ACTA MEDICA LITUANICA. 2014. Vol. 21. No. 3. P. 123–130

Manifestation of anxiety and depression and their association with cardiovascular diseases in the Lithuanian population

Neringa Burokienė[1],

Dovilė Karčiauskaitė[2],

Vytautas Kasiulevičius [1],

Vaidutis Kučinskas [3],

Zita Aušrelė Kučinskienė [2]

[1] *Clinics of Internal Diseases, Family Medicine and Oncology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania*

[2] *Department of Physiology, Biochemistry, Microbiology and Laboratory Medicine, Faculty of Medicine, Vilnius University*

[3] *Department of Human and Medical Genetics, Faculty of Medicine, Vilnius University*

Background. Cardiovascular diseases (CVD) continue to be the leading cause of morbidity and mortality in Lithuania. The key modifiable factors identified for CVD prevention include lifestyle and behavior factors (e. g. diet, body weight, physical activity, cigarette smoking), and health risk factors (e. g. hypertension, hypercholesterolemia, etc.), also anxiety and depression are considered as potentially modifiable CVD risk factors as well. The aim of this study was to evaluate the association between psychosocial stress, manifested as anxiety and depression, and CVD.

Material and methods. 317 individuals (155 men and 162 women) aged 40–85 years were randomly selected from primary care centers in 20 cities of Lithuania. Individuals were interviewed using the validated questionnaire comprising nutritional habits, family history and lifestyle factors. Psychosocial stress was evaluated using the HAD scale. Serum concentrations of cholesterol, HDL-Ch, LDL-Ch, triglycerides were measured.

Results. In 103 individuals (32.5%) the symptoms of clinical anxiety were found (HAD score was 8 points and above according to the anxiety scale). 43 individuals (13.6%) had symptoms of clinical depression (HAD score reached 8 points and above according to the depression scale). The median of depression symptoms was significantly different between men and women ($p < 0.0001$). 51 (32.9%) men experienced symptoms of anxiety, compared to 52 (32.1%) women, who suffered from symptoms of anxiety ($p = 0.905$). The symptoms of clinical depression were noticed in 12 (7.7%) men, while those symptoms were experienced by 31 (19.1%) women ($p = 0.003$). Prevalence of CVD was 23.3% (17.6% in men and 82.4% in women). The median anxiety HAD score was significantly different between CVD and healthy individuals' groups ($p = 0.013$) as well as the median depression HAD score ($p < 0.0001$). A significant correlation between CVD and depression was found: the increase in depression symptoms by 1 point increased the possibility of hazard ratio by 1.18 times ($\beta = 0.17$, OR = 1.18 (1.07–1.31), $p = 0.001$). There was no statistically important correlation between anxiety and CVD.

Conclusions. We have not found any significant correlation between the investigated biochemical blood parameters and HAD score, but there was a significant association between the depression HAD score and cardiovascular morbidity.

Key words: cardiovascular disease, depression, anxiety

Corespondence to: Neringa Burokienė, Clinics of Internal Diseases, Family Medicine and Oncology, Faculty of Medicine, Vilnius University, Santariškių St. 2, LT-08661 Vilnius, Lithuania.
E-mail: Neringa.burokiene@santa.lt

INTRODUCTION

According to the World Health Organization coronary heart disease (CHD) and depression are the two most common diseases causing disability and worsening survival in the developed countries. It is predicted that prevalence of these diseases is going to increase and by 2020 depression will be the second leading cause of disability in developed countries, second only to heart disease (1). Epidemiological, clinical and pathogenetic issues of cardiovascular diseases (CVD) continue to be an important research topic as CVDs are the leading cause of death and disability worldwide; in Lithuania CVD accounts for as many as 56% of all death and significantly surpasses other death causes (2).

It is well known that CVD risk is increased by certain risk factors: non-modifiable – sex, age, inheritance, and modifiable – arterial hypertension, dyslipidemia, smoking, overweight, and physical inactivity. Recently it has been shown that some psychological statuses, such as depression, anxiety or stress, are also potential risk factors for CVD (3).

