

DOI [10.35630/2022/12/psy.ro.17](https://doi.org/10.35630/2022/12/psy.ro.17)Received 14 December 2022;
Published 12 January 2023

THE LINK BETWEEN LIPIDIC PROFILE, DEPRESSION AND CARDIOVASCULAR DISEASE

Lucretia Anghel^{1,2}  , **Dumitru Ursu²**,
Simona Mitincu Caramfil¹, **Cristina Stefanescu¹** ,
Stefana Maria Moisa³ , **Anamaria Ciubara¹** ,
Liliana Baroiu¹ 

¹ Dunărea de Jos University of Galati, Faculty of Medicine and Pharmacy, Department of Internal Medicine, Galati, Romania

² Emergency Hospital St. Apostol Andrei of Galati, Romania

³ "Grigore T. Popa" University of Medicine and Pharmacy, Iasi, Romania

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 Lucretia.Anghel@ugal.ro

ABSTRACT

The purpose of this study was to identify the connection between cardiovascular disease and depression taking lipid profile as a common risk factor in the occurrence of both pathologies. **Materials and methods:** 100 patients were examined for 3 months, admitted to the internal medicine department of St. Andrew's Emergency Hospital in Galati. Anamnesis was collected; electrocardiogram, objective examination and lipid profile were performed. The Hamilton scale (HDRS-17) was used to assess depression. **Results:** In patients with depression, an increased prevalence of dyslipidaemia and obesity was detected, especially in women. Of 10 women with mild and severe depression, all had altered lipid profile, obesity or overweight and increased risk of cardiovascular disease. **Conclusions:** Although it is claimed that depression would be an individual risk factor for the occurrence of an adverse cardiac event, the comprehensive pathophysiological approach allows the identification of risk factors for both CVD and depression as being largely common. Therefore, a coexistence relationship is created. The other possible situations may arise due to the involvement of individual protective factors and genetic vulnerability. As a result, treatment of depression may reduce risk of cardiovascular event in some cases.

Keywords: Depression, cardiovascular disease, lipidic profile.

INTRODUCTION

Depression is a mental condition marked by loss of interest and pleasure in ordinary activities, profound sense of worthlessness and associated cognitive, physical, behavioral symptoms, including anhedonia, sleep disorders and eating. It is a quite common nosological entity (1 in 6 adults throughout life will suffer from depression, women being affected twice as much as men) (Alonso et al., 2004), and is ranked third according to the impact quantification (Mathers & Loncar, 2006). Depression includes extensive symptomatic variability in addition to the many subtypes, which can be differentiated by: duration, recurrence, occurrence under certain conditions, key symptoms (InformedHealth.org), which makes it difficult to diagnose in the presence of cardiac comorbidities. The intensity of the symptoms may be different from one person to another, and may be given by the multitude of precipitating factors. Thus, cases of mild to severe depression will be detected depending on the duration and intensity of the

symptoms. Therefore, the major target of the manifestations of depression is the quality of the person's life, which will be directly affected in proportion to the increase of the severity of this pathology and may culminate even with the suicide. The establishment of the treatment will be rational, in accordance with the severity of the symptoms, their duration, the subtype of depression, the degree of functional impairment of the individual.

MECHANISMS AND CORRELATION

At the brain level through imaging investigations it was identified that there is a decrease in blood flow, activity and connections between the prefrontal cortex and limbic and subcortical structures, responsible for the speed of reaction and cognitive function, and hyperactivity of the amygdala, which explains the lack control of emotions, mood, and increased anxiety (Murray et al., 2012; García et al., 2011; Paduraru et al, 2019; Sandu, 2021a; 2021b; Savitz & Drevets, 2009). The mechanisms by which this occurs are not yet elucidated. For depression and CVD (cardiovascular disease) the common link may be the existence of a chronic inflammatory process associated with increased inflammatory markers such as: C-reactive protein, TNF- α and pro-inflammatory cytokines (Dantzer et al., 2008).

