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Original scientific paper

Poststroke Depression

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Abstract: High prevalence of cerebrovascular insults (CVI) and their comorbidity with depression additionally makes difficult not just quality of life, also its serious obstacle to all measurements and attempts of patient's rehabilitation. The scope of work is to show frequency of depression after CVI ischemic type in whole its specifics in order to age of patients, gender, localization of lesion, as well as on level of physical handicapping. International classification of disease (MKB-10), Hamilton scale of depression (HAM-D-17) and Barthel index scale of disability were used for diagnosis. Statistical analysis was performed in SPSS programme. Among 103 patients with CVI 43 of them (41.7%) were found with consequential depression what was monitored in following six months after CVI. From total number of depressions after CVI in the age of 58 years old 14 (32.6%) were found, and in the age between 59-63 years old there were 17 (39.5%) found. In the later ages that percentage was significantly lower. This result had proved significant connection between age group and depression status ($p<0.05$): χ^2 *(3, n = 103) = 12.24; p=0.007, Cramer's V=0.34.* Depression appearance after CVI in relation to genders has showed difference. Depression was marked at 16 (25.8%) male and 27 (65.8%) at female patients: χ^2 *(1,n=103)=14.67; p=0.0002;Phi=0.4*. Localization of lesion was significant in emergence of depression. In frontal part were found at 21 examinees, in basal ganglia at 16 and rest of localizations were found at 6 examinees: Depressions presence were more found at lesion localizations in left hemisphere, but no statistical importance. There were some correlation between level of physical disability and depression severity.

Key words: depression, cerebrovascular insult, age, gender, localization of lesion, level of handicap.

INTRODUCTION

On its prevalence depressions are rated at fourth place of disease in the world and according to World Health Organization index until year 2020 will be on second place (*1*).

These facts indicate awareness of this disease especially when is known that depression is very often linked to other somatic diseases. One of diseases with depressive state as frequent outcome is cerebrovascular insult (CVI). Depression appearance after CVI is serious obstacle to implementing rehabilitation and generally, it is serious obstacle to comprehensive measures in attempt of patient complete recovery.

Aim of work is to imply on patient depression frequency after ischemic type of cerebrovascular insult, specifics related to age, gender, localization as well as level of physical deficit.

METHODS

Examination was implemented at Health Institution Specialist medical centre "Poliklinika Semiz" in Prijedor on 103 patients who have ischemic type of cerebrovascular insult (CVI) for a first time and consequential depressive symptomatology was found at 43 (41.7%) patients. Depression and CVI are diagnostic by current MKB-10, International classification of disease (*2*), Hamilton scale of depression with 17 items (HAM-D-17), frequently used in clinical practice (*3*),Barthel index scale of disability designed on evaluation of level of patient's independence as well asevaluation on regular daily activities after CVI (*4*). Patients who have had sensor aphasia and anosognosia after CVI, patients previously treated from depression or any other mental disorder and patients who had CVI before were excluded from examination.

Statistics analysis was performed in SPSS 17 program.

RESULTS

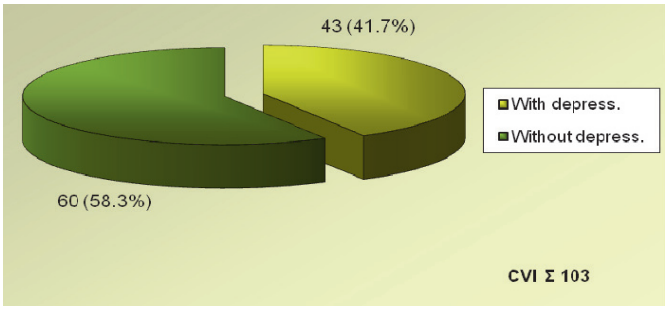

Figure 1. Depression frequency after CVI

Some studies imply on very high percentage after CVI, up to 80% but there are other studies which imply on significantly less depressions after CVI (*5-7*).

There are several reasons for this discrepancy mainly noted as diference in study design, work methodology, examinee characteristics, patient treatment specifics, etc. In so called population studies lower frequency of depression was found. We chose same type of examination because these studies include all patients, also patients who have not hospitalized in acute phase of CVI. Among 103 patients with CVI depressive disorder was found at 43 (41.7%) (Figure 1). In present time, genesis of depression after CVI are focused on two different theories; Neurobiological theory – linked to CVI localization and neurotransmission of serotonin and noradrenalin (*8-10*), cytokine, in recent examinations (*11, 12*), and psychosocial theory – states that genesis of depression is consequential psychological response on physical handicap after CVI (*13*).