Depression has an impact on the function of the hypothalamic – pituitary – adrenal axis: it decreases the secretion of cortisol and increases the secretion of the corticotrophin releasing factor, which enhances the release of glucocorticoids, being considered triggers of atherosclerosis, hypercholesterolemia, hypertension and hypertriglicerolemia (4). Depression promotes activation of platelets, increases their adhesion and might induce development of acute coronary syndromes. Patients with depression have higher levels of C-reactive protein (CRP), which can activate the endothelium of coronary arteries and destabilize the atherosclerotic plaque (5–6).

Improved care of patients with CVD and depression and early risk evaluation in primary care centers would be useful in recommending adequate approach to the high cardiovascular risk patients.

The aim of this study was to evaluate the association between depression and anxiety and CVD in the Lithuanian population.

MATERIALS AND METHODS

In cooperation with primary care physicians 315 individuals (155 men and 162 women) over 40 years of age were selected for the investigation and were interviewed using a specially created validated questionnaire. The patients were interviewed using a specially created validated questionnaire comprising nutritional and lifestyle habits, family history, and health status. The answers of randomly selected 8% respondents were verified according to the medical documents at the local primary healthcare centers. All the cardiovascular diagnosis indicated by the patients were confirmed by medical documents. Depression and anxiety were assessed using the Hospital Anxiety and Depression (HAD) scale consisting of 14 questions: 7 concerning depression symptoms and 7 about anxiety; subscale score <8 indicated no depression or anxiety, 8–10 showed possible depression or anxiety, and >11 indicated probable presence of depression or anxiety.

Approval for the biomedical research was obtained from the Vilnius Regional Biomedical Research Ethics Committee (No. 158200-05-329-79) and an informed written consent was received from every participant of the study.

Participants for the study were gathered from the six ethnolinguistic groups representing Lithuania – Western, Eastern and Southern Aukštaitija (Higher Lithuania) and Nothern, Western and Southern Žemaitija (Lower Lithuania). In addition, all of the participants were Lithuanians, i. e. at least three generations were living in the particular ethnolinguistic region.

Venous blood samples for biochemical testing were drawn after an overnight fasting at 7.30–11.00 a. m. at the local primary healthcare centers and immediately transported to the Centre of Laboratory Medicine, Vilnius University Hospital Santariškių Clinics. Biochemical blood parameters: total cholesterol, high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), triglycerides (TG), fasting glucose, C-reactive protein (CRP), apolipoprotein A1 (ApoA1), apolipoprotein B (ApoB), their ratio (ApoB/ApoA1) and lipoprotein (a) were tested using standardized procedures.

A statistical analysis was performed using IBM SPSS 20 (Statistical Package for Social Sciences). During the description of investigated persons the interval variable averages and standard deviations were submitted as well as the lowest and highest means. Differences of interval variable averages were compared using the criteria of t-Student, one-factor dispersion analysis (ANOVA), for

multiple comparisons applying post hoc Fisher's Least Significant Difference (LSD) criteria. For the assessment of the margin of efficiency the ratio of Cohen's d has been calculated. For the test of independence and genetic association analysis Pearson's chi-square (χ^2) statistics has been applied. In order to evaluate the influence of the independent factors on the dependent variable a logistic regression analysis has been applied. A significance level of 0.05 has been chosen.

RESULTS

General characteristics and biochemical parameters of the studied individuals are summarized in Table 1.

The studied population was comprised of 155 men (48.9%) and 162 women (51.1%). The comparison of clinical characteristics and biochemical blood parameters between men and women groups is presented in Table 2.

