

Pharmacy management of a patient with coronary heart disease and mental disorders

H.-F. HU¹, Y.-F. SANG², N. JIANG¹

¹Affiliated Hospital, Hunan Polytechnic of Environment and Biology, Hengyang, China

²Unit 95246 of the Chinese People's Liberation Army, Nanning, China

Abstract. – BACKGROUND: The aim of our study was to find the entry point of pharmaceutical management according to the own situation of a patient with coronary heart disease and psychological disorders.

CASE REPORT: Clinical pharmacists adjusted and optimized the drug treatment plan according to the patient's own individual situation from the perspective of the psychological disorder after coronary heart disease operation. The plan proposed by clinical pharmacists was adopted by clinicians, and the patient's rehabilitation treatment effect was obvious.

CONCLUSIONS: Clinical pharmacists can actively play a role in the treatment process, providing individualized drug treatment adjustments and optimization plans for clinicians, therefore improving the therapeutic effect.

Key Words:

Coronary heart disease, Psychological disorders, Pharmaceutical management.

Introduction

Ischemic heart disease (coronary heart disease) is one of the top three diseases in terms of mortality in China. The team of Professor Liang Xiaofeng from the Chinese Center for Disease Control and Prevention has researched and analyzed the changes in the national causes of death from 1990 to 2017 and pointed out that the mortality rate of coronary heart disease has increased in that period. In 2017, it had increased by 20.6%¹, making it a disease that seriously endangers human health. Some studies² have found that most patients with coronary heart disease have a certain degree of psychological disorder, and the incidence of coronary heart diseases is more than 30% related to psychological disorders and social factors. Due to the fact that patients with a coronary heart disease and psychological disorders have a certain degree of negative emotions and

uncooperative treatment in the treatment and prognosis, the recovery effect of their treatment and prognosis is not good. Insufficient attention to the disorder and less drug intervention led to sub-optimal treatment of the disorder^{3,4}. Therefore, in the treatment of patients with coronary heart disease, early identification and attention should be paid to the possible impact of their psychological disorders on the treatment effect, and drug and psychological counseling interventions should be applied to their psychological disorders, to improve the treatment and prognosis of patients. In this paper, the treatment plan of a middle-aged male patient with coronary heart disease and psychological disorder was adjusted and optimized to a certain extent, and drugs that partially relieved the psychological disorder were supplemented while the coronary heart disease was treated with drugs, which achieved the assistance of clinical pharmacists. The purpose of clinicians was that to adjust and optimize the treatment plan of coronary heart disease, to provide a certain reference for the related research of clinical rational drug use in the future.

Case Report

Patient Information

The patient was male, 34 years old, tall: 177 cm, weight: 98 kg, BMI: 31.3 kg/m², married with 1 daughter, 12 years of smoking history (about 30 cigarettes per day), and 8 years history of coronary heart disease, with hypertension grade 3 (very high-risk group) – hypertensive heart disease. With a history of hypertension for more than 12 years, the highest blood pressure can reach 192/115 mmHg. Long-term use of perindopril tablets 4 mg po-qd (Servier Pharmaceutical Co. Ltd., Tianjin, approval number: Guoyaozhunzi 20030453), a Tovastatin Calcium Tablet (Pfizer

Pharmaceuticals Co., Ltd., Approval No.: National Pharmaceutical Zhunzi H20051408), 20 mg po-qn Hemaixuekang Capsules (Chongqing Doptai Pharmaceutical Co., Ltd., Approval No.: National Pharmaceutical Zhun word Z10970056), 1 g po tid for treatment.