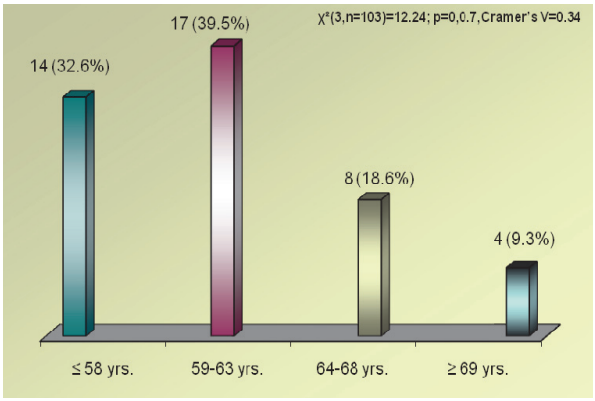

Figure 2. Depression frequency after CVI in reference to gender

In the age 59-63 years old depressions have found at 17 (39.5%) patients and in earlier ages at 14 (32.6%) patients. In later ages less depressions were found (Figure 2). χ^2 independence test indicated significant link between ages and depression status ($p<0.05$), [$\chi^2(3, n=103) =12.24$; $p=0.007$, Cramer's $V=0.34$]

Among 103 patients with CVI 62 (60.2%) were males and 41 (39.8%) were females (Figure 3). In the male group with CVI 16 (25.8%) patients developed depressive stage and in female group with CVI were 27 (65.8%). The difference was significant and χ^2 independence test showed link between gender and status of depression. $\chi^2(1, n=103)= 14.67$; $p=0.0002$; $Phi=0.4$ (According to Koen's criteria $Phi=0.4$ is middle influence). This significant depression appearance at female patients is interpreted as decreasing of female autonomy in daily activities some facts founded in literature (*5*).

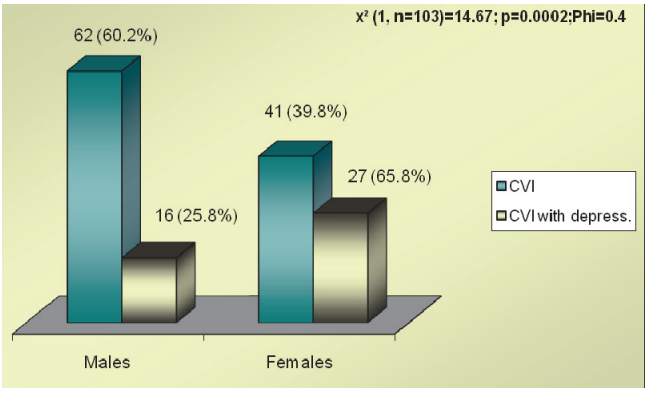

Figure 3. Frequency of depressions after CVI in reference to gender

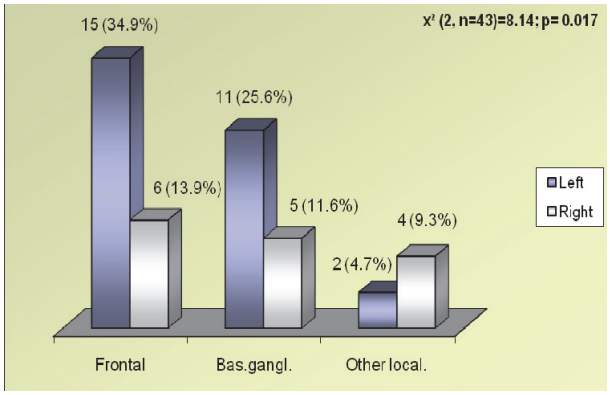

Figure 4. Depression after CVI in reference to localization

Localization of lesion after CVI was found important in genesis of depression (Figure 4). The most depressions were found with frontal lesion and less of them were found in basal ganglia and, whilst other localizations did not show significant influence at genesis of depression stage after CVI. $\chi^2(2, n=43)=8.14$; p=0,017. Relation of sides of lesion hemisphere (left, right) in this examination did not show significant influence, though some larger studies indicate on that (*14,15*).