Table 1. General characteristics and biochemical parameters of the studied population

Parameter	Mean ± SD	Minimum	Maximum
Age, y.	49.91 ± 8.20	40	85
Height, cm	177.36 ± 100.80	150.00	1 960.00
Body weight, kg	83.98 ± 17.86	47.00	170.00
BMI, kg/m^2	28.27 ± 5.17	0.21	51.32
Glucose, mmol/l	5.64 ± 1.53	3.71	23.97
Cholesterol, mmol/l	6.14 ± 1.11	2.98	10.49
HDL-C, mmol/l	1.42 ± 0.38	0.41	2.94
LDL-C, mmol/l	4.05 ± 0.98	1.67	7.58
Triglycerides, mmol/l	1.47 ± 1.02	0.40	8.95
CRP, mg/l	2.72 ± 4.98	0.20	47.10
ApoA1, g/l	1.59 ± 0.27	0.77	2.46
ApoB, g/l	1.05 ± 0.27	0.43	2.03
LP(a), g/l	0.19 ± 0.25	0.02	1.34
ApoA1/ ApoB	1.63 ± 0.60	0.65	4.22

SD – standard deviation, BMI – body mass index, HDL-C – high density lipoprotein cholesterol, LDL – low density lipoprotein cholesterol, CRP – C-reactive protein, ApoA1 – apoprotein A1, ApoB – apoprotein B, Lp(a) – lipoprotein (a).

Table 2. Comparison of clinical characteristics and biochemical blood parameters between men and women groups

Parameter	Men (n = 155), mean ± SD	Women (n = 162), mean ± SD	P value	Cohen's d
Age, y.	50.25 ± 8.43	49.59 ± 7.99	0.480	
Height, cm	178. ± 6.17	176.75 ± 141.09	0.912	
Body weight, kg	91.35 ± 18.09	76.92 ± 14.51	**<0.0001**	5.15
BMI, kg/m^2	28.71 ± 4.69	27.84 ± 5.57	0.134	
Glucose, mmol/l	5.66 ± 1.73	5.61 ± 1.32	0.756	
Cholesterol, mmol/l	6.01 ± 1.21	6.27 ± .99	**0.036**	1.10
HDL-C, mmol/l	1.32 ± .35	1.52 ± .38	**<0.0001**	0.37
LDL-C, mmol/l	3.95 ± 1.05	4.14 ± .9	0.083	
Triglycerides, mmol/l	1.64 ± 1.21	1.32 ± .76	**0.006**	1.01
CRP, mg/l	2.99 ± 6.03	2.47 ± 3.71	0.362	
ApoA1, g/l	1.52 ± .25	1.65 ± .28	**<0.0001**	0.27
ApoB, g/l	1.06 ± .3	1.05 ± .25	0.909	
LP(a), g/l	.19 ± .27	.18 ± .22	0.733	
ApoA1/ ApoB	1.58 ± .6	1.68 ± .59	0.135	

SD – standard deviation, BMI – body mass index, HDL-C – high density lipoprotein cholesterol, LDL – low density lipoprotein cholesterol, CRP – C-reactive protein, ApoA1 – apoprotein A1, ApoB – apoprotein B, Lp(a) – lipoprotein (a).

In the studied population clinical symptoms of anxiety (HAD scale Anxiety score >8) were present in 103 (32.5%) individuals, meanwhile clinical symptoms of depression (HAD scale Depression score >8) were present in 43 (13.6%). Mean values of HAD scale Anxiety and Depression scores are given in Table 3. The distribution of severity of depression and anxiety symptoms in the studied population is shown in Fig. 1.

The analysis of the relation between symptoms of anxiety and depression and biochemical blood parameters showed only a moderate statistically significant relation between the anxiety and depression scores ($r = 0.516$, $p < 0.01$). However, no significant relation between HAD scores and biochemical blood parameters was found.

The analysis of the mental status in men and women groups showed that the median of depression symptoms was significantly higher in the women group in comparison to the men group ($p < 0.001$) (Table 4). Clinical symptoms of anxiety (HAD Anxiety score >8) were present in 51 (32.9%) male subjects and 52 (32.1%) female subjects ($p = 0.905$). Meanwhile, clinical symptoms of depression (HAD Depression score >8) were present in 12 (7.7%) men in comparison to 31 (19.1%) women ($p = 0.003$). The distribution of severity of symptoms of anxiety and depression in men and women groups are shown in Figs. 2 and 3.

