

Case Report

Ischemic Heart Disease as an Important Risk Factor for Depression—A Case Report

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Abstract: The link between the mind and cardiac disease has been studied throughout the ages. Patients diagnosed with ischemic heart disease may develop psychological and psychiatric symptoms such as depressed mood, anxiety, and insomnia that can drastically affect life quality. Unfortunately, during cardiac rehabilitation, there is a lack of psychiatric care. To improve a patient’s quality of life, this intriguing relationship between ischemic heart disease and depression must be closely monitored, because risk factors and pathophysiological mechanisms may be common. This case report article is about a 47-year-old Romanian woman with acute coronary syndrome revascularized with angioplasty and stent implantation 3 months ago, admitted to the Arad Emergency County Clinical Hospital, Psychiatric Department, with depressive symptoms. Our patient was treated with an antidepressant, an anxiolytic, a mood stabilizer, a hypnotic, a nootropic, aspirin, dual platelet inhibition, a beta-blocker, a converting enzyme inhibitor, a statin, and oral antidiabetics medication, as well as having psychotherapy sessions. The treatment was well tolerated, with an improvement in the social and professional functionality of the patient. In conclusion, people with ischemic heart disease have a higher risk of developing depression, but patients with depression also have a higher risk of developing ischemic heart disease. This confirms the importance of an individualized multidisciplinary approach to management because the collaboration between psychiatrists and cardiologists can be an additional benefit to patients. This article may pave the way for further research into the association between ischemic heart disease and depressive disorders, which could provide significant advantages to patients. Interdisciplinarity contributes to the development of innovative techniques of prevention and treatment, reducing worldwide morbidity and mortality.

Keywords: depression; ischemic heart disease; mental disorders



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1. Introduction

The connection between mind, body, and cardiac disease extends back to Ancient Greece. These developments paved the way for modern scientific investigation into the connections between mental illness and heart disease [1]. Scientific evidence points to poor prognosis and reduced quality of life for patients with cardiovascular and psychiatric disorders, but the evidence on the mechanisms involved is poorly understood [2].

Ischemic heart disease (IHD) or coronary heart disease (CHD) is the leading cause of death worldwide [3]. CHD is the buildup of waxy material, also called atherosclerotic plaque, in the arteries of the heart (coronary arteries) that prevents them from meeting the needs of the heart muscle and surrounding tissue [4,5].

Mental disorders are a major factor in global morbidity and mortality [6]. Depression is a subject of interest these days because it is an important psychiatric disorder that

results from complex neuropsychiatric, immune, and endocrine disorders. The disease is accompanied by mood disturbances, persistent sadness, loss of interest, and cognitive impairment [7].

Several studies have shown a higher prevalence of psychiatric disorders, including depression, in patients with coronary artery disease. There seems to be an interesting link between depressive disorder and IHD from both perspectives. The mechanisms that explain the relationship between cardiovascular disease and depression are diverse and range from genetic risk factors, to pathophysiological aspects, to lifestyle, to psychological changes [8].

Psychosocial factors such as depression and stress are among the important negative prognostic factors in patients with cardiovascular disease. Behavioral disorders, lifestyle habits (physical inactivity, smoking, alcoholism, drug use), and antidepressant treatment promote the development of cardiovascular disease [9].

Knowledge of the association between CHD and depression is of great importance for therapeutic and prognostic efficacy. After the onset of ischemic heart disease, prophylactic and curative treatment is essential, but so is social and professional rehabilitation, as well as psychological support for the patient. In addition, depressed patients should be monitored from a cardiological point of view, and treatment should be individually tailored according to the details of individual cases [10].

This case report article could provide important patient benefits and could spur future research investigating the link between CHD and depression in more detail. Interdisciplinarity will help develop new methods for the prevention and treatment of these two diseases, thereby contributing to the reduction of morbidity and mortality worldwide. The subject is one of the representative cases from a batch of 444 patients, and for this reason, this case could bring additional benefits in terms of the relationship between ischemic heart disease and depression.