However, it is relevant that depression does not appear to influence CVD by conventional risk factors, and that lipid profile (high total cholesterol, and low HDL) is associated with a low level of depression (Shin et al., 2008). However, the treatment of depression with SSRI, reduces sympathetic activity (Barton et al., 2007), and prevents serotonin binding by platelets that would initiate their aggregation in a specific environment (atherosclerotic vessels), which contributes to diminishing the risk of an cardiac event (Institute for Quality and Efficiency in Health Care, 2017). Serotonin is also involved in the release of nitric oxide by the vascular endothelium, respectively the presence of inflammation as well as atherosclerotic areas in the vessels, will decrease its release, thus vasospasm will occur (Chirita et al., 2012). Depression in patients without CVD was associated with endothelial dysfunction, and treatment with SSRI produced significant improvements (Cooper et al., 2010; Pizzi et al., 2009). Also, in the etiopathogeny of depression, the behavioral component precipitated by psychosocial factors (acute stressors: social conflict, social ties; chronic: work, family), which denotes that depressed persons are less often engaged in activities that promote healthy lifestyle, they are not able to maintain a diet, exercise regularly, and adhere to treatment (Everson-Rose & Lewis, 2005; Vendemmia et al., 2019; Checherita et al., 2019).

MATERIALS AND METHODS

The study group comprised a number of 100 patients from urban and rural areas who were admitted to the Internal Medicine Department I within the Emergency Hospital "Apostol Andrei" Galați. Patient evaluation was done by:

I Anamnesis:

1. Age, sex, marital status, occupation, level of training
2. hereditary-collateral history: death from cardiovascular disease under 55, familial hypercholesterolemia, diabetes.
3. personal pathological history: the existence of chronic diseases, surgical interventions, sexually transmitted diseases, relevant medication
4. Lifestyle: physical activity, nutrition, nicotine consumption, coffee

II. Objective clinical examination - anthropometric data (height and body mass, waist, BMI calculation (Body Mass Index)), pulse and blood pressure measurement (2 values every 3 minutes)

III. Investigations

- Electrocardiogram;
- Laboratory tests: serum creatinine, blood sugar, triglycerides, total cholesterol

The Hamilton Scale (HDRS-17) was used to determine depression in the patient group

RESULTS AND DISCUSSIONS

The distribution of the group by sex was: 39 women and 61 men respectively. Of the 39 women over the age of 65, 30 are smokers, 7 are with cardiovascular disease, 12 are at high risk, and 10 are at low risk of cardiovascular disease, respectively. Based on the fact that the BMI reference values (Normal range 20 - 24.9; Overweight, 25-29.9 associate high risk, Obesity > 30 - high risk) and total cholesterol (120-200 mg / dl).

Of the 39 women, 17 have hypercholesterolemia, 10 are overweight, 13 have obesity, 7 have mild depression, and 3 have severe depression.

Of 61 men (age range was 55 – 79 years), 18 have cardiovascular disease, 23 are at high risk, and 20 have no or low risk of cardiovascular disease. Of the 61 men, 28 are with cholesterol, 25 are overweight, 2 men have mild depression and one with severe depression.

Of the 10 women with mild and severe depression, 6 are overweight 3 have obesity, most (10) have high total cholesterol, 4 have high LDL-cholesterol, and all 4 have an increased risk of cardiovascular disease. And the 3 men with mild and severe depression belong to the group with high risk of developing CVD and have the other conditions.

Of the total group of patients (100), (87%) have a mean depression score of 8.2, which corresponds to the norm, 4.4% have severe depression, and 9.9% have mild depression. The gender distribution of the mean values of the other conditions shows that although women have higher BMI, total cholesterol, and depression, men have a higher risk of developing CVD.

CONCLUSIONS

Although it is claimed that depression would be an individual risk factor for the occurrence of an adverse cardiac event, the comprehensive pathophysiological approach allows the identification of risk factors for both CVD and depression as being largely common. Therefore, a coexistence relationship is created. The other possible situations may arise due to the involvement of individual protective factors and genetic vulnerability.

Given that depression is found in large numbers among the population, its prompt and appropriate treatment concomitantly with psychotherapy would allow both to improve the quality of life of the people and to reduce the risk of CVD. In the case of CVD coexistence and depression, the patient's compliance with the treatment tends to decrease.

Modifiable risk factors such as: sedentary lifestyle, coffee, tobacco, unhealthy eating, excessive alcohol consumption, should be given priority control in order to obtain positive results in maintaining blood pressure and preventing depression.

The severity of depression correlates with the level of cardiovascular risk factors, so in major depression types, blood pressure and cholesterol levels were higher on average. The establishment of preventive health policies targeting the geriatric population, is an imperative in order to increase the quality of life, and implies the knowledge and identification of the geriatric particularities and their approach at the individual level

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