23.3% (n = 74) of the studied population comprised patients with CVD, among them 17.6% (n = 13) men and 82.4 (n = 61) women. The prevalence of CVD was significantly higher among women compared to men (37.7% vs 8.4%, $p < 0.001$). The clinical characteristics and bio-

Table 3. Manifestation of depression and anxiety in the studied population

Parameter	Mode	Median	Interquartile range
HAD scale Anxiety score	6	6	5 (4–9)
HAD scale Depression score	1	6	4 (2–6)

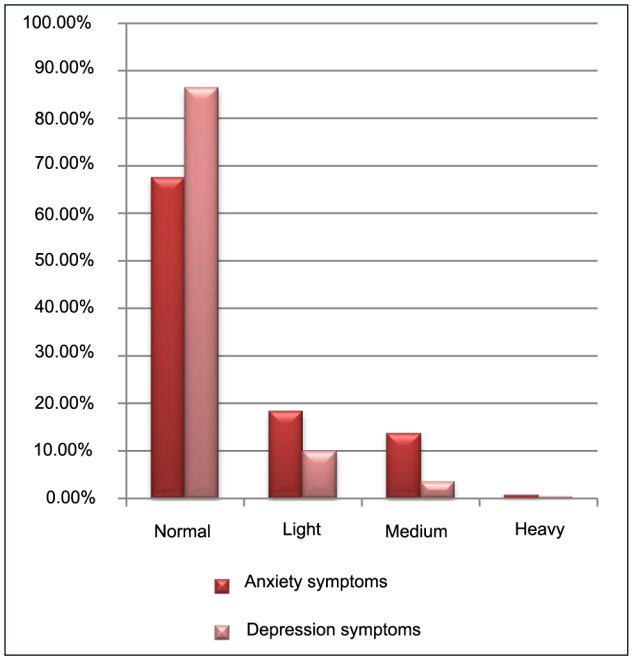

Fig. 1. Severity of depression and anxiety symptoms (HAD score) in the studied population

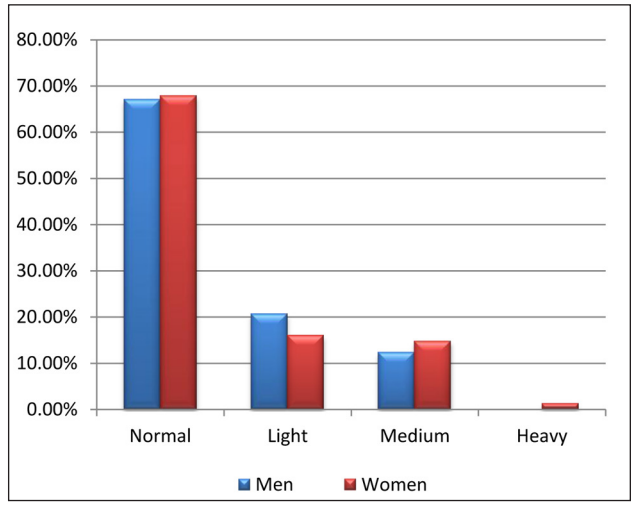

Fig. 2. Severity of anxiety symptoms in women and men groups

Table 4. Anxiety and depression scores in men and women groups

Parameter	Men (n = 155)			Women (n = 162)		
	Mode	Median	Interquartile range	Mode	Median	Interquartile range
HAD scale Anxiety score	5	6	5 (4–9)	6	6	5 (4–9)
HAD scale Depression score	1	3	4 (1–5)	5	5	5 (2–7)

