PROTECTIVE FACTORS AGAINST DEPRESSION IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE WITH CRITICAL LIMB ISCHEMIA

Assist. Prof. Liliana Veronica Diaconescu[1], MD, PhD, Ion Diaconescu[2], MD
[1]Department of Medical Psychology, "Carol Davila" University of Medicine and Pharmacy, Bucharest
[2]Department of Vascular Surgery, "Prof. Dr. C.C. Iliescu" Emergency Institute for Cardiovascular Diseases, Bucharest

ABSTRACT

Introduction. The aim of the study was to assess the extent to which psychosocial factors (social support and coping strategies) may have a protective role against depression in patients with peripheral arterial disease (PAD).
Methods. The design of the study was transversal and included 37 patients with PAD with critical ischemia (32 men, 5 women, mean age = 62.41). They were administered Center for Epidemiologic Studies Depression Scale, Duke-UNC Functional Social Support Questionnaire and COPE inventory.
Results. Depressive symptoms were found at 28.6% of the patients. There were low scores of perceived social support at 32.4% of the patients. Depression correlated (p<.001) positively with mental disengagement (r=.791), denial (r=.672), behavioral disengagement (r=.760), restraint (r=.075) and negatively with social support (r= -.879) and positive reinterpretation (r=-.844), active coping (r=-.776), use of emotional support (r=-.624).
Discussion. PAD patients experience depression. Is highlighted the buffer role of social support and of active coping strategies in facing a chronic disease.
Conclusions. Recognition and evaluation for depression in patients with PAD followed by identifying psychosocial interventions may be useful in improving outcomes of these patients.

Keywords: peripheral arterial disease, critical limb ischemia, depression, social support, coping

INTRODUCTION

Peripheral arterial disease (PAD) implies damage of arterial blood-axes of the legs. Early clinical manifestations are intermittent claudication and severe forms are represented by critical limb ischemia (CLI). Patients with CLI suffer of pain at rest and severe ischemic lesions extending to gangrene and amputation limb-threatening. PAD prevalence ranges from 3-10% to 15-20% in patients aged 70 years and older (1-3).

Depressive symptoms are present among patients with PAD (4,5,6), with a prevalence varying between 16% and 36% (4,7,8) and are associated with functional impairment (4), a worse outcome in their revascularized leg (9), poor quality of life (10).

A perceived lack of social support has been implicated as a risk factor for the development and progression of cardiovascular disease (5,11,12). Social support may influence the seeking of appropriate treatment (10) and is associated with greater quality of life and better physical health (13).

Coping strategies influence the adjustment to PAD, with maladaptive coping affecting the daily life and predicting a worse prognosis (14,15). Passive coping styles are associated with more depressive symptoms and active ones are associated with less depressive symptomatology (16).

The study's aim was to assess the presence of depressive symptoms at patients with peripheral arterial disease (PAD) and to identify potential psychosocial factors (such as social support and cop-

Corresponding author:
Assist Prof. Liliana Veronica Diaconescu, MD, PhD "Carol Davila" University of Medicine and Pharmacy, 8 Eroilor Sanitari Blvd, Bucharest
e-mail: liliana.diaconescu@umfcd.ro

ing mechanisms) that may help these patients to deal with the disease.

MATERIAL AND METHODS

The participants were patients from a vascular surgery department. The inclusion criteria was the diagnosis of PAD with CLI, which was met by 42 patients. A number of 37 patients (32 men and 5 women) agreed to participate into the study. The mean age was 62.41 (SD=8.0). From them, 21 patients were their early postoperative stage and the others 16 were preoperatively.

The study design was transversal. It comprised one single administration of the following psychological instruments:

1. Center for Epidemiologic Studies Depression Scale (CES-D Scale) (17) Is a short self-report scale designed to measure depressive symptomatology in the general population (17). The questions are answered on a scale of 0-3, the CES-D scores range from 0 to 60 with higher scores indicating more severe depressive symptoms. Internal consistency using coefficient alpha is estimated to be .85 for the general population (healthy) and .90 in patient samples (17).

2. The Duke-UNC Functional Social Support Questionnaire (FSSQ) (18) Is a 8-item instrument that measures the strength of the person's social support network. Scoring is made on a 1 to 5 scale (the higher the average score, the greater the perceived social support). Characteristics: high construct validity; high internal consistency reliability (Cronbach's alpha = .81 - .92).

3. COPE questionnaire (19). Is a 60-item measure. It contains 15 scales: Active Coping, Planning, Seeking Instrumental Social Support, Seeking Emotional Social Support, Suppression of Competing Activities, Religion, Positive Reinterpretation and Growth, Restraint Coping, Resignation/Acceptance, Focus on and Venting of Emotions, Denial, Mental Disengagement, Behavioral Disengagement, Alcohol/Drug Use and Humor.

Statistical analysis: Responses were analyzed using SPSS Statistics 16.0 software.