2. Materials and Methods

2.1. Materials

We report the case of a 47-year-old Romanian woman who lived in an urban area. She was admitted to the Arad County Emergency Clinical Hospital, Psychiatry Department, with depressive symptoms; her emotional mood was depressed due to intrapsychic tension, anxiety, and emotional instability. The onset of the patient's psychiatric history started after an acute coronary syndrome revascularized with angioplasty and stent implantation. Shortly after the intervention, the patient presented with psycho-emotional dysfunction of pathological intensity. After the cardiac event, the patient presented herself for a psychiatric consultation in the specialized outpatient clinic, where she received treatment and a recommendation for psychotherapy. Due to the aggravation of the depressive pathology, the patient was hospitalized for the first time at the Psychiatry Department of the Arad County Clinical Hospital on an emergency referral from the general practitioner.

The psychological examination was conducted using the following psychometric tests: Szondi test, Koch's test, Woodworth–Mathew's test, Beck's Depression Inventory, The State–Trait Anxiety Inventory, The Luscher Color Test, and The Mini Mental State Examination.

The connection between depression and ischemic heart disease is much more dangerous than each separate condition, but nevertheless, at present, the link between heart disease and psychiatric symptoms is highly interesting and yet underexplored.

The purpose of this study was to highlight the importance of interdisciplinary collaboration between cardiologists and psychiatrists, with the involvement in psychiatric intervention, the demonstration of the interdisciplinary importance, in order that the collaboration between psychiatrist and cardiologist bring about additional benefits to the patient. The patient with cardiac conditions requires psychiatric intervention in view of the fact that a functional limitation occurs.

2.2. Methods

Sources of information were determined through the direct investigation of the patient, consultation of observation files, and talking to family members about their medical history.

This case report was conducted with the approval of the Ethics Committee of the Arad County Clinical Hospital (no. 38/6 April 2021) and was conducted in accordance with the principles of the Helsinki Declaration. Written informed consent was obtained from the patient for this manuscript and any accompanying images.

This article represents the presentation of a clinical case. The sample of cases studied was a larger one, consisting of 444 patients with similar pathologies, but this patient was significantly more interesting, and for this reason, it was considered that her detailed presentation could bring additional benefits in terms of the relationship between ischemic heart disease and depression. Of all the cases evaluated, this patient was selected due to the particularity of the case, with her being considered a representative case for the studied group. The conclusions reached after studying the presented case were similar to those of other patients studied.

Subjects were selected in the study based on the inclusion and exclusion criteria of all subjects who were part of the group conform Table 1.

Table 1. Inclusion and exclusion criteria of all subjects.

Inclusion Criteria
Adult patients
Patients of both sexes
Patients hospitalized at Arad County Emergency Clinical Hospital, Psychiatry Department (Acute and Chronic Departments)
Patients diagnosed with depression according to the Diagnostic and Statistical Manual of Mental Disorders V
Patients diagnosed with ischemic heart disease according to the current diagnostic and treatment guidelines
Exclusion Criteria
Patients who did not provide evidence of a diagnosis of depression even after a careful clinical, psychiatric, and paraclinical examination according to the Diagnostic and Statistical Manual of Mental Disorders V
Patients without evidence of a diagnosis of ischemic heart disease after a careful clinical and paraclinical examination according to the diagnostic and treatment guidelines
Patients who did not wish to participate in the study

The most complex subject was chosen from the point of view of the associated pathologies.

The patient completed questionnaires in which psychometric tests were performed. Depression severity, patient performance level, risk factors, treatment, and patient symptom evolution under treatment were tracked. The application of psychometric tests was performed at admission, at 5 days after admission, at discharge, and at 1 month after discharge.

Due to associated physical symptoms, it was necessary to perform a multidisciplinary examination during hospitalization. This included cardiology examination, diabetes consultation, repeating analyses, adding laboratory tests, and dynamically adjusting specific therapeutic doses.

After each application of the tests, a comparative study was carried out between the results and the mental and somatic symptoms presented by the subject. Depending on the symptomatology, the clinical and paraclinical investigations were repeated, and the therapeutic doses were adjusted.