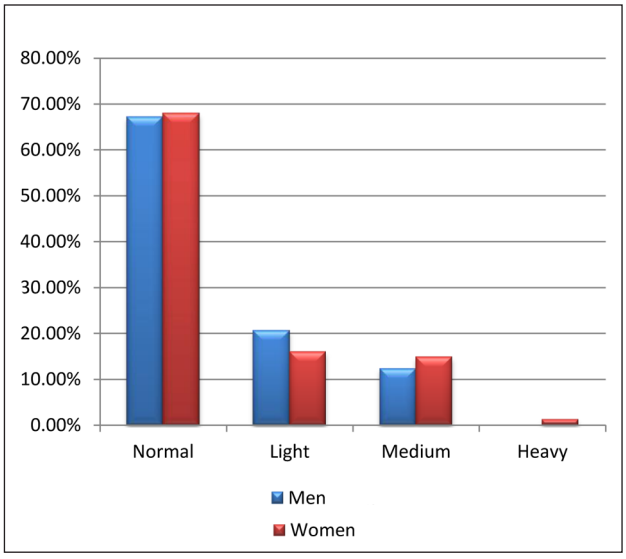

Fig. 3. Severity of depression symptoms in women and men groups

chemical parameters between the groups of patients with and without CVD were not significantly different (Table 5).

The comparison of the mental status between the groups of individuals with and without CVD showed that the median HAD Anxiety score was statistically higher in patients with CVD vs individuals without CVD ($p = 0.013$). Likewise, the median HAD Depression score was also statistically higher in patients with CVD vs individuals without CVD ($p < 0.0001$) (Table 6).

Clinical symptoms of anxiety and depression were significantly more prevalent in individuals with CVD in comparison to those without CVD (Table 7). The distribution of the severity of anxiety and depression symptoms in individuals with and without CVD is shown in Figs. 4 and 5.

Table 5. Comparison of clinical characteristics and biochemical parameters between the groups of individuals with and without CVD

Parameter	Patients with CVD (n = 74), mean ± SD	Individuals without CVD, (n = 243), mean ± SD	p
Age, y.	51.19 ± 9.97	49.52 ± 7.56	0.188
Height, cm	192.66 ± 208.39	172.70 ± 8.71	0.413
Body weight, kg	80.90 ± 15.39	84.91 ± 18.47	0.064
BMI, kg/m^2	28.04 ± 5.43	28.34 ± 5.10	0.670
Glucose, mmol/l	5.60 ± 1.23	5.65 ± 1.61	0.793
Cholesterol, mmol/l	6.09 ± 0.98	6.16 ± 1.15	0.628
HDL-C, mmol/l	1.42 ± 0.41	1.42 ± 0.37	0.994
LDL-C, mmol/l	3.98 ± 0.87	4.06 ± 1.01	0.546
Triglycerides, mmol/l	1.46 ± 0.91	1.48 ± 1.05	0.910
CRP, mg/l	3.58 ± 6.29	2.46 ± 4.49	0.092
ApoA1, g/l	1.61 ± 0.29	1.58 ± 0.27	0.408
ApoB, g/l	1.06 ± 0.24	1.05 ± 0.28	0.955
LP(a), g/l	0.17 ± 0.20	0.19 ± 0.26	0.449
ApoA1 / ApoB	1.63 ± 0.59	1.64 ± 0.60	0.950

SD – standard deviation, BMI – body mass index, HDL-C – high density lipoprotein cholesterol, LDL – low density lipoprotein cholesterol, CRP – C-reactive protein, ApoA1 – apoprotein A1, ApoB – apoprotein B, Lp(a) – lipoprotein (a).

Table 6. Comparison of HAD scores between the groups of individuals with and without CVD

Parameter	Patients with CVD (n = 74)			Individuals without CVD (n = 243)		
	Mode	Median	Interquartile range	Mode	Median	Interquartile range
HAD scale Anxiety score	6	7	5 (5–10)	6	6	4 (4–8)
HAD scale Depression score	5	5	5.25 (2.75–8)	1	3	4 (1–5)

Table 7. Manifestation of clinical symptoms of anxiety and depression in patients with and without CVD

