptoms of chronic heart disease, metabolic syndrome and the range of digestive system diseases became broader. In general, the patients were diagnosed with 7-9 and more comorbidities. Combination of hypertension and ischemic heart disease, and gastropathy, cholecysto-pancreatopathy, steatohepatosis were more frequent leading to high levels of CVR and gastrointestinal risks (GIR), but CVR dominated. In this aspect, studying features of fibrinolytic and proteolytic activity of blood seemed to be important (Table 2).

No significant differences in proteolytic properties of blood were detected in patients with OA at the age under 50 (with low comorbid processes) in comparison with healthy individuals. However, the TFA was significantly reduced ($p < 0.05$) due to EFA. The changes constituted 9.3% and 28.8% respectively. Reliable increase in albumin lysis was also noticed.

Reliable increase in the content of fibrinogen in the blood (35.03%) was noticed in patients with OA at the age of 51-60 (high comorbidity) while decrease in total fibrinolytic activity (by 22.7%), non-enzymatic (by 21.2%) and enzymatic fibrinolytic activity (by 25.43%) was observed. At the same time reliable increase in proteolysis of low-molecular (by azaalbumin lysis) and high-molecular (by azocasein lysis) weight proteins by 58.22% and 59.16% respectively, and also collagen activity of blood (by azocol lysis) by 64.06% was detected.

It was more significant in patients with OA with high comorbidity and at the age over 60 than in patients at the age of 51-60 years in terms of TFA and FFA, and lysis of low molecular weight proteins was reliably worse than in patients under the age of 60. It should be noted that patients with dominant CVS and MS lesions suffered from more severe disorders of fibrinolytic and proteolytic activity than in case of comorbid gastroenterological processes prevalence or those of kidneys. Moderate feedback between TFA and fibrinogen ($r = -0.47$; $p < 0.05$) and direct correlation between the values of albumin lysis and fibrinogen ($r = 0.41$; $p < 0.05$), azocasein lysis of and fibrinogen ($r = 0.39$; $p < 0.05$), azocol and fibrinogen ($r = 0.44$; $p < 0.05$) was detected in the patients at the age of 51-60. These correlation principles increased but within moderate intensity, TFA and fibrinogen $r = -0.64$ ($p < 0.01$); values of fibrinogen lysis and azaalbumin $r = 0.58$ ($p < 0.01$); azocasein and fibrinogen lysis $r = 0.54$ ($p < 0.01$); azocol and fibrinogen lysis $r = 0.61$ ($p < 0.01$) in patients at the age over 60.

Therefore, patients with OA experienced decrease in the fibrinolytic properties of blood and increase in the proteolytic processes along with the age growth of comorbidity. Osteoarthritis and almost all diagnosed comorbid processes are known to be characterized by non-specific effects of oxidative stress. Under these conditions partial breakdown of proteins in the form of their fragmentation or even denaturation in the tissues and blood occurs. These proteins are a substrate for intracellular

Table 1. Age features of poly- and comorbid diseases in patients with osteoarthritis (n, %)

Nosology	Patients under 50 n=15	Patients at the age of 51-60 n=49	Patients over 60 n=56	Total n=120
Without comorbidity	6 (5.0%)	-	-	6 (5.0%)
Arterial hypertension stage 1	4 (26.67%)	14 (28.57%)	12 (21.43%)	30 (25.0%)
Arterial hypertension stage 2	-	6 (12.24%)	25 (44.64%)	31 (25.83%)
IHD, moderate forms	2 (13.33%)	7 (14.28%)	21 (37.5%)	30 (25.0%)
IHD, severe forms (with heart failure, arrhythmia)	-	1 (2.04%)	4 (7.14%)	5 (4.17%)
Obesity stage 1	3 (20%)	15 (30.61%)	15 (26.78%)	33 (27.5%)
Obesity stage 2-3	-	7 (14.28%)	28 (50.0%)	35 (29.17%)
Diabetes mellitus type 2	-	5 (10.20%)	13 (23.21%)	18 (15.0%)
Steatohepatosis	2 (13.33%)	17 (34.69%)	37 (66.07%)	56 (46.67%)
Steatohepatitis	-	2 (4.08%)	6 (10.71%)	8 (6.67%)
Cerebral forms of atherosclerosis with dyscirculatory encephalopathy stages I-II	-	3 (6.12%)	11 (19.64%)	14 (11.67%)
Chronic cholecystitis including calculous cholecystitis	7 (46.67%)	24 (48.97%)	34 (60.71%)	65 (54.17%)
Gastritis, duodenitis	8 (53.33%)	26 (53.06%)	32 (57.14%)	64 (53.33%)
Peptic ulcer	-	3 (6.12%)	6 (10.71%)	9 (7.5%)
Chronic pancreatitis	-	6 (12.24%)	15 (26.78%)	21 (17.5%)
Enterocolonopathy	-	15 (30.61%)	29 (51.78%)	44 (36.67%)
COPD, bronchitis	1 (6.67%)	5 (10.20%)	7 (12.50%)	13 (10.83%)
Chronic renal disease stages I-II	-	6 (12.24%)	6 (10.71%)	12 (10.0%)
Chronic adnexitis	1 (6.67%)	7 (14.28%)	6 (10.71%)	14 (11.74%)
Chronic prostatitis or BPH	-	2 (4.08%)	3 (5.35%)	5 (4.17%)
ENT diseases	2 (13.33%)	4 (8.16%)	5 (8.93%)	11 (9.17%)
Eye diseases (cataract, glaucoma)	1 (6.67%)	3 (6.12%)	5 (8.93%)	9 (7.5%)
Skin diseases (dermatosis, mycoses)	1 (6.67%)	4 (8.16%)	6 (10.71%)	11 (9.17%)

proteases [2]. Increase in the proteolysis enzyme activity in the blood causes activation of the kinin-kallikrein, the renin-angiotensin-aldosterone system and complement, the development of inflammatory and destructive processes in the body.