3. Results

3.1. Diagnostic Formulation and Justification

The patient's diagnoses were formulated and sustained by using the Diagnostic and Statistical Manual of Mental Disorders V:

1. Major depressive disorder with anxious distress: The patient was admitted to the hospital, presenting the following for 2 months: depressed mood; persistent feelings of sadness, hopelessness, worthlessness, and loss of interest; loss of energy; fatigue; decrease in appetite; rumination; suicidal thoughts; diminished ability to think and concentrate; anxiety; and insomnia [11].
2. Mild cognitive impairment: In this case, the patient had a diminished ability to think and concentrate, secondary to the depression. The patient scored 24 points on the Mini-Mental State Examination (MMSE), a test that checks for cognitive impairment.
3. Histrionic personality disorder: Sustained by psychological evaluation and symptoms: highly sensitive, unstable emotions, self-dramatization, and egocentrism [12].
4. Acute coronary syndrome with recent revascularization: This diagnosis is supported by the patient's medical history and a cardiological examination.
5. Stage II hypertension, with very high cardiovascular risk: This diagnosis is supported by patient history and cardiac evaluation.
6. Unbalanced type II diabetes mellitus: Fasting glycemia was elevated to 186 mg/dL, and her HbA1C was elevated by 8.7%.
7. Metabolic syndrome: The patient had criteria for mixed dyslipidemia (her lipid profile was unbalanced, total cholesterol was over 230 mg/dL, HDL cholesterol was 45 mg/dL, LDL cholesterol was 150 mg/dL, and a triglycerides test showed 177.5 mg/dL) and type II diabetes mellitus [13].
8. Obesity class 2: Weight: 100 kg, height: 165 cm, Body Mass Index: 36, abdominal circumference: 95 cm.

3.2. Differential Diagnosis of Major Depressive Disorder with Anxious Distress

1. Bipolar I disorder: This diagnosis was ruled out based on the fact that the patient's psychiatric history had no history of manic episodes. Mania is characterized by a euphoric and/or irritable mood and increased energy or activity. During manic episodes, people with bipolar disorder also regularly engage in risky activities that can harm themselves and others [14].
2. Bipolar II disorder: This was excluded because the patient did not have any episodes of hypomania. To be diagnosed with bipolar II, the patient must have at least one current or past episode of hypomania (a less severe form of mania) and at least one current or past episode of major depressive disorder [14].
3. Depressive disorder due to another medical condition/bipolar and related disorder due to another medical condition: These diagnoses were ruled out because the patient's symptoms were not directly caused by an underlying medical condition.
4. Substance/medication-induced depressive disorder and/or substance/medication-induced bipolar disorder: These were excluded because the patient denied the use of substances or drugs that can induce mood disorders.
5. Recurrent depressive disorder: This was excluded because she had not had repeated episodes of depression.
6. Adjustment disorder with disturbed emotions: In this case, the condition occurred in response to a psychosocial stressor but met the criteria for major depressive disorder.
7. Schizoaffective disorder—depressive type: The patient did not show symptoms of schizophrenia.
8. Psycho-organic syndrome: This was ruled out by the absence of changes on the computerized tomography scan; memory and attention disorders were secondary to the depression.

3.3. Biography-Related Patient History of Illness Data

From the patient's medical history, we note the following: Her father died at the age of 65 as a result of an acute myocardial infarction. Her mother died at age 62, and she was known to have type II diabetes. Brotherhood Rank IV, Grade I. The patient had a younger sister who died of an acute myocardial infarction at the age of 50, although the siblings had no known history of psychiatric illness.

Personal physiological history: Menarche at 12 years; regular menstrual cycles; four spontaneous deliveries (two girls, two boys); no abortions.

This patient had a pathological history of acute coronary syndrome recently treated with interventional angioplasty and stenting, stage II hypertension with very high cardiovascular risk, type II diabetes, and obesity. She denies trauma, accidents, or surgical intervention.

Based on the patient's psychiatric history, one month after cardiac intervention, the patient presented to a special clinic for psychiatric evaluation, wherein she received treatment with an antidepressant (a selective serotonin reuptake inhibitor—sertraline), a mood stabilizer (carbamazepine), and a hypnotic (zolpidem).

The patient came from a legally constituted family and reported a "happy" childhood. She graduated from twelve classes and three years of professional tailoring. She worked between 1993 and 2023 at a tailoring company, but at the time of the research, the patient was on medical leave of absence after the cardiac intervention. She was married in 1997, having two daughters and two sons. One of the patient's sons had intellectual disability and required special care. Affirmative conflicting family relationships. She lived in an urban area with her husband, in a house with four rooms, in appropriate conditions. Orthodox religion. Smoker for 15 years, 20 cigarettes a day; denied alcohol or drug use.

