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Myocardial Infarction in Women of Reproductive age: Risk Factors, Clinical Picture, Prognosis

Aim	To study risk factors (RF) and clinical and anamnestic features of the course and prediction in women with a preserved menstrual cycle and postmenopausal women after ST segment elevation (STEMI) and non-ST elevation myocardial infarction (NSTEMI).
Material and methods	This study included 121 women aged 32 to 55 years diagnosed with MI. The patients were divided into two groups, group 1 (study group) consisting of 60 women with preserved menstrual function (1A, STEMI; n=38; age, 48.3±5.7 years and 1B, NSTEMI; n=22; age. 49.0±4.8 years), and group 2 (control) consisting of 61 postmenopausal women (2A, STEMI; n=43; age, 49.05±4.9 years; 2B, NSTEMI; n=18; age, 49.9±3.5 years). Beside the analysis of RF and clinical features, a prediction was produced for each subgroup at one year after discharge from the hospital based on the following indexes: hospitalization for unstable angina, non-fatal MI, revascularization, cardiovascular (CV) death, and major adverse cardiac events (MACE), which included all these outcomes.
Results	In all subgroups, the most frequent RFs were arterial hypertension (AH), overweight and obesity, family history, smoking, and type 2 diabetes mellitus (DM2). Among patients with STEMI, smoking was significantly more frequently observed in the group with preserved menstrual function. Oral contraceptives were used by 3 and 6 women of reproductive age in the STEMI and NSTEMI subgroups, respectively. Incidence of STEMI as the onset of ischemic heart disease (IHD, 46.7%) was higher than in subgroup 2A (27.9%; p=0.003). Early postinfarction angina was a more frequent complication of MI in subgroup 1A than in 2A (p=0.02).
Conclusion	The incidence rate of RFs, including AH, overweight and obesity, dyslipidemia, family history, and DM2, was similar in both STEMI and NSTEMI groups. Incidence rate of smoking was statistically significantly higher in subgroup 1A. One-year prediction for women with STEMI and NSTEMI was comparable irrespective of the presence or absence of the menstrual function.

Keywords	Myocardial infarction; regular menstrual function; postmenopause
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Circulatory system diseases (CSDs) are the leading cause of death in the Russian adult population (46.3% of the total number of deaths) [1, 2]. A CSD mortality structure analysis performed in 2018 revealed that more than half of cases are due to coronary artery disease (CAD) [1]. Female myocardial infarction (MI) has its specificities and more unfavorable prognosis than in males [3, 4]. Several papers contain data on risk factors (FRs), clinical course, and prognosis for female patients with MI depending on their reproductive function [5–7].

Yihua et al. [5] compared pre- and postmenopausal patients with CAD and showed that premenopausal women were more likely to have cardiovascular disease (CVD)-related family history. Postmenopausal women were more likely to have hypertension, diabetes mellitus (DM), hyperlipidemia, and had a worse prognosis. Another study compared the results of imaging examinations in female patients with a history of MI. Coronary angiography detected coronary stenosis >50% in Q-MI more often in postmenopausal patients than in premenopausal patients. Echocardiogram showed left ventricular (LV) hypertrophy, reduced ejection fraction, and positive treadmill stress test [6]. However, this paper, as well as other available literature, has not evaluated RFs, clinical features, and prognosis depending on a form of MI, with ST-elevation (STEMI) and without ST elevation (NSTEMI). However, in recent years mortality in NSTEMI has been steadily increasing[8], and the long-term prognosis in these patients varies considerably [9, 10].

Objective

To study and compare RFs, clinical anamnestic features of the course and prognosis of STEMI and NSTEMI in female patients with retained menstrual function and after menopause.

Material and Methods

The study was conducted following the Good Clinical Practice (GCP, 2006) and the Declaration of Helsinki of the World Medical Association (Ethical Principles for Medical Research Involving Human Subjects) between 2013 and 2017 and included 121 female patients from the age of 32 to 55. The patients were treated in the cardiac departments in Ryazan. The diagnosis of MI was established by clinical examination, laboratory tests, and imaging studies.