Parameter	Patients with CVD (n = 74)	Individuals without CVD (n = 243)	p
Clinical anxiety symptoms	34 (45.9%)	69 (28.4%)	0.007
Clinical depression symptoms	21 (28.4%)	22 (9.1%)	<0.0001

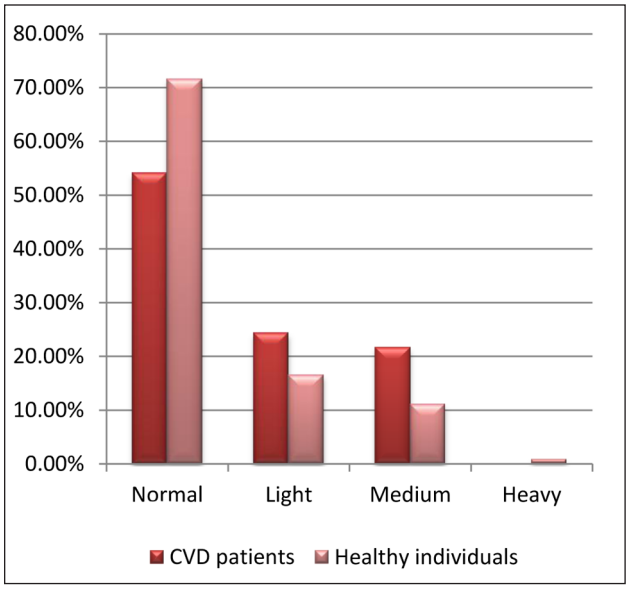

Fig. 4. Severity of symptoms of anxiety in individuals with and without CVD

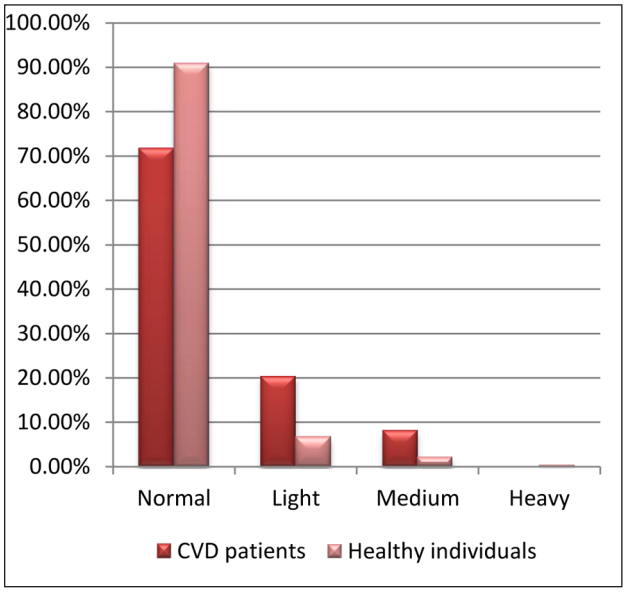

Fig. 5. Severity of symptoms of depression in individuals with and without CVD

Analyzing the dependence of cardiovascular morbidity on depression and anxiety symptoms and biochemical blood parameters, a multivariate stepwise backward conditional logistic regression analysis was performed. In the initial model the dependent variable was cardiovascular morbidity and included independent variables were age, sex, BMI, glucose, total cholesterol, HDL-C, LDL-C, triglycerides, CRB, apoA1 and apoB levels, as well as HAD Depression and Anxiety scores. In the studied population CVD morbidity was dependent on sex, LDL cholesterol, apolipoprotein B and depression symptoms. Women had an odds ratio of CVD 7.14 higher than men. The increase in apolipoprotein B concentration by 1 g/l increased odds ratio of CVD 12.03 fold, meanwhile the increase of depression score by 1 point increased CVD risk 1.16 fold.

Analyzing the dependence of cardiovascular morbidity on depression and anxiety symptoms a multivariate logistic regression analysis was performed. In the initial model dependent variable was cardiovascular morbidity and independent variables were HAD scale Depression and Anxiety scores. The final model had 76.3 correct classification; the Cox-Snell pseudotermination coefficient was $r_{CS}^2 = 0.062$ and the Nagelkerke pseudotermination coefficient was $r_{CS}^2 = 0.093$.