We report a 47-year-old patient with a history of mood disorder through a psychiatric consultation 2 months ago. This patient was admitted for the first time at the Arad County Clinical Hospital, Department of Psychiatry, as an emergency with a referral from the general practitioner because of the presence of the psychopathological pattern of a major depressive disorder. Psychiatric symptoms developed after a minimally invasive cardiovascular procedure with stent implantation. The patient's affective mood was depressed with intrapsychic tension, anxiety, and emotional instability.

Even if the patient had multiple traumas throughout her life, represented by having a disabled son under her care, strained family relationships, and comorbidities, the onset of the psychiatric condition was secondary to the cardiac intervention. In the case of this patient, the traumatic events were managed thanks to her social and partial family support; this fact does not mean that each trauma cannot represent a trigger leading to a close onset after the cardiac intervention.

3.4. Current Mental and Somatic Conditions

A psychiatric examination of the current mental status revealed the patient to be relatively well-dressed, with physical hygiene relatively maintained, and with an emphasis on time and space. The patient's field of consciousness was clear, but mental contact was achieved with difficulty, and eye contact was maintained intermittently. The patient's facial expression became sluggish, expressing sadness, frowning, and reduced gesticulation. At the time of examination, the patient denied hallucinations.

The patient's speech was slow, but with a melodramatic tone, having attention and memory disorder, with thoughts being focused on the following:

- Ruminations on existential problems and illnesses, stating: "I'm never going to get better. I'm so worried about the situation I've found myself in. I don't feel good. It all started with a problem in my heart".
- Thoughts of incapacity and uselessness: "I can't be the same as before. I used to be very active and now I'm so tired. I can't even get out of bed; I can hardly move. I'm so tired. I don't think I can do it anymore. I'm going to stay in the hospital here for a long time".

- Suicidal thoughts, with the patient saying “I can’t live like this anymore, I want to die and end this life now”.
- Lack of hope.
- Lack of self-confidence.
- Feeling of insecurity and fear: “I don’t know what will happen to me, I’m scared, maybe I’ll be like this for the rest of my life”.

Behaviorally, the patient presented symptoms such as social withdrawal, isolation, loss of interest in activities she once enjoyed, decrease in interest in the environment, easy crying, global reduction of activities and performances, reduced occupational achievement, reduction of self-care and household activities, restlessness, impatience, self-management difficulties, low involvement in daily activities, and low willpower. The patient had low instincts (food, preservation, gregarious, defense). The patient had dysregulation of the nighttime rhythm, causing insomnia. The awareness of the patient’s illness was present.

The conclusions of the psychological evaluation were that the subject presented hyper-expressive tendencies, self-dramatization, and egocentrism; showed lability, sensitivity to frustration with a tendency to exaggerated reactions, anxiety, insecurity, and severe depression indices (MMSE = 24); and had memory and attention disorders.

On physical examination, she had no fever, her blood pressure was 125/75 mmHg, her heart rate was 76 beats per minute, cardiopulmonary auscultation was normal, weight: 100 kg, height: 165 cm, Body Mass Index: 36, and abdominal circumference: 95 cm.

The electrocardiogram before revascularization is attached in Figure 1. Cardiolog-ical examination and paraclinical examination revealed no modifications at the electrocardiogram (Figure 2), as well as discrete anterolateral hypokinesia at the transthoracic echocardiogram.