Patients were randomized into two groups: Group 1 (main) included 60 female patients with preserved menstrual function; Group 2 (control) included 61 female patients after menopause. Group 2 was selected using the copy-pair method with respect to Group 1.

Each of the main groups was divided into the STEMI and NSTEMI subgroups: 1A – 38 female patients (48.3±5.7 years old) with STEMI and retained menstrual function; 1B – 22 female patients (49.0±4.8 years old) with NSTEMI and retained menstrual function; 2A – 43 female patients (49.1±4.9 years old) with STEMI after menopause; 2B – 18 female patients (49.9±3.5 years) with NSTEMI after menopause.

In addition to the analysis of RFs and clinical features, all patients in each subgroup were examined 12 months after discharge to assess the following endpoints: hospital admissions for unstable angina; non-fatal MI; revascularization; and CVD and MACE (major adverse cardiac events) mortality, which included the mentioned outcomes.

The results were statistically processed using the Statistica 10 Rus and MS Excel 2007 software. The result analysis produced the main statistical indicators: mean (M); standard error (m); and standard deviation (δ). The samples were compared using the Student t-test in a normal distribution and equality of sample variances. In non-normal distribution, the signs were described using the median and the upper and lower quartiles: Me [Q1; Q3] Two unrelated groups were compared using the Mann–Whitney test, and more than two unrelated groups were compared using the Kruskal-Wallis test. Small samples were compared using the Yates' χ^2 test or Fisher's exact test (the absolute rates in the contingency table was less than 5). Pearson's χ^2 test was used to compare standardized indicators [22]. The differences between the compared indicators were statistically significant at $p<0.05$.

Results

Analysis of RFs and comorbidities (Table 1) revealed that the most common RFs were hypertension, excessive weight and obesity, burdened family history, smoking, and type 2 DM . At the same time, attention was drawn to the similar rates of RFs in patients with STEMI and NSTEMI, both with preserved menstrual function and after menopause. However, from a statistically significant point of view, more patients with STEMI and retained menstrual function were smokers.

More than 50% of patients in both groups were admitted to hospital within 12 hours after the onset of pain syndrome, and no difference was found between the STEMI and NSTEMI subgroups. Moreover, it should be emphasized that exertional angina was significantly less common (26.3%) in patients with STEMI of subgroup 1A, when compared to patients of subgroup 2A (60.5%; p=0.003) and to patients with NSTEMI (54.6 and 50.0% in subgroups 1B and 2B, respectively). A higher incidence of STEMI as CAD

Table 1. Risk factors and comorbidities in female patients with myocardial infarction

Parameter	Group 1 (n=60)		Group 2 (n=61)	
	1A (n=38)	1B (n=22)	2A (n=43)	2B (n=18)
Hypertension	30 (79.0%)	21 (95.5%)	35 (81.4%)	16 (88.9%)
Normal body weight	8 (21.0%)	5 (22.7%)	6 (13.9%)	4 (22.2%)
Excess weight	12 (31.6%)	5 (22.7%)	18 (41.9%)	7 (38.9%)
Obesity				
Grade 1	10 (26.3%)	5 (22.7%)	11 (25.6%)	5 (27.8%)
Grade 2	6 (15.8%)	5 (22.7%)	5 (11.6%)	2 (11.1%)
Grade 3	2 (5.3%)	2 (9.1%)	3 (7.0%)	0 (0.0%)
Total of patients with obesity	18 (47.4%)	12 (54.6%)	19 (44.2%)	7 (38.9%)
Burdened family history	22 (57.9%)	13 (59.1%)	18 (41.9%)	5 (27.8%)
Smoking	19 (50.0%)	9 (40.9%)	11 (25.6%)*	6 (33.3%)
Type 2 diabetes mellitus	9 (23.7%)	5 (22.7%)	12 (27.9%)	3 (16.7%)
Diffuse nodular goiter	2 (5.3%)	4 (18.2%)	12 (27.9%)**	3 (16.7%)
Autoimmune thyroiditis	1 (2.6%)	1 (4.6%)	3 (7.0%)	3 (16.7%)

Differences between 1A and 2A are statistically significant: *, p=0.04; **, p=0.008.

