UDC 616.1:616.06-08-039.35-089

MULTIMORBID AND POLYPHARMACY IN CLINICAL CARDIOLOGY IN TERMS OF THE CLINICAL CASE

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In this article is raised the topic of multimorbidity and polypharmacy on the example of a clinical case with the main diagnosis of Ischemic Heart Disease: Systemic atherosclerosis with predominance of coronary arteries sclerosis. Stable angina class III. Hypertensive heart disease III stage 3rd degree. Aortocoronary bypass. Sick sinus syndrome, tachy-brady form. Constant form of atrial fibrillation-flutter. AV node catheter ablation with pacemaker implantation. Infarction pneumonia of the lingual segments of the upper lobe of the right lung. CHF II-B stage with preserved systolic function of the left ventricle (EF LV 53 %). Very high additional cardiovascular risk. Concomitant conditions: Chronic obstructive pulmonary disease: Chronic obstructive bronchitis 2 degrees severity. Chronic pulmonary insufficiency III degree. Obesity III degree. Diabetes mellitus type 2, medium severity, decompensated. Chronic renal failure, III stage. The ongoing therapy is discussed and recommendations are given to minimize it in order to avoid polypharmacy.

KEY WORDS: multimorbidity, cardiovascular diseases, drug therapy, polypharmacy

МУЛЬТИМОРБІДНІСТЬ І ПОЛІПРАГМАЗІЯ В КЛІНІЧНІЙ КАРДІОЛОГІЇ НА ПРИКЛАДІ КЛІНІЧНОГО ВИПАДКУ

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У статті розглянута тема мультиморбідності і поліпрагмазії на прикладі клінічного випадку з основним діагнозом Ішемічна хвороба серця: Системний атеросклероз з переважанням склерозу коронарних артерій. Стабільна стенокардія напруги III функціональний клас. Гіпертонічна хвороба III стадії 3 ступеня. Аортокоронарне шунтування. Синдром слабкості синусового вузла, тахі-браді форма. Постійна форма фібриляції-тріпотіння передсердь. Катетерная абляція АВ-з'єднання з імплантацією електрокардіостимулятора. Інфаркт-пневмонія язичкових сегментів верхньої частки правої легені. Хронічна серцева недостатність II-Б стадії зі збереженою систолічною функцією лівого шлуночка (ФВ ЛШ 53%). Дуже високий додатковий кардіоваскулярний ризик. Супутні стани: Хронічне обструктивне захворювання легень: Хронічний обструктивний бронхіт 2 ступеня тяжкості. Хронічна легенева недостатність III ст. Ожиріння III ст. Цукровий діабет 2 тип, середньої тяжкості, декомпенсований. Хронічна ниркова недостатність, III ст. Обговорюється що проводилася терапія і даються рекомендації щодо її мінімізації з метою уникнення поліпрагмазії.

КЛЮЧОВІ СЛОВА: мультиморбідність, серцево-судинні захворювання, лікарська терапія, поліпрагмазія

МУЛЬТИМОРБИДНОСТЬ И ПОЛИПРАГМАЗИЯ В КЛИНИЧЕСКОЙ КАРДИОЛОГИИ НА ПРИМЕРЕ КЛИНИЧЕСКОГО СЛУЧАЯ

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В статье поднята тема мультиморбидности и полипрагмазии на примере клинического случая с основным диагнозом ИБС: Системный атеросклероз с преобладанием склероза коронарных артерий. Стабильная стенокардия напряжения III функциональный класс. Гипертоническая болезнь III стадии 3 степени. Аорто-коронарное шунтирование. Синдром слабости синусового узла, тахи-бради форма. Постоянная форма фибрилляции-трепетания предсердий. Катетерная абляция АВ-соединения с имплантацией ЭКС. Инфаркт-пневмония язычковых сегментов верхней доли правого легкого. Хроническая сердечная недостаточность II-Б стадии с сохраненной систолической функцией левого желудочка (ФВ ЛЖ 53 %). Очень высокий дополнительный кардиоваскулярный риск. Сопутствующие состояния: Хроническое обструктивное заболевание легких: Хронический обструктивный бронхит 2 степени тяжести. Хроническая легочная недостаточность III ст. Ожирение III ст. Сахарный диабет 2 тип, средней тяжести, декомпенсированный. Хроническая почечная недостаточность, III ст. Обсуждается проводившаяся терапия и даются рекомендации по ее минимизации для избегания полипрагмазии.

