Preliminary report on the prevalence of depression in patients with coronary artery disease and severe aortic valve stenosis

Marcin Piechocki[1]*, Michał Okarski[2]*, Kornelia Szkodoń[2], Katarzyna Lizończyk[2], Jan Zachara[2], Marcin Skiba[2], Tadeusz Przewłocki[3, 4], Jacek Legutko[4, 5], Paweł Kleczyński[4, 5], Anna Kabłak-Ziembicka[3, 6], Jakub Podolec[4, 5]

[1]Department of Vascular and Endovascular Surgery, The St. John Paul II Hospital, Kraków, Poland
[2]Students' Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Institute of Cardiology — Jagiellonian University Medical College, Kraków, Poland
[3]Department of Cardiac and Vascular Diseases, Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland
[4]Department of Interventional Cardiology, The St. John Paul II Hospital, Kraków, Poland
[5]Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland
[6]Noninvasive Cardiovascular Laboratory, The St. John Paul II Hospital, Kraków, Poland
*Both authors equally contributed to the study.

Correspondence to:
Jakub Podolec, MD, PhD,
Department of Interventional Cardiology,
Institute of Cardiology,
Jagiellonian University Medical College,
John Paul II Hospital,
Prądnicka 80, 31–202 Kraków, Poland,
phone: +48 12 614 35 01,
e-mail: jakub.podolec@uj.edu.pl

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INTRODUCTION

Anxiety and depression remain among the most common mental health disorders. The link between "psyche" and "soma" is unquestionable [1]. Cardiovascular disease (CVD) patients are no exception concerning mental health problems [2]. Depression, like frailty, is associated with a decline in physical, socio-psychological, and cognitive function, and it lowers quality of life, resulting in an extreme vulnerability to stressors [3]. In aging populations, the elderly are at particular risk of developing cardiovascular risk factors, pan-vascular arterial disease, and adverse events [4]. Decreased mood, depression, and co-morbidities influence effective cardiovascular rehabilitation, management, and adherence to medication, which considerably decreases life expectancy of CVD patients [5].

For these reasons, the European Society of Cardiology guidelines recommend patient screening for depression as a good practice [1]. CVD patients who are also depressed have worse outcomes than those who are not depressed [2]. Nonetheless, most medical centers admitting CVD patients usually marginalize and neglect psychiatric assessment.

Therefore, this preliminary report aimed to assess the prevalence of depressive symptoms among patients hospitalized for chronic coronary syndrome (CCS), acute coronary syndrome (ACS), and severe aortic valve stenosis (AoS). Furthermore, we looked for risk factors associated with depression.

MATERIAL AND METHODS

The study included 133 consecutive patients with either CCS, ACS, or AoS hospitalized at the interventional cardiology department between the 1st of February and the 30th of April 2023. Three patients were excluded due to multiple causes of hospitalization, while 130 patients were included in statistical analysis. Depending on the cause of admission, patients were divided into 3 groups: group 1 included patients with CCS, group 2 — ACS, and group 3 — severe AoS. All patients signed informed consent to participate in the study.

Each patient was assessed for depressive symptoms using two questionnaires: the Beck Depression Inventory (BDI) and the Hamilton Depression Rating Scale (HAM-D). The exclusion criteria included other reasons for hospitalization than CCS, ACS, or AoS: hemodynamic instability, active cancer, or history of valve/cardiac surgery. Data about basic patients' characteristics, comorbidities, previous medical history, and laboratory test results were collected from medical records.