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Table 2. Prevalence of complications of myocardial infarction in the study groups

Parameter	Group 1 (n=60)		Group 2 (n=61)	
	1A (n=38)	1B (n=22)	2A (n=43)	2B (n=18)
Recurrent MI	2 (5.3%)	0	0	0
EPIA	21 (55.3%)*	6 (27.3%)	13 (30.2%)*	3 (16.7%)
SVPBs and SVPBs	9 (23.7%)	4 (18.2%)	7 (16.3%)	4 (22.2%)
AF-AFL	2 (5.3%)	0	2 (4.7%)	0
VF	2 (5.3%)	0	0	1 (5.6%)
AHF	6 (15.8%)	1 (4.6%)	7 (16.3%)	1 (5.6%)
Conduction disorders	5 (13.2%)	2 (9.1%)	5 (11.6%)	0
LV aneurysm	4 (10.5%)	0	3 (7.0%)	0
Death	2 (5.3%)	0	1 (2.3%)	1 (5.6%)

*, p=0.02 – statistical significance of the differences between groups 1A and 2A; EPIA, early post-infarction angina; SVPBs, supraventricular premature beats; AF-AFL, atrial fibrillation and atrial flutter paroxysms; VPBs, ventricular premature beats; VF, ventricular fibrillation; AHF, acute heart failure (Killip functional class II and IV); conduction disorders, first-time complete right bundle branch block; degree II–III transient Av-block; transient sinoatrial block.

debut (73.7% of cases) in subgroup 1A compared to subgroup 2A (39.5%) should be noted.

Early post-infarction angina was the most common complication in both groups (Table 2). Comparative analysis of angina incidence found that it was more common in patients with STEMI. It was statistically more common in female patients with preserved menstrual function than in patients after menopause (p=0.02).

Analysis of biochemical blood findings revealed no differences between the subgroups of female patients with retained menstrual function and after menopause (Table 3). However, all subgroups had changes in blood lipid composition (increased mean total cholesterol, triglycerides, and low-density lipoprotein cholesterol) and mean glucose levels.

Echocardiogram revealed left atrial and interventricular septal enlargement in both groups (Table 4).

Standard coronary angiogram was performed in 18 (47.4%) and 9 (40.9%) patients of Group 1 and 19 (44.2%) and 10 (55.5%) patients of Group 2. Hemodynamically significant atherosclerotic lesion (> 70% stenosis) of one vessel was detected in 66.7 and 55.6%

Table 3. Blood biochemistry

Parameter	Group 1 (n=59)		Group 2 (n=61)	
	1A (n=37)	1B (n=22)	2A (n=43)	2B (n=18)
TC, mmol/L	5.3 [4.5; 6.1]	5.6 [5.0; 6.0]	5.4 [4.8; 6.1]	5.6 [4.4; 6.2]
TG, mmol/L	1.8 [1.3; 2.4]	2.1 [1.3; 2.5]	1.7 [1.3; 2.1]	1.6 [1.3; 2.7]
LDL-C, mmol/L	3.5 [2.6; 4.3]	3.5 [2.9; 4.2]	3.1 [2.3; 4.2]	3.6 [2.8; 4.3]
HDL-C, mmol/L	1.1 [1.0; 1.2]	1.0 [0.9; 1.2]	1.1 [0.9; 1.3]	1.3 [0.8; 1.4]
Creatinine, μmol/L	83.0 [69.0; 94.0]	83.0 [75.0; 87.0]	78.0 [66.5; 86.0]	75.0 [64.0; 81.0]
Urea, mmol/L	5.1 [4.2; 5.9]	5.2 [4.5; 6.3]	5.5 [4.2; 6.5]	4.7 [4.4; 6.3]
Glucose, mmol/L	6.1 [5.5; 7.2]	6.7 [5.5; 9.0]	6.5 [5.5; 9.3]	5.6 [5.2; 6.6]
PR, %	90.0 [80.0; 90.0]	100.0 [90.0; 100.0]	90.0 [80.0; 100.0]	90.0 [80.0; 100.0]
Fibrinogen, g/L	3.7 [2.7; 5.0]	3.1 [2.4; 3.4]	3.1 [2.7; 3.8]	3.1 [3.0; 4.0]
aPPT, sec	32.1 [28.7; 37.5]	27.8 [24.6; 30.9]	29.7 [27.2; 35.1]	32.0 [24.8; 41.0]

TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; PR, prothrombin ratio; aPPT, activated partial thromboplastin time.

Table 4. Echocardiogram findings

Parameter	Group 1 (n=56)		Group 2 (n=60)	
	1A (n=36)	1Б (n=20)	2A (n=43)	2Б (n=17)
Ao, cm	3.1 [2.9; 3.2]	3.3 [2.9; 3.4]	3.2 [3.0; 3.4]	3.2 [3.0; 3.4]
LA, cm	4.0 [3.7; 4.3]	4.0 [3.7; 4.1]	3.9 [3.6; 4.2]	4.0 [3.5; 4.2]
LVEDD, cm	5.4 [5.0; 5.7]	5.1 [5.0; 5.3]	5.2 [5.0; 5.4]	5.1 [5.0; 5.4]
LVESD, cm	3.8 [3.5; 4.2]	3.5 [3.2; 3.5]	3.7 [3.5; 4.0]	3.4 [3.1; 3.5]
LVEF, %	52.5 [48.5; 57.3]	61.5 [58.8; 65.0]	54.0 [50.5; 60.0]	64.0 [63.0; 65.0]
IVC, cm	1.0 [0.9; 1.2]	1.2 [1.0; 1.3]	1.1 [1.0; 1.2]	1.1 [1.0; 1.2]
LVPW, cm	1.0 [0.9; 1.2]	1.2 [1.0; 1.2]	1.0 [1.0; 1.2]	1.0 [0.9; 1.1]
RV, cm	2.2 [2.0; 2.3]	2.2 [2.0; 2.3]	2.2 [2.0; 2.6]	2.2 [2.2; 2.4]

Ao, aorta; LA, left atrium; LVEDD, left ventricular end-diastolic dimension; LVESD, left ventricular end-systolic dimension; LVEF, left ventricular ejection fraction; IVS, interventricular septum; LVPW, left ventricular posterior wall; RV, right ventricle.

of female patients in subgroups with retained menstrual function, respectively, compared with postmenopausal female patients who had less significant lesions (36.8 and 30.0%, respectively). Primary percutaneous coronary intervention (PCI) and endoprosthetics were performed in 76.5 and 75.0% of patients with retained menstrual function and 61.1 and 100.0% of postmenopausal patients.

Pharmacological reperfusion in the STEMI subgroups was used equally often in 42.1% of female patients in Group 1 and 37.2% of patients in Group 2. The reperfusion efficacy was approximately the same in both groups, 75.0 and 68.8%, respectively.

Twelve months later, after taking into account the mortality rate (4 patients died: 2 patients in Group 1 with STEMI and 1 patient in each of the Group 2 subgroups with STEMI and NSTEMI), life status was established in 107 (91.5%) patients, and 10 (8.5%) patients were lost for follow-up. The assessment of such MACEs as hospital admissions for unstable angina, nonfatal MI, revascularization, and CVD-related death revealed no statistically significant differences between the patient groups with retained menstrual function and after menopause. MACEs were reported in 34.6% of patients with a history of STEMI, 15.4% of patients after NSTEMI in Group 1 and 34.5 and 14.5% of patients in Group 2, respectively. There were also no statistically significant differences between patients with retained menstrual function (7.7%) and after menopause (1.8%; p=0.2) in the fatal outcomes of CVDs. There was no difference in the rate of hospitalizations for unstable angina which occurred in 25.0% of female patients in subgroup 1A, 5,8% in subgroup 1B, and 23.6 and 9.1% of patients in subgroups 2A and 2B, respectively.