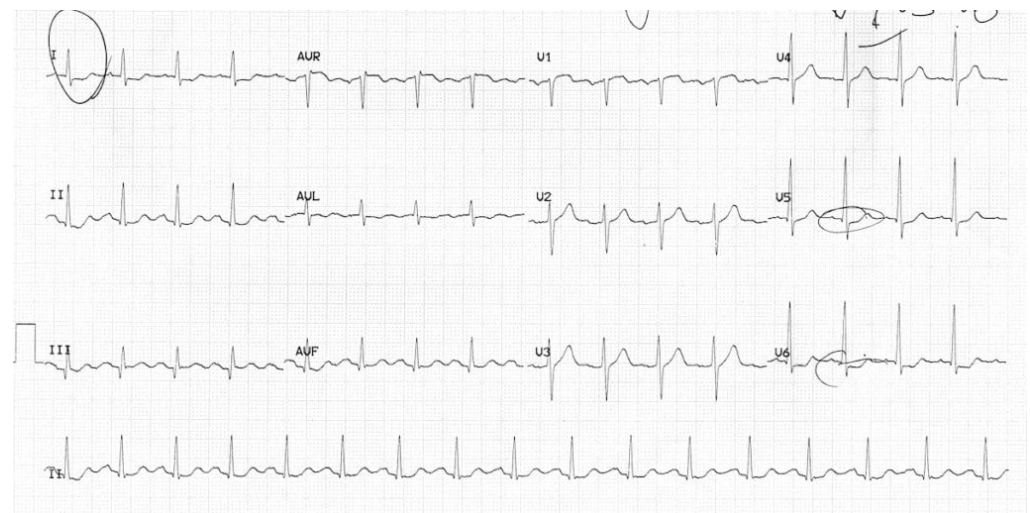


Figure 1. Electrocardiogram before revascularization.

The computed tomography of the brain showed no visible infratentorial/supratentorial newly formed hetero-dense lesions. Central structures were found without ventricular system deviations (Figure 3).

Laboratory findings confirmed type II diabetes mellitus (fasting glucose: 186 mg/dL, HbA1C: 8.7%), metabolic syndrome (total cholesterol was over 230 mg/dL, HDL cholesterol was 45 mg/dL, LDL cholesterol was 150 mg/dL, triglycerides test showed 177.5 mg/dL), and an inflammatory syndrome (leucocyte: 10.325/mm³, ESR: 30 mm/h, fibrinogen: 500 mg/dL, PCR: 7 mg/dL). Her platelet count (268,000/mm³), bleeding time (135 s), and liver function tests were normal.

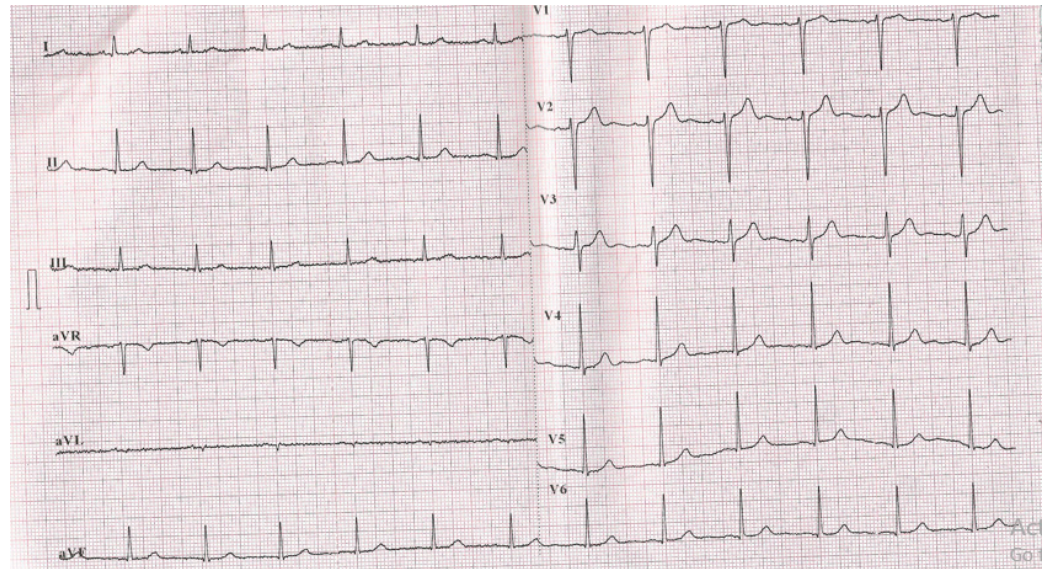


Figure 2. Electrocardiogram after revascularization.