BDI and HAM-D scale

BDI is a 21-item self-reported inventory designed to assess the presence and severity of depressive symptoms [6]. HAM-D comprises

Table 1. Results of the BDI and HAM-D scores and risk factors for depression in patients with CCS, ACS and AoS

	CCS n = 61	ACS n = 29	AoS n = 40	*P*-value
BDI score, median (IQR), points	5 (3–11)	8 (3–17)	8 (5–15)	0.34
Results of the BDI (scoring scale):				0.25
No depression (0–11 points), n (%)	46 (75.4)	18 (62.1)	26 (65)	
Mild depression (12–26 points), n (%)	13 (21.3)	11 (37.9)	14 (35)	
Moderate depression (27–49 points), n (%)	2 (3.3)	0 (0)	0 (0)	
Severe depression (50–63 points), n (%)	0 (0)	0 (0)	0 (0)	
HAM-D score, median (IQR), points	5 (2–9)	7 (3–12)	8 (5–14)	0.01
HAM-D *post hoc* analysis	CCS vs. ACS: *P* = 0.07	ACS vs. AoS: *P* = 0.44	AoS vs. CCS: *P* = 0.003	
Results of the HAM-D (scoring scale):				0.1
No depression (0–7 points), n (%)	42 (68.9)	16 (55.2)	17 (42.5)	
Mild depression (8–12 points), n (%)	12 (19.7)	7 (24.1)	11 (27.5)	
Moderate depression (13–17 points), n (%)	3 (4.9)	5 (17.2)	8 (20)	
Severe depression (18–29 points), n (%)	4 (6.6)	1 (3.4)	4 (10)	
Very severe depression (30–52 points), n (%)	0 (0)	0 (0)	0 (0)	
Risk factors associated with depression in BDI:				
Risk factor	**OR (95% CI)**		**P-value**	
Diabetes	2.25 (1.05–4.81)		0.038	
Risk factors associated with depression in HAM-D:				
Risk factor	**OR (95% CI)**		**P-value**	
Age >65 years	8.05 (2.88–22.5)		<0.001	
Female gender	1.98 (0.94–4.15)		0.09	
Diabetes	4.03 (1.93–8.42)		<0.001	
Diabetes on oral medications	2.47 (1.18–5.15)		0.017	
Insulin	3.94 (1.17–13.3)		0.024	
Chronic kidney disease (eGFR <60 ml/min)	3.31 (1.54–7.11)		0.002	
Hypertension	1.11 (0.37–3.34)		1	
Hypercholesterolaemia	1.54 (0.49–4.79)		0.58	
Current smoking	0.89 (0.44–1.79)		0.86	
Prior myocardial infarction	2.17 (1.07–4.41)		0.034	
Prior stroke	2.74 (0.86–8.69)		0.09	
Atrial fibrillation	2.52 (1.11–5.69)		0.038	
Anticoagulants	2.47 (1.13–5.42)		0.029	
Antiplatelets (aspirin/$P2Y_{12}$ inhibitors)	0.84 (0.34–2.05)		0.82	

Abbreviations: ACS, acute coronary syndrome; AoS, aortic valve stenosis; BDI, Beck Depression Inventory; CCS, chronic coronary syndrome; CI, confidence interval; eGFR, estimated glomerular filtration rate; HAM-D, Hamilton Depression Rating Scale; IQR, interquartile range; OR, odds ratio

17 items. In our study, these questionnaires were completed with the assistance of an experienced physician [7]. The scoring scales of both questionnaires are shown in Table 1.

Statistical analysis

Qualitative data comparisons utilized Pearson's χ^2, Fisher's, Fisher–Freeman–Halton, or McNemar's tests. Quantitative data were compared using ANOVA (*post hoc* Tukey) or Kruskal–Wallis (*post hoc* Dunn) tests. The odds ratios of obtaining a score indicating depression in the BDI (>11 points) and HAM-D (>7 points) were calculated. The significance level α was set at 0.05. All statistics were carried out using PS IMAGO PRO 9.0.

RESULTS AND DISCUSSION

Group 1 comprised 61 patients, group 2 — 29, and group 3 — 40. Patients with AoS were older and had higher rates of respiratory system disorders and atrial fibrillation compared to CCS and ACS patients (Supplementary material, *Table S1*). Current smoking history and antiplatelet treatment were more prevalent in CCS and ACS groups.

Of the total, 40 (30.8%) patients were found to have a score indicating depression according to the BDI, while 55 (42.3%) according to the HAM-D. Among these patients, 29 had results beyond the norm in both questionnaires, while 11 patients had only elevated BDI scores, and 26 patients had elevated only HAM-D scores ($P = 0.02$). Using both tests indicated that approximately half of the study cohort experienced depressive symptoms. The BDI identified mild depressive episodes in 38 and moderate episodes in 2 cases. The results of HAM-D suggested a mild depressive episode in 30, moderate in 16, and severe depression in 9 patients (Table 1).