Admission Information

The patient was admitted to our hospital for further treatment after complaining “sudden chest pain 3 weeks ago that lasted for several minutes”. On March 22, 2019, the patient had sudden chest pain, which was relieved by taking Suxiao Jiuxin Pill after a few minutes. The patient denied diabetes history, infectious disease history, surgical trauma history, allergy history, etc., history of hypertension and depression. Physical examination: BP: 157/93 mmHg, P: 76 times/min, T: 36.4°C, R: 20 times/min. The patient’s consciousness was clear, the spirit was poor, the breathing of both lungs was stable, nutrition was good, expression was free, development was normal, the body position was autonomous, the response was relatively smooth, and the physical examination was moderately cooperative. No skin infection, no liver palm, no spider nevus, no swelling of superficial lymph nodes, no deformity of the head, no yellowing of the sclera, no protrusion of the eyeball, no large circles such as pupils, 3 mm in diameter, sensitive to light reflex, normal hearing, no external auditory canal. No tenderness in secretions, pinna and mastoid, no deviated nasal septum, no flapping of nasal alar, no tenderness in sinus area, rosy and glossy lips, no special odor in oral cavity, center protruding tongue, second-degree enlargement of tonsils, normal parotid gland, soft neck. The thyroid was not enlarged, the thorax was not deformed, and both lungs were unvoiced on percussion. Breath sounds clear on auscultation. There was no bulge in the confidant area, the heart circle was not large, the heart rate was 76 beats/min, the rhythm was uniform, and no murmur and galloping rhythm were heard in the auscultation area of each valve. The abdomen was flat and soft, the liver and spleen did not reach under the ribs, the moving dullness was negative, there was no percussion pain in the liver and kidney areas, bowel sounds were 4-5 times/min, and no water vibration or blood vessel murmur was heard. Peripheral vascular signs: no Duroziez double murmur, capillary pulsation sign, anhydrous pulse, gunshot sound. The anogenital organs were not examined, the limbs and spine were not deformed, there was no edema in the lower limbs, and the limbs were free to move. In the re-

lated examination after admission, the chest front and lateral DR showed that cardiac shadow was enlarged, and the cardiothoracic ratio was about 0.54. The multi-slice spiral CT (256) coronary angiography showed coronary atherosclerosis, multiple soft plaques in the left main and proximal anterior descending artery, mild stenosis of the left main lumen, and enlargement of the proximal left anterior descending artery. The electrocardiogram revealed occasional premature atrioventricular contractions (some in bursts), occasional premature ventricular contractions, and normal heart rate variability.

Admission diagnosis: coronary atherosclerotic heart disease, hypertension grade 3 very high-risk group, hypertensive heart disease, etc.

Preoperative Information

After the patient was admitted to the hospital, the examination was completed, and aspirin enteric-coated tablets (Bayer Health Care Co. Ltd., approval number: Guoyao Zhunzi J20130078), 0.1 g po-qd, clopyrrole hydrogen sulfate tablets (Sanofti Pharmaceutical Co., Ltd., Hangzhou, approval number: Guoyao Zhunzi J20180029) 75 mg po-qd combined with ticagrelor tablets (manufacturer: AstraZeneca Pharmaceutical Co. Ltd., approval number: Guoyao Zhunzi J20171077), 90 mg to bind antiplatelet aggregation, Metoprolol succinate sustained-release tablets (AstraZeneca Pharmaceutical Co. Ltd., approval number: H20100167), 47.5 mg po-qd anti-myocardial ischemia, vasodilator and antihypertensive therapy, rosuvastatin calcium tablets (AstraZeneca Pharmaceutical Co. Ltd., China, approval number: Guoyao Zhunzi J20170008), 10 mg po-qn lipid-lowering and stable plaque treatment, etc. Antihypertensive drugs were taken normally.

Surgical Data

The patient underwent coronary angiography and stent implantation on April 17, 2019: 50% stenosis at the distal end of the left main trunk, 99% stenosis in the proximal segment of the left anterior descending artery, mild tumor-like expansion in the proximal and middle segments of the anterior descending artery after stenosis, and irregular and no obvious stenotic lesions were found in other branches. Interventional treatment of the anterior descending branch was performed after the consent of the patient and family members after communication: a 6F EBU3.5 left guide catheter was taken and sent to the left coronary mouth, 0.014 run-through and SION guide wires were sent to the circumflex branch and the distal end of the anterior descending branch through the

lesion, Woten 2.0 A × 15 mm balloon was dilated at 12 atm × 10 seconds at the proximal lesions of the anterior descending artery, and the residual stenosis was 90%. Then, the Flextome 3.25 × 10 mm noncompliant balloon was expanded twice at 12 atm × 10 seconds at the proximal lesions of the anterior descending artery. Follow-up angiography showed 70% residual stenosis in the proximal segment of the anterior descending artery with localized dissection signs, and the Optic Cross intravascular ultrasound catheter was sent into the middle segment of the anterior descending artery to gradually withdraw. The formation of fibrous plaque and the formation of dissection were seen. Another run-through wire was sent to the aortic root to fix the guide catheter. Promus Premier 4.0×20 mm everolimus drug stent was implanted from the proximal segment of the anterior descending artery to the opening of the left main trunk, 12 atm × 8 dilated and released in seconds, and then Quantum 4.0*12 mm and Quantum 4.5*8 mm non-compliant balloons were used to expand plasticity in the stent for 14-18 atm*10 seconds. Repeat angiography showed satisfactory stent expansion, no residual stenosis, TIMI blood flow grade 3, gyration branch openings were not involved. The operation was successful, the sheath was removed, and the hemostasis was stopped with a TR-Band radial artery inflator (inflated 14 ml).