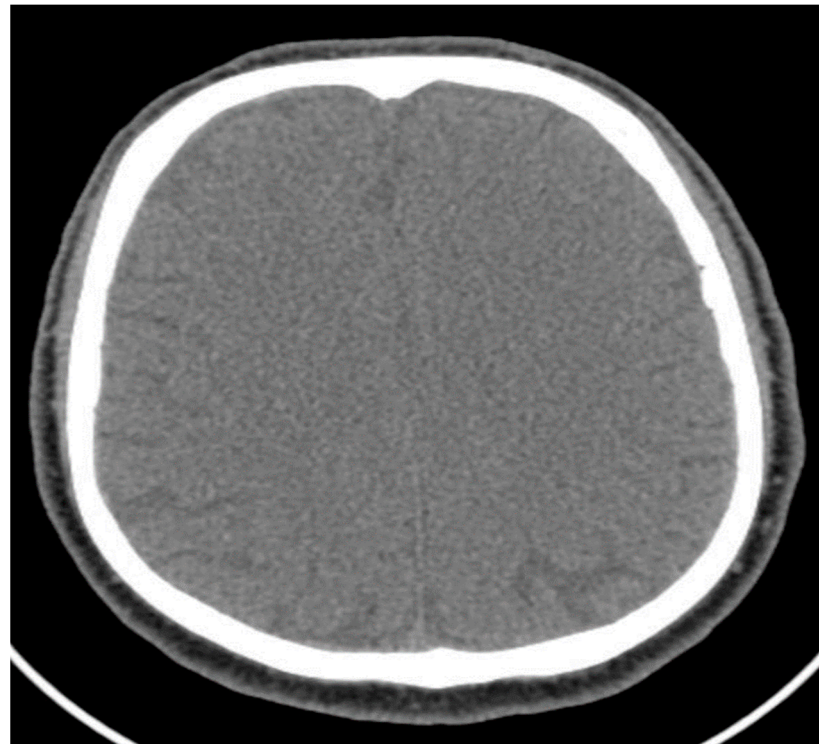


Figure 3. Computed tomography of the brain.

3.5. Treatment

After diagnosing a patient with depression and ischemic heart disease, complete management is important, with the treatment of both diseases being pharmacological (cardiological, psychiatric, and specialized treatment of associated non-cardiac pathologies) and non-pharmacological (cardiac rehabilitation, supportive psychotherapy).

During this hospitalization, it was decided to replace the antidepressant treatment that the patient was receiving at home. The patient was treated at home with sertraline, which is a selective serotonin reuptake inhibitor. Sertraline's mechanism of action is to increase the level of the neurotransmitter serotonin, thereby increasing serotonergic neurotransmission [15].

Since this treatment was not effective at home, it was decided to be replaced with tianeptine, which is a glutamatergic modulator that increases serotonin reuptake, but at the same time can act similarly to agents that block serotonin reuptake. Long-term studies have shown that tianeptine does not alter heart rate, blood pressure, conduction, or ventricular function. Tianeptine was well tolerated in patients with depression, and at current doses did not cause significant changes over the treatment periods of 3 months to 1 year, even in elderly patients, patients with cardiovascular abnormalities, or patients with alcoholism [16]. It was decided that 37.5 mg of tianeptine be administered in three divided doses to this subject.

Anxiolytic benzodiazepines (bromazepam 3 g three times a day, dose reduced depending on test results over 5 days) and nootropics (piracetam 1200 mg twice: 800 mg in the morning, 400 mg at lunch) were also introduced for treatment. A mood stabilizer (carbamazepine 400 mg in two doses) and a hypnotic (zolpidem 10 mg/day in the evening) were kept in the therapeutic scheme.

It was decided to continue the treatment of somatic conditions with aspirin, dual platelet inhibition, a beta-blocker, a converting enzyme inhibitor, a statin, and oral antidiabetics.

Cardiac rehabilitation is an integral part of modern care for patients with coronary artery disease. The goal of cardiac rehabilitation is to improve both the physiological and psychosocial status of cardiac patients. Physiological outcomes include improved physical performance and optimized risk factor status. Additional goals include improving myocardial perfusion and performance and slowing the progression of underlying atherosclerotic processes [17].

The patient also participated in psychotherapy sessions, as psychological interventions are essential in the management of psychiatric disorders. Many studies have examined the use of psychotherapy to treat depression in patients with heart disease. Cognitive-behavioral therapy is the most-studied psychotherapy for people with heart disease. Cognitive-behavioral therapy is a collective term for therapies that focus on identifying and restructuring cognitive distortions, modifying problem behaviors, regulating emotions, and understanding the causes that lead to psycho-emotional changes [18–20].

After applying psychometric tests and repeated clinical and paraclinical evaluation, a long-term treatment scheme was established: maintaining the antidepressant tianeptine in the same dose, reducing the dose of the anxiolytic (bromazepam 6 mg administered in two divided doses, which were to gradually decrease and stop at 6 weeks). The mood stabilizer (carbamazepine) and hypnotic (zolpidem) were kept in the therapeutic scheme at the same doses.