According to HAM-D, group 3 patients had the highest percentage of scores indicating depression, followed by the ACS and CCS groups. No statistical differences in the depression distribution between the study groups were observed with the BDI scale (Table 1).

Patients with a BDI-diagnosed depression, compared to those with normal BDI scores, had a higher prevalence of diabetes: 36 (40%) vs. 24 (60%), $P = 0.038$. In the BDI scale, only diabetes was a significant risk factor associated with depression (OR, 2.25; 95% CI, 1.05–4.81).

Patients with HAM-D scores indicating depression were older, had lower estimated glomerular filtration rate, and had a higher prevalence of diabetes, atrial fibrillation, and prior myocardial infarction (Table 1). According to the HAM-D scale, the odds ratios for depression were 4.03 in diabetic patients, 2.5 in atrial fibrillation, 3.31 in chronic kidney disease, and 2.2 in those with prior myocardial infarction.

One of our major findings is that depressive symptoms are not an uncommon diagnosis in so-called well-cared cardiac patients, and it can be detected both in patients with long-lasting CVD, such as degenerative AoS or CCS, but also in patients with short-lasting CVD, such as ACS. Studies show that the prevalence of depression varies depending on the patient, averaging 20%–30% [8]. It increases twice in CCS patients and can range between 41% and 51% in hospitalized patients [9]. The anxiety and depression levels remain elevated by up to 43% during the first 12 months after ACS [8]. These proportions are in line with our results. There was a higher percentage of patients suffering from depression in the ACS group compared to the CCS group (Table 1). The AoS group presented the highest prevalence of depression. It matches the rapid pace of symptom progression that can lead to death shortly after the occurrence of clinical symptoms [10, 11].

The level of depression seems to depend on the level of severity of symptoms and CVD, as these patients often require more radical treatment and use multiple drugs [2]. In our preliminary report, it was particularly true for patients with diabetes, chronic kidney disease, atrial arrhythmia, and in the elderly.

Depression and specific markers of depression were shown to be significantly associated with mortality and failure of post-procedural rehabilitation [12]. As patients grow in age, depression affects their compliance with the growing number of medications and medical procedures required [13].

The differences between the results obtained in HAM-D and BDI scores look obscure at first glance. However, it is worth mentioning that the BDI is a self-reporting questionnaire that takes a few minutes to complete [6]. These results may be considerably biased, as the patient may consider depression symptoms as the consequence of an underlying disease or can neglect them. In contrast, HAM-D is designed to be used by healthcare professionals [7]. Therefore, the HAM-D scale seems to be more accurate in providing actual diagnosis.

It is reported that only 11% of CVD patients with depression receive adequate antidepressant therapy [2, 13], and even fewer patients are screened for depression in ambulatory care settings despite the European Society of Cardiology's guidance [1]. At the same time, cardiac interventions on AoS, as well as percutaneous coronary interventions, were reported to reduce anxiety and depression levels in CVD patients [14].

This study has several limitations. First, the level of anxiety can differ between patients admitted in life-threatening conditions, such as ACS, compared to the patients with a prescheduled hospital admission, which allows the latter to develop adaptation mechanisms. Second, the results from BDI and HAM-D questionnaires do not automatically translate into a clinical diagnosis of depression since that diagnosis requires thorough psychiatric evaluation. Lastly, the study group was relatively small. However, this is a preliminary report with which we have attempted to start a professional discussion about the need for a multidisciplinary approach.

CONCLUSIONS

Depressive symptoms are common and often underdiagnosed in CVD patients. The BDI may not be sufficient to assess depression in these patients, potentially leaving many unaware of their mental health issues. In contrast, the HAM-D scale identifies depression in a significantly greater number of CVD patients. Additionally, HAM-D highlights distinct risk factors differentiating patients with depression from those without.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

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