Discussion

Analysis of RFs in female patients with retained menstrual function and after menopause with a history of MI, found that traditional MI RFs (hypertension, obesity, dyslipidemia, burdened family history, DM) were factors which most frequently and equally contributed to the development of the disease in our study. This is comparable to published data [11, 12]. RF such as smoking was statistically significantly more common in the subgroup of patients with preserved menstrual function and STEMI. It should be noted that smoking has the greatest adverse impact on younger female patients. The relative risk of MI increases 7.1-fold in smoking females under the age of 44 and 2.6-fold in those up to 52 years of age [13]. Smoking even one cigarette a day by a woman with retained menstrual function adversely affects the endothelial function of vessels and accelerates the cardiovascular remodeling processes [14]. Taking into account the increased risk of CVDs during the use of oral contraceptives depending on its duration [15], drug generation [16], and other RFs such as smoking, hypertension, hyperlipidemia, DM, and burdened family history [17, 18], the above-mentioned factors contributed to the increased risk of MI in female patients with retained menstrual function in our study. Interestingly, the prevalence of thyroid diseases in female patients after menopause was more than 2-fold. This can be explained by major involution changes in this group and corresponds to the published data on the age-related increase in thyropathies [19, 20]. However, it may be premature to consider these changes an additional trigger in this group of patients, given the very low rate of changes in thyroid hormone levels (hyper- or hypofunction was observed in only 5.0% of patients in Group 1 and 8.2% in Group 2).

Analysis of history and current disease revealed that in both groups the first manifestation of CAD was STEMI. This was then often complicated by early post-infarction angina, especially in patients with retained menstrual function. Our findings correspond to the published data that CAD usually debuts as MI in young patients [11], and is more often complicated with early post-infarction angina [21]. This can be explained by the lack of preconditioning effect and less developed collateral coronary circulation in patients of this category.

Coronary angiogram showed that more than 50% of patients in the subgroups with MI and retained menstrual function had an atherosclerotic lesion of one vessel. Post-menopausal patients with STEMI were more likely to have multi-vessel disease. This is comparable to the results of two other studies in female patients of working age [21, 22]. At the same time, the results obtained by Gibradze et al. [6] that post-menopausal patients had more severe coronary atherosclerotic lesions than premenopausal patients (72 and 40%, respectively; p=0.003) seem more consistent. However, our data may indicate that the predominance of established common atherosclerosis RFs and the use of oral contraceptives and smoking with preserved estrogen protection contribute to coronary atherosclerosis.

Certain literature sources point to a more unfavorable prognosis in female patients with STEMI, especially of a younger age [3, 4]. However, in our study there were no statistically significant differences in MACE and cardiovascular mortality. Nevertheless, we established adverse prognosis in both STEMI and NSTEMI patients of reproductive age. For this reason we should be able