We have found a statistically significant relation between CVD morbidity and depression symptoms: the increase in depression symptoms by 1 point increased the possibility of the hazzard ratio by 1.18 times ($\beta = 0.17$, OR = 1.18 (1.07–1.31), $p = 0.001$). Meanwhile, a statistically important correlation between anxiety and CVD was not found.

DISCUSSION

Depression and coronary heart diseases are commonly presented together. Depression is more prevalent among patients with CHD in comparison to general population; more than 20% of the patients hospitalized due to myocardial infarction meet the criteria of the major depression disorder (7). Multiple research results support the relation between depression and increased risk of CHD and CVD mortality, however, the relationship could be bidirectional. Results of the meta-analysis confirm the role of depression in the development of CHD reporting effect sizes between 1.5 and 2.7 (9–10).

The meta-analysis of the systemic review and 28 prospective studies confirmed the association between depression and stroke. These studies were performed in European and North American medicine centers and found that depression was significantly related to increased risk of stroke (HR 1.45, 95% CI [1.29–1.63]) (11). In our study we have found that the increase of HAD Depression score by 1 point increases the odds ratio by 1.16 fold.

The atherosclerotic process starts in early life and is influenced by various potentially modifiable risk factors, lifestyle and environment. In a prospective population study involving 37,291 Norwegians it was found that depression and anxiety were significantly related to the risk of developing type 2 diabetes in 10 years (OR 1.8, 95% CI [1.3–2.5]) (12). In 2003 Danner et al. reported an association between depression and increased CRP level (13). However, in our study we did not find any significant correlation between depression or anxiety and the investigated biochemical blood parameters.

CONCLUSIONS

We did not find any significant correlation between the investigated biochemical blood parameters and HAD score, but there was a significant association between the depression HAD score and cardiovascular morbidity.

ACKNOWLEDGEMENTS

The LITGEN project (VP1-3.1-ŠMM-07-K-01-013) is funded by the European Social Fund under the Global Grant measure.

Received 24 September 2014
Accepted 22 October 2014

References

1. Neylon A, Canniffe C, Anand S, Kreatsoulas C, Blake GJ, Sugrue D, McGorrian C. A global perspective on psychosocial risk factors for cardivascular disease. Prog Cardiovasc Dis. 2013; 55: 574–81.
2. http://www.stat.gov.lt/lt/news/view/?id=10285
3. Khawaja IS, Westermeyer JJ, Gajwani P, Feinstein RE. Depression and coronary artery disease: the association, mechanisms, and therapeutic implications. Psychiatry. 2009; 6(1): 38–51.
4. Radsheer FC, van Heerikhuize JJ, Lucassen PJ, Hoogendijk WJ, Tilders FJ, Swaab DF. Corticotropin-releasing hormone mRNA levels in the paraventricular nucleus of patients with Alzheimer's disease and depression. Am J Psychiatry. 1995; 152: 1372–6.
5. Bruce EC, Musselman DL. Depression: alterations in platelet function and ischemic heart disease. Psychosom Med. 2005; 679(Suppl): S34–6.
6. Kop WJ, Gottdiener JS. The role of immune system parameters in the relationship between depression and coronary artery disease. Psychosom Med. 2005; 67: 537–41.
7. Thombs BD, Bass EB, Ford DE, Stewart KJ, Tsilidis KK, Patel U, et al. Prevalence of depression in survivors of acute miocardial infarction. J Gen Intern Med. 2006; 21: 30–8.
8. Lesperance F, Frasure-Smith N, Talajic M, Bourassa MG. Five-year risk of cardiac mortality in relation to initial severity and one-year changes in depression symptoms after myocardial infarction. Circulation. 2002; 105: 1049–53.
9. Frasure-Smith N, Lesperance F. Depression and cardiac risk: present status and future direction. Heart. 2010; 96: 173–6.
10. Barth J, Schumacher M, Herrmann-Lingen C. Depression as a risk factor for mortality in patients with coronary heart disease: a meta-analysis. Psychosom Med. 2004; 66: 802–13.
11. Pan A, Sun Q, Okereke OI, Rexrode KM, Hu FB. Depression and risk of stroke morbidity and mortality: A meta-analysis and systematic review. JAMA. 2011; 306: 1241–9.
12. Engum A. The role of depression and anxiety in onset of diabetes in a large population-based study. J Psychosom Res. 2007; 62: 31–8.
13. Danner M, Kasl SV, Abramson JL, Vaccarino V. Association between depression and elevated C-reactive protein. Psychosom Med. 2003; 65: 347–56.