RESULTS

Descriptive statistics are presented in Table 1. Depressive symptoms (scores more than 35 points) were present at 28.6% of patients. Low levels of social support were reported by 32.4% of patients.

The most used coping strategies were *positive reinterpretation* (COPE 1), *restraint* (COPE 10), *planning* (COPE 15), *suppression of competing activities* (COPE 14), *use of instrumental social support* (COPE 4) and *active coping* (COPE 5). The least used coping strategies were *denial* (COPE 6), *religious coping* (COPE 7) and *substance use* (COPE 12).

TABLE 1. *Descriptive statistics*

	Mean (SD)	Minimum	Maximum
Depression	26.84 (9.84)	6	48
PSS	25.11 (8.32)	10	40
COPE 1	11.30 (2.78)	6	16
COPE 2	10.00 (3.09	5	15
COPE 3	9.24 (1.75)	5	13
COPE 4	10.32 (2.89)	5	15
COPE 5	10.19 (3.38)	5	16
COPE 6	8.08 (3.64)	4	16
COPE 7	7.51 (2.98)	4	13
COPE 8	8.43 (3,52)	4	15
COPE 9	9.14 (4.04)	4	16
COPE 10	10.81 (2.22)	7	16
COPE 11	9.11 (3.12)	4	14
COPE 12	6.11 (2.44)	4	13
COPE 13	9.73 (2.49)	5	16
COPE 14	10.43 (1.90)	7	14
COPE 15	10.78 (2.90)	5	16

(PSS – perceived social support, COPE – coping scales, SD – standard deviation)

There were performed t-test to compare operated patients and patients before surgery. There were identified some differences (higher levels of depression and higher scores at *acceptance* and *mental disengagement* scales at operated patients), but they were non-significant.

Depression correlated positively with *mental disengagement* (COPE2), denial (COPE6), *behavioral disengagement* (COPE 9), *restraint* (COPE10) and negatively with social support and *positive reinterpretation* (COPE1), *active coping* (COPE5), *use of emotional support* (COPE11), *planning* (COPE15) (Table 2).

DISCUSSIONS

In our study, moderate and high levels of depression were present in 28.6% of patients (which is concordant with other studies) (4,7,8), meanwhile low levels of social support were perceived in 32.4% of patients. Hence, there can be considered the role played by social support as a buffer factor against depression in PAD patients. In addition, the influence of coping mechanisms on depression must be taken into account. On the one hand, there were found lower levels of depression in patients who face stressful situations by active

TABLE 2. *Significant correlations between study variables*

	PSS	COPE1	COPE2	COPE5	COPE6	COPE9	COPE 10	COPE 11	COPE 12	COPE 15
Depression	-.879**	-.844**	.791**	-.776**	.672**	.760**	.753**	-.624**	.777**	-.587**
PSS		.865**	-.738**	.784**	-.496**	-.676**	-.753**	.627**	-.749**	.523**
COPE1			-.745**	.831**	-.625**	-.746**	-.776**	.733**	-.701**	.536**
COPE2				-.864**	.636**	.774**	.643**	-.572**	.632**	-.525**
COPE3				.189	-.229	-.510**	-.444**	.426**	-.175	.185
COPE4				.138	.115	-.197	-.082	.467**	-.053	-.162
COPE5					-.531**	-.713**	-.646**	.679**	-.664**	.595**
COPE6						.764**	.760**	-.513**	.730**	-.627**
COPE7						-.247	-.261	.226	-.228	-.076
COPE8						-.377*	-.436**	.250	-.579**	.438**
COPE9							.838**	-.753**	.734**	-.586**
COPE10								-.665**	.760**	-.660**
COPE11									-.615**	.425**
COPE12										-.739**
COPE13										.429**
COPE14										.383*
COPE15										1

*Correlation is significant at the 0.05 level (2- tailed)
**Correlation is significant at the 0.01 level (2- tailed)

coping strategies. On the other hand, passive coping contributed to maintain increased levels of depression.

CONCLUSIONS

Patients with PAD with CLI experience depression which, according with previous studies (20,21), is a significant determinant of disease's prognosis (20,21). For this reason it is important to recognize and evaluate the depressive symptoms in order to further identify psychosocial interventions that may be useful in improving these patients' outcomes.

In this respect, there can be assessed at least 2 psychosocial aspects:

– social support as a buffer factor against stress and depression along the path of a chronic illness and with certain role in treatment adherence.
– coping strategies as individual abilities to deal (or not) with depression, with limitation of daily activities and with distress due to the surgical intervention and to the major risk of amputation. Thus, acquiring active coping mechanisms may result in accepting the new life situation, a better adjustment to the disease and a better quality of life of PAD patients.

Acknowledgements

The authors would like to thank medical staff of Vascular Surgery Department from Emergency Institute for Cardiovascular Diseases „Prof. Dr. C.C. Iliescu", Bucharest, who offered us the opportunity to conduct the study.