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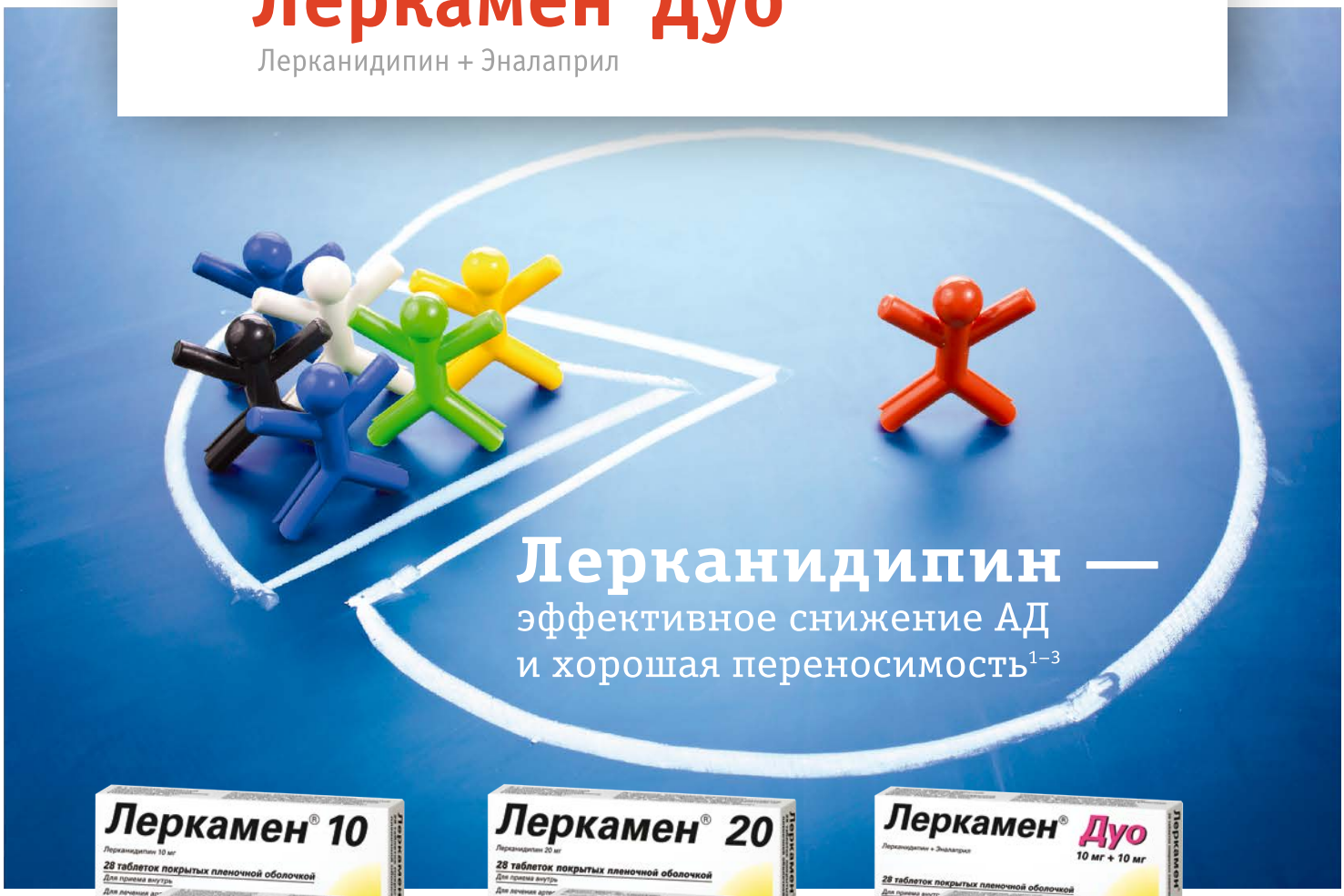