КЛЮЧЕВЫЕ СЛОВА: мультиморбидность, сердечно-сосудистые заболевания, лекарственная терапия, полипрагмазия

INTRODUCTION

The topic of multimorbidity and progression of the cardiovascular pathology has been relevant and is being fully investigated [1–2]. The most frequent combinations of multimorbidity in clinical practice are Ischemic Heart Disease (IHD), Arterial Hypertension (AH), atherosclerotic dyscirculatory encephalopathy (ADE), atherosclerosis of mesenteric vessels, intestinal ischemia and other conditions [3–6].

Multimorbidity results in polypharmacy [7] that is when the number of medications simultaneously prescribed to the patient is significantly higher than the reasonable limits and when the probability and severity of their cumulative side effects are increasing catastrophically. In this regard, the physician is faced with the task of controlling prescriptions, the solution of which is not simple.

The clinical case demonstrates the problem and its possible solution.

CLINICAL CASE

57 year old man, resident of the city, transport retiree, disabled of the 2nd group.

COMPLAINTS

Patient E., born in 1959, was hospitalized with complaints on chest pains of a pressing character during moderate physical exertion, and at rest (go away at rest). These attacks are accompanied by dyspnea, palpitations. Feeling of suffocation at night. Shortness of breath decreases in the sitting position. Frequent remote dry wheezing. Transient increases in blood pressure to 230/130 mm Hg are accompanied by headache, dizziness. Dyspnea accretion while minimal physical exertion. Weakness. Fast fatigability.

ANAMNESIS

Hypertensive disease since 1984 with a maximum level of blood pressure of 230/130 mm Hg. The usual blood pressure of 140/90 mm Hg. In 2004, radiofrequency ablation and pacemaker implantation because of atrial fibrillation were performed. Subsequently, ablation was repeated twice. 22.10.2010, pacemaker reimplantation. 22.10.2010, the pacemaker was replaced to Baikal in the VVI mode due to depletion. In August 2011 patient suffered pulmonary embolism. 15.04.2013, coronary angiography was performed, multivessel lesion was revealed, and Coronary artery bypass grafting (CABG) was recommended. 23.10.2013, CABG – 2 shunts were performed. During the last 5 days, blood pressure began to increase more often, pain attacks increased and dyspnea became worse at rest. 11.09.2016 on the background of significance increases of blood pressure to 220/110 mm Hg the patient experienced severe shortness of breath, chest pain. Ambulance was called out, first aid was rendered, and patient was hospitalized in Kharkiv railway clinical hospital № 1 of the branch «Center of healthcare» of public JSC «Ukrainian Railway».

MEDICATIONS TAKEN:

Warfarin, Acetylsalicylic acid, Valsartan, Nifedipine, Rosuvastatin, Torasemide, Spironolactone, Dapagliflozin, Metformin, Nitroglycerin situationally in the presence of chest pains, Captopril / Nifedipine in case of

significance increase in blood pressure. There is indisputable presence of polipharmacy.

LABORATORY TESTS

Complete Blood Count: WBC count $7,5 \cdot 10^9$/L, band neutrophils 7 %, segmented 79 %, eosinophils 2 %, lymphocytes 10 %, monocytes 2 %, RBC count $4,2 \cdot 10^{12}$/L, platelet count $388 \cdot 10^9$/L, hemoglobin 122 g/L, hematocrit 39 %, ESR 27 mm/h, color index 0,87.

Chemistry Panel: glucose 13.52 μmol/L, urea 9.6 μmol/L, creatinine 119 μmol/L, total protein ratio g/L, AST 14 U/L, ALT 17 U/L, total bilirubin 5,2 μmol/L.

Coagulation Test: prothrombin complex according to Quique 78,1 %, soluble fibrin-monomer complexes 14 mg/100 mL, fibrinogen 3,77 g/L.

Urinalysis Test: color light yellow, clear, specific gravity 1010, pH 7,0, protein ratio 0,14 g/L, leukocyte 0–1, glucose – 24,12 mmol/L, ketone bodies were not detected.

Activity of serum enzymes: CK-83,6 U/L, CK-MB 16,47 U/L.

INSTRUMENTAL TESTS

ECG: Pacemaker rhythm with stimulation frequency = 65 beats / min on the background of atrial fibrillation, the form of the QRS complex is constant.