REFERENCES

1. **Hiatt W.R, Hoag S., Hamman R.F.** Effect of diagnostic criteria on the prevalence of peripheral arterial disease.The San Luis Valley Diabetes Study. *Circulation*.1995; 91:1472-9.
2. **Selvin E., Erlinger T.P.** Prevalence of and risk factors for peripheral arterial disease in the United States:results from the National Health and Nutrition Examination Survey, 1999-2000. *Circulation*. 2004;110:738-43.
3. **Kröger K., Stang A., Kondratieva J. et al.** on behalf of the Heinz Nixdorf Recall Study Group. Prevalence of peripheral arterial disease–results of the Heinz Nixdorf recall Study. *Eur J Epidemiol.* 2006; 21:279–85.
4. **McDermott M.M., Greenland P., Guralnik J.M. et al.** Depressive symptoms and lower extremity functioning in men and women with peripheral arterial disease. *J Gen Intern Med.* 2003; 18:461-7;
5. **Remes L., Isoaho R., Vahlberg T. et al.** Quality of life among lower extremity peripheral arterial disease patients who have undergone endovascular or surgical revascularization: a case control study, *European Journal of Vascular & Endovascular Surgery.* 2010; 40 (5), 618-625;
6. **Grenon S.M., Hiramoto J., Smolderen K.G. et al.** Association between depression and peripheral artery disease: Insights from the Heart and Soul Study, *Journal of the American Heart Association*.2012; 1:e002667 doi: 10.1161/JAHA.112.002667;
7. **Arseven A., Guralnik O'Brien E., Liu K., McDermott M.M.** Peripheral arterial disease and depressed mood in older men and women, *Vascular Medicine*, 2001; 6, 229-234;
8. **Pratt A.G., Norris E.R., Kaufmann M.** Peripheral vascular disease and depression. *J Vascular Nurs.* 2005; 23:123–7;

9. **Cherr G.S., Wang J., Zimmerman P.M., Dosluoglu H.H.** Depression is associated with worse patency and recurrent leg symptoms after lower extremity revascularization. *J Vasc Surg*. 2007; 45:744-50;
10. **Aquaris A.E., Denollet J., Hamming J.F., De Vries J.** Age-related differences in invasive treatment of peripheral arterial disease: disease severity versus social support as determinants, *J Psychosom Res*. 2006; 61(6):739-45;
11. **Angerer P., Siebert U., Kothny W., Muhlbauer D., Mudra H., von Schacky C.** Impact of social support, cynical hostility and anger expression on progression of coronary atherosclerosis. *J Am Coll Cardiol*. 2000; 36: 1781–88.
12. **Wattanakit K., Williams J.E., Schreiner P.J. et al.** Association of anger proneness, depression and low social support with peripheral arterial disease: the Atherosclerosis Risk in Communities Study, *Vasc Med.* 2005; 10: 199-206, DOI: 10.1191/1358863x05vm622oa
13. **Oka R.K., Szuba A., Giacomini J.C., Cooke J.P.** (2004). Predictors of Physical Function in Patients with Peripheral Arterial Disease and Claudication, *Prog Cardiovasc Nurs*. 2004; 19(3):89-94.
14. **Wann-Hanson C., Halberg I.R., Klevsgard R., Anderson E.** (2005). Patients' experiences of living with peripheral arterial disease awaiting intervention: a qualitative study. *International Journal of Nursing Studies*.2005; 42(8), 851-862.
15. **Richardson C., Glenn S., Horgan M., Nurmikko T.** A prospective study of factors associated with the presence of phantom limb pain six-months after major lower limb amputation in patients with peripheral vascular disease. *The Journal of Pain*, 2007; 8(10), 793-801.
16. **Garnefski N., Grol M., Kraaij V., Hamming J.F.** Cognitive coping and goal adjustment in people with Peripheral Arterial Disease: Relationships with depressive symptoms. *Patient Educ Couns.* 2008; doi:10.1016/j.pec.2008.11.009.
17. **Radloff L.** The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385-401.
18. **Broadhead W.E., Gehlbach S.H., DeGruy F.V., Kaplan B.H.** The Duke-UNC Functional Social Support Questionnaire: Measurement of social support in family medicine patients. *Medical Care*, 1988; 26 (7), 709-23.
19. **Carver C.S., Scheier M.F., Weintraub, J.K.** Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology,* 1989; 56(2), 267-283.
20. **Thomas A.J., Kalaria R.N., O'Brien J.T.** Depression and vascular disease: what is the relationship? *J Affect Disord*. 2004; 79:81-95.
21. **Smolderen K.G., Aquarius A.E., De Vries J. et al.** Depressive symptoms in peripheral arterial disease: a follow-up study on prevalence, stability, and risk factors. *J Affect Disord*. 2008; 110:27-35.