Сокращенная инструкция по медицинскому применению препарата Леркамен® 10 и Леркамен® 20. Регистрационный номер: ЛСР-007057/09-301219 от 30.12.2019 г., ЛСР-006976/08-150120 от 15.01.2020 г. **МНН:** лерканидипин. **Лекарственная форма:** таблетки, покрытые пленочной оболочкой. **Показания к применению:** артериальная гипертензия **I-II** степени у взрослых пациентов. **Противопоказания:** повышенная чувствительность к лерканидипину, другим производным дигидропиридинового ряда или любому компоненту препарата; хроническая сердечная недостаточность в стадии декомпенсации; нестабильная стенокардия; обструкция выносящего тракта левого желудочка; острый инфаркт миокарда и в течение одного месяца после перенесенного инфаркта миокарда; тяжелая печеночная недостаточность; тяжелая почечная недостаточность (СКФ < 30 мл/мин/1.73 м^2 площади поверхности тела); непереносимость лактозы, дефицит лактазы, синдром глюкозо-галактозной мальабсорбции; беременность и период грудного вскармливания; применение у женщин детородного возраста, не пользующихся надежными методами контрацепции; возраст до 18 лет (эффективность и безопасность не изучены); одновременное применение препарата Леркамен® с мощными ингибиторами CYP3A4 (кетоконазол, итраконазол, эритромицин, ритонавир, тролеандомицин); с циклоспорином; одновременное применение с грейпфрутом и грейпфрутовым соком. **С осторожностью:** синдром слабости синусового узла (без электрокардиостимулятора); дисфункция левого желудочка сердца; ишемическая болезнь сердца; нарушения функции печени легкой и средней степени тяжести; нарушения функции почек легкой и средней степени тяжести; перитонеальный диализ; одновременное применение с индукторами/субстратами изофермента CYP3A4, мидазоламом, метопрололом, дигоксином; хроническая сердечная недостаточность; пожилой возраст. **Способ применения и дозы:** внутрь по 10 мг 1 раз в сутки не менее чем за 15 минут до еды, предпочтительно утром, не разжевывая, запивая достаточным количеством воды. В зависимости от индивидуальной переносимости препарата пациентом, доза может быть увеличена до 20 мг. Терапевтическая доза подбирается постепенно, так как максимальное антигипертензивное действие развивается приблизительно через две недели после начала приема препарата. **Побочное действие:** наиболее частыми нежелательными реакциями во время проведения контролируемых клинических исследований были следующие: головная боль, головокружение, периферические отеки, тахикардия, сердцебиение и «приливы крови» к лицу, которые встречались менее чем у 1% пациентов. Приблизительно у 1,8% пациентов, получавших лечение, наблюдались нежелательные реакции. Подробная информация содержится в инструкции по медицинскому применению лекарственного препарата Леркамен® 10 ЛСР-007057/09-301219 от 30.12.2019 г. и Леркамен® 20 ЛСР-006976/08-150120 от 15.01.2020 г.