Postoperative Data

After the operation, the local bleeding and vital signs were monitored, 2 ml of air every 1-2 hours were deflated, and the compression after 8-10 hours released, if there was no bleeding. Postoperative dual antiplatelet therapy included aspirin, enteric-coated tablets, and ticagrelor tablets.

The patient reported that he still had symptoms such as chest and lower abdominal pain on the same day, and there was no significant relief the next day. There was no obvious abnormality after the relevant examination on the 2nd day. The chief doctor found that the patient was accompanied by emotional changes such as tension, anxiety, and depression (no suicidal tendencies yet). Before admission, the patient admitted that he had a history of depression and considered that he may still have depression and anxiety disorder. The clinical pharmacist assisted the physician to use "SCL-90" and "Self-rating Depression Scale", conducting a psychological evaluation on the patients, and the scores of the patient were 209 and 76.25, respectively, indicating that the patient was

currently in a relatively serious state of depression and anxiety, with psychological disorders; therefore, antidepressant treatment was given.

The clinical pharmacist considered that the patient was currently in a state of depression but had no suicidal tendencies, and after knowing that he had a history of smoking (about 30 cigarettes per day) and a BMI > 30kg/m², it was recommended to add bupropion hydrochloride sustained-release tablets (Disha Pharmaceutical Group Co., Ltd., approval number: Guoyao Zhunzi H20080398), 0.15 g po bid antidepressant treatment, and psychological counseling; at the same time, other therapeutic drugs continued to be taken. After adjusting the treatment plan, the patient's condition improved significantly, and the pain symptoms in the chest and lower abdomen were relieved. After 3 days, the somatic pain symptoms in the chest and lower abdomen caused by non-surgery disappeared. The mental state recovered well, and the tension, anxiety, and depression were greatly reduced. She could walk by the bedside lightly, and she was discharged in stable condition after 7 days. One week after discharge from the hospital, the patient with coronary heart disease was in a stable condition and had no uncomfortable symptoms such as cardiothoracic pain and lower abdominal pain and had normal diet and sleep. The patient was recommended to go to a specialized hospital for antidepressant treatment.

Discussion

Coronary heart disease patients with psychological disorders have an increased risk of cardiovascular events due to stress, anxiety, and depression during surgery and hospitalization⁵, and evidence-based medicine and epidemiological survey results have confirmed that coronary heart diseases are associated with psychological disorders. The increase in the recurrence of adverse cardiovascular events after a coronary heart disease in patients will also increase significantly⁶. This may be related to the fact that tension, anxiety, and depression can interfere with and disrupt human neurological function and endocrine^{7,8}, and it may also be related to adverse emotions affecting the reduction of human activity rate and affecting postoperative rehabilitation.

Domestic epidemiological investigations have found that nearly half of patients with cardiovascular disease have some degree of psychological disorder⁹, and the rate of patients with coronary

heart disease complicated by anxiety and/or depression is close to 1/5¹⁰. Studies¹¹ have shown that more than half of patients with coronary heart disease have experienced stress, anxiety and depression to varying degrees during hospitalization, especially among female and elderly patients. Due to the fact that Chinese physicians usually have less training and study on diseases such as psychology and mental disorders during the growth and training period¹², and due to humanistic reasons, it relatively represents a taboo for clinicians in China, so whether patients have psychological disorders during hospitalization and other related issues, the disease does not receive enough attention¹³.