Neringa Burokienė, Dovilė Karčiauskaitė, Vytautas Kasiulevičius, Vaidutis Kučinskas, Zita Aušrelė Kučinskienė

NERIMO IR DEPRESIJOS PASIREIŠKIMAS IR JŲ SĄSAJOS SU ŠIRDIES IR KRAUJAGYSLIŲ LIGOMIS LIETUVOS POPULIACIJOJE

Santrauka

Įvadas. Širdies ir kraujagyslių ligos (ŠKL) ir toliau išlieka pagrindinė sergamumo ir mirtingumo Lietuvoje priežastis. Pagrindiniai modifikuojami ŠKL rizikos veiksniai yra gyvenimo būdas ir elgsena, o nerimas ir depresija taip pat yra reikšmingas ŠKL rizikos veiksnys. Šio tyrimo tikslas – įvertinti psichosocialinio streso, pasireiškiančio nerimu ir depresija bei širdies ir kraujagyslių ligų sąsajas.

Metodai. 40–85 metų amžiaus 317 asmenų (155 vyrai ir 162 moterys) buvo atsitiktinai atrinkta iš 20-ties Lietuvos miestų pirminės sveikatos priežiūros centrų. Asmenys buvo apklausti naudojant patvirtintą klausimyną, apimantį mitybos, gyvenimo būdo įpročius ir širdies bei kraujagyslių (miokardo infarktas, insultas ir hipertenzija) ligos anamnezę. Širdies ir kraujagyslių diagnozė buvo patikslinta pagal medicininę dokumentaciją. Psichosocialinis stresas vertintas naudojant HAD skalę.

Rezultatai. 103 asmenims (32,5 %) nustatyti klinikiniai nerimo simptomai (HAD skalės balų skaičius ≥8 pagal nerimo skalę). 43 asmenys (13,6 %) sirgo klinikine depresija (HAD skalės balų skaičius ≥8 pagal depresijos skalę). Depresijos simptomų mediana tarp vyrų ir moterų reikšmingai skyrėsi ($p < 0,0001$). 51 vyrui (32,9 %) buvo nustatytas nerimas ir 52 moterys (32,1 %) turėjo nerimo simptomų ($p = 0,905$). Klinikinės depresijos simptomai pastebėti 12 vyrų (7,7 %) ir 31 moteriai (19,1 %) ($p = 0,003$). Sergamumas širdies ir kraujagyslių ligomis siekė 23,3 % (17,6 % vyrų ir 82,4 % moterų). Nustatyta reikšminga sąsaja tarp ŠKL ir depresijos: depresijos simptomams padidėjus 1 balu, šansų santykis išaugo 1,18 karto ($\beta = 0,17$, ŠS = 1,18 (1,07–1,31), $p = 0001$). Statistiškai reikšmingo ryšio tarp nerimo ir širdies bei kraujagyslių ligų nebuvo rasta.

Išvados. Nustatėme reikšmingas sąsajas tarp depresijos įverčio HAD skalėje, sergamumo širdies ir kraujagyslių ligomis, tačiau tarp biocheminių kraujo rodiklių ir HAD skalės įverčio reikšmingo skirtumo neradome.

Raktažodžiai: širdies ir kraujagyslių ligos, depresija, nerimas