Краткая инструкция по медицинскому применению лекарственного препарата Леркамен® Дуо: Регистрационный номер: ЛП №001184 **МНН:** Лерканидипин + Эналаприл. **Лекарственная форма:** таблетки, покрытые пленочной оболочкой. **Показания к применению:** Дозировка 10 мг+10 мг: эссенциальная гипертензия (при неэффективности монотерапии лерканидипином 10 мг). Дозировка 10 мг+20 мг: эссенциальная гипертензия (при неэффективности монотерапии эналаприлом 20 мг). **Противопоказания:** повышенная чувствительность к лерканидипину, эналаприлу или к любому другому ингибитору АПФ и другим БМКК, производным дигидропиридина, а также к любому другому компоненту препарата; обструкция выносящего тракта левого желудочка, включая стеноз аортального клапана; хроническая сердечная недостаточность в стадии декомпенсации; наследственный и/или идиопатический ангионевротический отек (в том числе – в анамнезе); у пациентов с сахарным диабетом или с нарушением функции почек (при скорости клубочковой фильтрации < 60 мл/мин/1,73 м^2) на фоне применения препаратов, содержащих алискирен; нестабильная стенокардия; в течение первого месяца после перенесенного инфаркта миокарда; тяжелая почечная недостаточность (клиренс креатинина менее 30 мл/мин), включая пациентов, находящихся на гемодиализе; тяжелая печеночная недостаточность; одновременное применение с сильными ингибиторами изофермента CYP3A4 (кетоконазол, итраконазол, эритромицин, ритонавир, тролеандомицин), а также циклоспорином и грейпфрутовым соком; дефицит лактазы, непереносимость лактозы и синдром глюкозо-галактозной мальабсорбции; детский возраст до 18 лет; беременность, грудное вскармливание; женщины, способные к деторождению и не пользующиеся надежными средствами контрацепции. **С осторожностью:** синдром слабости синусового узла (без одновременного применения искусственного водителя ритма сердца); левожелудочковая недостаточность, ишемическая болезнь сердца; почечная недостаточность (клиренс креатинина более 30 мл/мин); реноваскулярная гипертензия; цереброваскулярные заболевания; состояние после недавно выполненной трансплантации почки (опыт применения отсутствует); печеночная недостаточность; угнетение костномозгового кроветворения (нейтропения/агранулоцитоз); тяжелые аутоиммунные заболевания соединительной ткани (в т.ч. склеродермия, системная красная волчанка); одновременное применение с иммунодепрессантами, аллопуринолом, прокаинамидом; одновременное применение с индукторами CYP3A4 (например, фенитоин, карбамазепин, рифампицин); сахарный диабет; хирургические вмешательства и общая анестезия; пациенты, соблюдающие диету с ограничением потребления поваренной соли; гиперкалиемия; одновременное применение с препаратами лития; одновременное применение с антагонистами рецепторов ангиотензина **II** или препаратами, содержащими алискирен; анафилактоидные реакции при десенсибилизации к ядам перепончатокрылых; анафилактоидные реакции во время афереза липопротеинов низкой плотности; пациенты негроидной расы; состояния, сопровождающиеся снижением объема циркулирующей крови, в т.ч. диарея, рвота, а также на фоне применения диуретиков; первичный гиперальдостеронизм. **Способ применения и дозы:** Внутрь, принимать препарат следует по одной таблетке один раз в сутки. Принимать желательно утром, не ранее чем за 15 минут до еды, не разжевывая, запивая достаточным количеством воды. Нельзя запивать грейпфрутовым соком. Препарат Леркамен® Дуо не предназначен для стартового лечения гипертензии. Терапию препаратом следует начинать после предварительного титрования доз монопрепаратов лерканидипина и эналаприла. Дозировка 10 мг+10 мг: при неэффективности монотерапии лерканидипином 10 мг, следует начать прием препарата Леркамен® Дуо в дозе 10 мг+10 мг. Дозировка 10 мг+20 мг: при неэффективности монотерапии эналаприлом 20 мг, следует начать прием препарата Леркамен® Дуо в дозе 10 мг + 20 мг. Дозу препарата выбирает врач. **Побочное действие:** Ниже приведены наиболее часто встречающиеся побочные эффекты при применении препарата Леркамен Дуо, а также эналаприла или лерканидипина в отдельности. Нарушения со стороны нервной системы: головокружение, головная боль, депрессия; Нарушения со стороны сердечно-сосудистой системы: головокружение, артериальная гипотензия (включая ортостатическую гипотензию), синкопальное состояние, боль в грудной клетке, нарушения ритма, стенокардия, тахикардия; Нарушения со стороны дыхательной системы, органов грудной клетки и средостения: кашель, одышка; Нарушения со стороны желудочно-кишечного тракта: тошнота, диарея, боль в животе, нарушение вкуса; Нарушения со стороны кожи и подкожной клетчатки: сыпь, гиперчувствительность / ангионевротический отёк; Нарушения общего характера: астения, усталость; Результаты обследований: гиперкалиемия, повышение концентрации креатинина в сыворотке. Подробная информация содержится в Инструкции по медицинскому применению препарата Леркамен® Дуо: ЛП №001184 от 11.11.2011 с внесенными изменениями от 28.09.17. Препарат отпускается по рецепту.

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to address this problem at all stages of the management of such patients, from emergency call to post-infarction outpatient care.

Conclusion

1. Female patients with ST-elevation/non-ST-elevation myocardial infarction, both with regular menstrual cycle and after menopause, present the following most common risk factors with an equal frequency: hypertension, excessive weight and obesity, dyslipidemia, diabetes mellitus, and burdened family history. Patients with myocardial infarction and ST-segment elevation who have regular menstrual cycles were significantly more likely to smoke than postmenopausal patients (50.0 vs. 25.6%, p=0.04).
2. No statistically significant differences were found between the subgroups of patients with ST-elevation/non-ST-elevation myocardial infarction, depending on the menstrual cycle, in blood biochemistry, and sonographic structural and functional characteristics of the heart.
3. ST-segment elevation myocardial infarction as the first manifestation of coronary artery disease (p=0.003) and post-infarction angina (p=0.02) was more common in patients with retained reproductive function than in the group of post-menopausal patients.
4. The incidence of adverse cardiac outcomes, including MACE, was not different in female patients with retained menstrual function and after menopause, with ST elevation and non-ST elevation myocardial infarction, during the 12-month follow-up.

No conflict of interest is reported.

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