In view of the fact that this patient with coronary heart disease had somatic pain of unknown cause after surgery, and the Self-rating Depression Scale and SCL-90 scores showed that the patient had depressive symptoms, and the patient's past medical history confirmed that the patient had concurrent psychological disorders, the patient's poor psychological condition were identified and treated as soon as possible after surgery. Because the patient was obese (BMI > 30 kg/m²) and had a history of smoking, clinical pharmacists considered that it could not be possible to do so. Following tobacco control and cessation during the postoperative and rehabilitation process, bupropion was chosen for its treatment. The reasons are as follows: (1) Bupropion is a new type of antidepressant drug that has been widely used in clinical treatment. It has the same efficacy as traditional antidepressants and has milder adverse reactions. It is an inhibitor of NE and DA reuptake. The effect is comparable to that of sertraline¹⁴. (2) Compared to traditional tricyclic antidepressants, bupropion is a weak inhibitor of norepinephrine, serotonin, and dopamine reuptake¹⁵, which has a negative effect on monoamine oxidase. There is no inhibitory effect and thus will not have a major impact on the patient's established antihypertensive therapy. (3) Because the patient had a smoking history of 12 years and the average daily smoking volume before admission was 30 cigarettes, the clinical pharmacist considered that there was a high possibility of smoking cessation failure in the postoperative and recovery process, while bupropion could help to a certain extent. Blocking nicotine receptors can block the nicotine pleasure caused by smoking and recycle the blocking effect through dopamine (hereinafter referred to as DA). It helps patients quitting smoking. (4) Bupropion increases DA energy, and DA

can stimulate the activity of morphine-like neuropeptide cells in the arcuate nucleus of the hypothalamus, which in turn causes an increase in the secretion of α -melanocyte-stimulating hormone, an increase in melanocortin type 4 receptors, and anorexia. The degree of energy consumption increases^{16,17}, thereby reducing the patient's weight. In addition, to strengthen the therapeutic effect of antidepressant treatment in patients, a certain degree of psychological counseling intervention was carried out with psychologists in conjunction with drug antidepressant treatment. Moreover, the clinical pharmacist also inquired about the patient's physical condition and living condition in detail and combined with professional knowledge to provide comfort and encouragement to the patient to a certain extent, so that the patient could eliminate all concerns as much as possible.

Clinical pharmacists and psychologists introduce the common causes of coronary heart disease, treatment methods, and postoperative prognosis of patients, and give easy-to-understand explanations based on the therapeutic purposes and therapeutic effects of various drugs currently taken by patients combined with professional knowledge to relieve patients from anxiety. Through active psychological counseling and intervention, psychologists can relieve and improve symptoms of tension, anxiety, and depression to a certain extent, and at the same time encourage patients to positively recognize their own disease and the negative impact of depression on their recovery after coronary heart disease, to stimulate patients to exert their subjective initiative to overcome depression. Through the active intervention of the above drugs and psychological treatment, the patient's physical pain symptoms caused by non-surgery disappeared after 3 days, and the mental state also greatly improved. One week after discharge from the hospital, the doctor in charge returned to the patient by telephone, and the patient's coronary heart disease condition was relatively stable, the drugs were taken on time, the mental state was relatively ideal, and the recovery effect was good.

Conclusions

Based on this case, the roles of clinical pharmacists in the postoperative treatment of patients with coronary heart disease are as follows: (1) actively participate in tracking the changes of the patient's condition and quantify the "Self-rating Depression Scale" and "SCL-90" as soon as possible Score

to assess the patient's psychological barriers¹⁸, so as to evaluate and adjust the patient's drug regimen. (2) According to the patient's past history, current illness history, and condition changes, the patient's depressive state, smoking history in the past decades, and obesity should be coordinated to select a bupropion drug that combines multiple factors, to better cooperate with clinicians in treating patients. Postoperative rehabilitation should be performed for maximum benefit. (3) Pay close attention to and cooperate with the patient's psychological counseling treatment while using drug treatment, and actively explain the patient's condition and the related effects of the drugs to eliminate any concerns. (4) Actively communicate and coordinate with patients and their families before determining the drug treatment plan, and clarify the drug effects, adverse reactions, usage and dosage, course of treatment, and precautions to improve compliance and efficacy.

During the postoperative treatment of this patient with coronary heart disease, the clinical pharmacist actively participated in and assisted the physician in evaluating the patient's medication and optimizing and adjusting the plan according to the patient's own situation and various factors, especially in the selection of antidepressant and anxiety drugs. Give full play to professional advantages, coordinate various factors to comprehensively select and optimize antidepressant drug treatment, actively communicate with patients and conduct medication education to prevent the occurrence of potential medication problems. After comprehensive treatment, the patient recovered well.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Ethics Approval

The study was approved by the IRB of Hunan Environment Biological Polytechnic Committee.

Informed Consent

Obtained.

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This study has not received funding.

Availability of Data and Materials

The data that support the findings of this study are available from the corresponding author upon reasonable request. No additional unpublished data are available.

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