The patient had social support, but effective management of family conflicts is required to avoid psychologically traumatic situations and maintain a protective family climate.

The treatment was well tolerated and improved the patient's social and occupational functioning.

3.6. Prognostic and Capacity Assessment, Evolution, and Complications

The course during hospitalization was good, and the psychiatric symptoms improved. After one month, the patient's social and occupational performance improved.

The course and long-term prognosis cannot be accurately predicted:

- Symptoms may subside, and normal social and occupational functioning may return.
- There is the possibility of relapses during life, with deterioration in social and occupational functioning.

Negative prognostic factors are represented by patient comorbidities, histrionic personality disorder, and conflicting family circumstances. The positive prognostic factors of this case are represented by the fact that the patient was admitted to a specialized hospital in time, and at she received adequate treatment for the associated pathologies.

Complication can be a functional consequence, with social and occupational dysfunction or suicidal risk.

3.7. Current Literature Acknowledgment of This Case

Cardiovascular disease is a serious disease that imposes a moral and economic burden on today's society. Several studies in the literature not only indicate that the prevalence of depression may increase after IHD installation, but also that mood disorders may cause IHD [21–23].

European and American guidelines recommend and encourage regular screening for depression. Comprehensive treatment after diagnosis is crucial in patients with depression and coronary artery disease, and both diseases should be treated pharmacologically and non-pharmacologically (cardiac rehabilitation, cognitive-behavioral therapy, supportive psychotherapy). These diseases share common pathophysiological mechanisms and risk factors. In such cases, the interaction between the psychiatrist and the cardiologist has proven to be very important [24–26].

4. Discussion

This article covers current topics from the literature, as depression in patients with cardiovascular disease is an important issue. Early recognition of depression in patients with cardiovascular disease, referral to specific health services, and follow-up of treatment at an early stage will reduce the risk of social and occupational dysfunction. The identification of the relationships between depression and ischemic heart diseases confirms the need to apply specific questionnaires to determine these conditions as a routine screening procedure in people with the cardiovascular disease.

Although the patient experienced several microtraumas throughout her life, the course of this case was favorable. This shows the importance of individualized multidisciplinary management.

A limitation of our study was that this article is a case report, so the association between ischemic heart disease and depression could be examined more closely, providing an additional benefit to patients who have had a cardiac event. Early psychological and psychiatric intervention after cardiac events may reduce the incidence of social and occupational dysfunction.

There are two possibilities in decreasing the global morbidity and mortality rate: prevention and treatment. Nowadays, it is much more useful to prevent than to treat, so it is very important that clinicians must be prepared to treat comorbid depression and cardiovascular disease. In current studies, the epidemiology and main risk factors for the comorbidity of depression and cardiovascular disease are reviewed. This topic appears to be of great importance and requires further research. Overall, the relationship between ischemic heart disease and depression is complex and bidirectional. Effective treatment of depression may become an important part of cardiovascular disease prevention and treatment. Conversely, effective treatment of cardiovascular disease can also help prevent depression and improve mental health [27,28].

5. Conclusions

Psychiatric disorders and cardiovascular disease are the most common causes of disability in developed countries. In the general population, patients with heart disease are more likely to develop depression, but at the same time, depressed patients also have an increased risk of coronary artery disease [26].

Depression is not an ordinary emotional change but a serious condition that has a significant impact on the patient's life. Both of these diseases affect patients' quality of life by impairing occupational and social functioning [25].

Nowadays, there is a growing debate about psychiatric stigma and patients' fear of psychiatrists. Stigma against having a mental illness is felt not only in society, but also in the minds of patients. It is internalized by the fact that after being diagnosed with a mental illness, the person has become the victim of countless indifferences, rejection, or cynicism from others. Through this case report, we would like to emphasize the importance of inter-

disciplinary collaborations and encourage patients to seek psychological and psychiatric help in critical situations.

This case report article may provide important patient benefits and thus may pave the way for future studies to further investigate the association between major depressive disorder and ischemic heart disease. Interdisciplinarity will help develop new methods for the prevention and treatment of these two diseases, thereby contributing to the reduction of morbidity and mortality worldwide. Examination of this patient demonstrates the fact that effective cooperation between a cardiologist and a psychiatrist can lead to the restoration of social and professional life.

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