Table 1. Correlation of depression and level of physical handicap

	Depression (HAM-D-17)			
BI	**No depress.(< 11 pts)**	**Light (< 18 pts)**	**Medium (18-25 pts)**	**Heavy (> 25 pts)**
Total dependance (0-4 pts)	2	1	4	9
Heavy dependance (5-12 pts)	3	1	4	13
Medium dependance (13-18 12pts)	12	2	2	3
Light dependance (19 pts)	23	1	1	1
Total Independace (20 pts)	20	1	0	0

Performed and confirmed correlation between heaviness of neurological deficit (level of physical handicap and dependence (BI) and genesis of depression (HAM-D-17). It was not possible to perform statistical performance due to low frequencies but results indicate that physical handicap is big factor of risk to genesis of depression after CVI (Table 1) and some studies imply on that (*16-20*).

CONCLUSION

Depression after CVI accident has a significant negative influence on course and forecast of recovery from CVI and decrease quality of life. Because of that, it is very important to recognize symptoms and development and apply specific therapy to provide even better results of rehabilitation at depressive patients after CVI, though faster recovery in general. Risk factors for genesis of depression are age, female, localization and heaviness of CV accident as well as absence of earlier process of rehabilitation and socialization that imply to one very complex bio-psycho-social problem.

LITERATURE

Burden of Mental and Behavioural Disorders. U: The World Health Raport 2001. Mental Health: New Understanding, New Hope. Geneva: WHO;2001; 21-30, 37-45.

Savezni zavod za zaštitu i unapređenje zdravlja. Međunarodna klasifikacija bolesti (MKB-10): X revizija. Knjiga I. Beograd, Savremena administracija;1996.

Hamilton MA. A rating scale for depression. J Neurol Neurosurg Psychiatry 1960;23:56-62.

Collins C, Wade DT, Davies S, Horne V. The Barthel ADL Index: A reliability study. Int Disabil Stud, 1988;10(2):61-3.

Gordon WA, Hibbard MR. Poststroke depression: an examination of the literature. Arch Phys Med Rehabil 1997;78:658-63.

Folstein MF, Maiberger R, McHugh PR. Mood disorder as a specific complication of stroke. J Neurol Neurosurg Psychiatry 1977; 40:1018-20.

Hackett ML, Yapa C, Parag V, Anderson CS. Frequency of depression after stroke: a systematic review of observational studies. Strole 2005; 36(6):1330-40.

Robinson RG, Szetela B. Mood change following left hemispheric brain injury. Ann Neurol 1998;9:447-53.

Vataja R. Leppavuori A, Pohjasvaara T. Poststroke depression and lesion location revisited. J Neuropsychiatr Clin Neurosci 2004;16(2):156-62.

Morrison JH, Molliver ME, Grzanna R. Noradrenergic innervation of the cerebral cortex: widespread effects of local cortical lesions. Science 1979;205:313-6.

Thomas AJ, Ferrier IN, Kalaria RN. Elevation in late-life depression of intracellular adhesion molecule-l expression in the dorsolateral prefrontal cortex. Am J Psychiatr 2000;157(10):1682-4.

Robinson RG. The Clinical Neuropsychiatry of Stroke. 2nd ed. Cambridge: University Press;2006.

House A. Depression Associated with Stroke. J Neuropsychiatry 1996;8(4):453-7.

Vataja R, Pohjasvaara T, Leppavuori A, et al. Magnetic resonance imaging correlates of depression after ischemic stroke. Arch Gen Psychiatr 2001; 58(10):925-31.

Vataja R, Leppavuori A, Pohjasvaara T, et al. Poststroke depression aqnd lesion location revisited. J Neuropsychiatr Clin Neurosci 2004;16(2):156-62.

Bruce M. Depression and disability in late life: directions for future research. Am J Gerietr Psychiatry 2001;9(2):102-12.

Semiz ZŽ, Semiz Lj. Ateroskleroza u cerebrovaskularnoj bolesti, faktori rizika i novi aspekti regresije. U: Semiz ZŽ (ured.) Hronične nezarazne bolesti, Knjiga 2/I: Zbornik radova Internacionalni kongres "Zdravlje za sve" - perspektive zdravlja u 21.vijeku, Banja Luka, 2003; 34-46.

Semiz ZŽ, Semiz Lj. Mogući efekti Berlithiona® na ishemijske procese u CNS-u. Savremena terapija Diabetes mellitusa, Barselona, Španija, Zbornik radova, Berlin-Chemie Menarini, 2009; 87-91.

Semiz ZŽ, Semiz Lj. Depresije poslije cerebrovaskularnog insulta: rani početak. Četvrti međunarodni kongres »Ekologija, zdravlje, rad, sport. Banja Luka, Zbornik radova, 2011; 387-391.

Semiz ZŽ, Marinković S. Neurološki značaj oboljenja arterija mozga. Panevropski Univerzitet Apeiron, Banja Luka, 2016.

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