Echocardiography: Eccentric type of left ventricular hypertrophy. Sclerotic changes in the walls of the aorta, flaps of the aortic and mitral valves. Dilatation of all heart cavities. Left ventricular diastolic dysfunction type 2. Left ventricular myocardial contractility was reduced (Fractional shortening = 28 %, ejection fraction (EF) = 53 %).Tricuspid valve regurgitation of the 3rd-4th degrees, 1st degree regurgitation of the pulmonary artery valve, signs of the 1st degree pulmonary hypertension. Pacemaker electrode is fixed in the right heart cavities.

Ultrasonography of the lower extremities arteries: Atherosclerosis of the main arteries of lower extremities, occlusion of the left superficial femoral artery, multiple stenosis of the right superficial femoral artery up to 65 %

Chest X-ray: eED 0.3 mSv, focal and infiltrative changes in the lungs were not detected. The roots are structural, not enlarged. Sinuses are free. Aperture clearly delineated. The median shadow is widened in diameter; the heart is widened to the left. Pacemaker is on the left, dislocations and damages of the electrode were not revealed. Condition after sternotomy.

DIAGNOSIS

The underlying disease: Ischemic Heart Disease: Stable angina class III. Hypertensive heart disease III stage 3rd degree. Hypertensive heart (LVMH). Complicated hypertensive crisis (11.09.2016 Acute left ventricular failure: cardiac asthma). Atherosclerosis of coronary arteries (coronary angiography 15.04.2013). CABG – 2 shunts (23.10.2013). Sick sinus syndrome, tachy-brady form. Constant form of atrial fibrillation-flutter. AV node catheter ablation with pacemaker implantation (16.04.2004). Reoperation – AV node destruction (08.11.2004). Pacemaker reimplantation (22.10.10) in the VVI mode. The stimulation frequency 65. Pulmonary artery thromboembolism (16.08.2011). Infarction pneumonia of the lingual segments of the upper lobe of the right lung (2011). CHF II-B stage with preserved systolic function of the left ventricle (EF LV 53 %).

Very high additional cardiovascular risk.

Comorbid conditions: Cardio-cerebral syndrome on the background of vascular encephalopathy II stage. Cerebral athero-sclerosis. Chronic obstructive pulmonary disease: Chronic obstructive bronchitis 2 degrees severity. Chronic pulmonary insufficiency III degree. Metabolic syndrome. Obesity III degree. Diabetes mellitus type 2, medium severity, decompensated. Chronic renal failure, III stage. Urolithiasis, asymptomatic form. Mixed nephropathy. Obliterating atherosclerosis of the lower extremities arteries. Hemodynamically significant stenosis of the arteries of the lower extremities on both sides. Diabetic antipathy of the lower extremities. Chronic ischemia of the 2nd degree.

CLINICAL TREATMENT

Warfarin 3.75 mg at 5 pm, Valsartan 80 mg 2 times a day, morning and evening, Rosuvastatin 20 mg in the evening, Spironolactone 50 mg in the morning, Acetylsalicylic acid 75 mg in the evening, Nifedipine 40 mg, Torasemide 50 mg in the morning in a day, Metformin 500 mg 2 times a day, Aminophylline 2 % – 5.0 intravenously jet-like 2 times a day + Dexamethasone 8 mg + saline intravenously drip-like, Salmeterol 100 μg + Fluticasone 500 μg 2 times a day, Ipratropium bromide 40 μg + Fenoterol

hydrobromide 100 μg in case of threat of respiratory failure, Tiotropium bromide 22.5 μg once a day, soda 4 % - 200.0 intravenously drip-like.

RECOMMENDED REDUCED DRUG TREATMENT

Lisinopril 10 mg 2 times a day, Nebivolol 5 mg under the control of blood pressure and pulse, Nitrates as needed, Rivaroxaban 10 mg once a day, Rosuvastatin 10 mg once a day, Metformin 500 mg 2 times a day, Salbutamol 2 inhalations as needed, Salmeterol 25 μg 2 times a day.

CONCLUSIONS

Multimorbidity and polypharmacy take place in the clinical case. The solution of the problem is not simple, but the doctor should always monitor the prescribed combinations of drugs in order to minimize their number and choose the most suitable combination to get the best result with the least risk of side effects.

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