Fibrinolytic system plays an important role in maintaining

hemostasis providing normal blood flow in the vessels [2]. The weakening process of fibrinolysis and increase in fibrinogen level in the blood were found in the study group of patients, indicating increased ability of blood to possible microthrombosis, impaired microcirculation and tissue metabolism in all structures of the human body. The mechanism of disorders in fibrinolytic and

Table 2. Indicators of fibrinolytic and proteolytic activity of plasma levels of fibrinogen and C-reactive protein in the blood of patients with OA according to age comorbidity (M ± m, p)

Rates, units of measurement	Apparently healthy individuals, n=30	Patients with OA at the age under 50 (low comorbidity rate) n=15	Patients with OA at the age of 51-60 (high comorbidity rate) n=49	Patients with OA at the age over 60 (high comorbidity rate) n=56
fibrinogen, g/l	3.54±0.32	3.78±0.36	4.78±0.33***	5.1±0.42***
Blood TFA, E440/ml/h	1.63±0.05	1.48±0.07*	1.26±0.06***	1.1±0.07***#
Blood NFA, E440/ml/h	1.04±0.04	1.06±0.05	0.82±0.06***	0.73±0.04***
Blood EFA, E440/ml/h	0.59±0.03	0.42±0.04*	0.44±0.03*	0.38±0.02*#
Lysis of low molecular weight proteins mmol/azobalbumin/1 ml/h	2.92±0.12	3.06±0.17	4.62±0.16***	4.96±0.18***#
Lysis of high molecular weight proteins mmol/azocasin/1 ml/h	2.62±0.16	2.94±0.24	4.17±0.28***	4.56±0.22***
Lysis of collagen mmol/azocol/1 ml/h	0.64±0.06	0.98±0.09*	1.05±0.07***	1.39±0.11***
C-reactive protein, mg	2.8±0.18	5.2±0.46*	6.6±0.43***	7.8±0.56***#

Notes: *- the difference in the rates is reliable (p<0.05-0.001) compared to those in apparently healthy individuals; **- the difference in the rates is reliable (p<0.5-0.01) compared to those in patients at the age under 50; #- the difference in the rates is reliable (p<0.05) compared to those in patients at the age of 51-60

proteolytic activity of blood in case of high level of comorbidity is probably very complex, universal and non-specific, especially in case of the cardiovascular system diseases prevalence. However, it is important that they are integral components of high cardiovascular risk in these patients. In a complex regimen of their treatment in the context of CVR prevention they should be kept in mind as the metabolic basis of a number of disorders and the means of metabolic and rheological correction should be used.

Conclusions

1. The comorbidity occurs in patients with osteoarthritis with age, increase in disease severity and duration mainly due to the cardiovascular system disorders, metabolic syndrome, digestive system diseases and increased levels of cardiovascular and gastrointestinal risks.

2. Age-increasing levels of comorbidity in patients with osteoarthritis are accompanied by significant progressive decrease in fibrinolytic properties of blood, increased levels of fibrinogen and increased blood proteolytic activity.

3. Disorders of proteolysis and fibrinolysis in the blood of this group of patients are one of the pathophysiological components of high cardiovascular risk and vascular-metabolic disorders in different tissues and organs. They should be taken into account in the implementation of preventive measures and as an addition to the used rheological means of metabolic action.

Prospects for further research

Different medication with vascular-metabolic-rheological properties is advisable to be tested to determine criteria and duration of its use in the treatment of patients with OA and high comorbidity.

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Peculiarities of Hemostasis System in Pregnant Women with Fetal Loss Syndrome on the Background of Thrombophilia

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Abstract. The results of studying the status of hemostasis system in pregnant women with fetal loss syndrome and thrombophilia are demonstrated.

The objective of the research was to study the peculiarities of hemostasis system in pregnant women with fetal loss syndrome on the background of thrombophilia.

Materials and methods. There were examined 60 pregnant women with fetal loss syndrome and thrombophilia and 30 healthy pregnant women without aggravated anamnesis. All women underwent examination using clinical and laboratory methods.

Results and discussion. The disorders of the vascular-platelet and coagulation elements of hemostatic process being characterized by hypercoagulation, reduction in natural anticoagulants, intensification of thrombosis processes were determined.

Conclusions. In pregnant women with fetal loss syndrome on the background of thrombophilia disorders of the vascular-thrombocytic and coagulation elements of hemostatic process were observed.

Keywords: pregnancy; hemostasis system; fetal loss syndrome; thrombophilia.

Problem statement and analysis of the recent research

The relevant problem of modern obstetrics is the management of pregnancy in women with fetal loss syndrome. To prevent miscarriage or premature delivery, special importance is given to prenatal observation, timely diagnostics and correction of detected disorders.

According to literature data, 40% of perinatal losses are