

The Frequency of Post Stroke Depression

Valentina Asabella¹, Mira Rakacolli²

¹Community Center of Mental Health, No. 3, Tirana-Albania

²Neuro-Psychiatric Service, University Hospital Centre "Mother Theresa", Tirana-Albania

Abstract: *Stroke is the third most common cause of death in developed countries, exceeded only by coronary heart disease and cancer. The purpose of the present study is to determine the frequency and severity of depression in post-stroke patients Based on a cross-sectional research design, in 57 recent stroke outpatients who were referred to the Community Center of Mental Health, No. 3, Tirana. 28% of the patients reported depression on BDI and interview-based information. Women were more depressed than men (62.5% and 37.5%). Differences were found in lesion side, with patients with lesions in right side reporting higher levels of depression than patients with left side lesions. Motor disturbances were the most prevalent clinical features. Depression and cerebrovascular disease have an overwhelming mutual effect and the treatment of patients should not be neglected*

Keywords: cerebrovascular disease, depression, location, lesion

1. Introduction

Stroke is the third most common cause of death in developed countries, exceeded only by coronary heart disease and cancer. The World Health Organization (WHO) estimates that 15 million people worldwide suffer a stroke each year and of these, 5 million die and another 5 million are left permanently disabled (1). This burden is projected to rise from 38 to 61 million Disability-Adjusted Life Years globally between 1990 and 2020 (1). Among stroke survivors, the sequelae of physical and psychological changes can be devastating. One of those psychological changes is Post-Stroke Depression (PSD).

Morris et al (2) reported that over a ten year period, depressed stroke patients were 3.4 more times likely to die than their non-depressed counterparts. Depression is thought to have a detrimental effect on stroke recovery through a number of mechanisms. For instance, a depressed patient may be less motivated to participate in stroke rehabilitation, due to persistent fatigue or a lack of hope for example (3). Cognitive impairment may also impede the recovery process (4-7) causing non-adherence to treatment schedules, which may lead to increased mortality (8-10).

PSD is common among men and women. In 2005, a systematic review of 51 primary articles by Hackett et al (11) estimated the overall frequency of PSD to be 33% (95% CI 29 – 36). The WHO reports that after a first stroke, women are kept in hospital longer, are less likely to be referred to rehabilitation programs and remain more disabled than men receiving similar care (1). It is plausible that these discrepancies in medical care and rehabilitation are reflected in a difference in the prevalence of PSD between the sexes. Despite the magnitude of studies included in the review outlined above, few stratified their PSD prevalence results by sex. Thus, the effect of sex on PSD is not well documented. The aim of this study was to determine to determine which factors influence the expression of post-stroke depression, with particular emphasis on its prevalence, gender, distribution, location of the brain lesion and associated clinical features.

2. Material and Methods

A sample of 57 recent stroke outpatients (maximum three months post-stroke) who were referred to the Community Center of Mental Health, No. 3, Tirana-Albania for follow up from 2015 to 2016 and had agreed to participate in the investigation, were selected. 24 patients (42%) were male and 33 (58%) were female. The age range of the patients was between 40 to 81 years (mean age of 63.4 years). Patients with severe functional disabilities and history of clinical depression were not included. The measures for assessing clinical depression included Beck Depression Inventory (BDI) which is one of the most widely used instruments in assessing the intensity of depression in psychiatrically diagnosed patients. It consists of 21 symptoms and attitudes that could be rated from 0 to 3 in terms of intensity. A cut off of 12/13 is taken to indicate the presence of depression. The scale had excellent external consistency and validity as scored by independent ratings ($r = 0.91$), it also has a high coefficient alpha (0.82) (12). Information regarding independent variables of age, time elapsed since stroke, location of the lesion (left or right hemisphere) and the associated clinical features (sensory, motor, verbal, etc) were obtained from patients' charts. The descriptive statistics and Pearson correlation coefficient was used for analysis of data.

3. Results

Figure 1 illustrates the frequency of clinical depression in the sample. From a total of 57 stroke patients 16 (28%) met the criteria for clinical depression on BDI with a mean intensity score of 25 on BDI. Figure 2 presents the frequency of depression in terms of selected variables of gender, location of the lesion and the associated clinical features. As figure 2 shows, women were more depressed than men (62.5% and 37.5% respectively), patients with right hemisphere lesions were more depressed than left hemisphere lesions (68.8% compared to 31.2%) and motor disturbances were the most prevalent clinical features (75%).

4. Conclusion

We report that one third of all people experience significant depressive symptoms at some time after the onset of stroke. We recognize, however, that this is likely to be a conservative estimate because of potential under-reporting (or underrecognition) of abnormal mood, and the difficulties inherent to the assessment of mood in patients with neurological disability, particularly when there are communication problems caused by dysphasia and/or dementia. Given the importance of mood, which along with cognition, motivation, and social support is a key factor influencing recovery from stroke, it is surprising that there is much misconception over the epidemiology of stroke-associated depression, although the generally poor quality of studies has obviously contributed to this situation. Whereas previous reports have acknowledged wide variation in the frequency of depression after stroke across studies largely because of differences in patient characteristics and study designs, they have also suggested that the lowest and highest frequency of depression is found among patients in population-based and rehabilitation-based studies, respectively, potentially reflecting selection bias toward the inclusion of more disabled stroke survivors in the latter studies (13,14)

Moreover, the time period of greatest risk of depression has traditionally been considered to be the first few months of stroke onset. Reviews mentioned in the literature, conversely, showed consistency in the overall frequency of depression across the 3 different types of studies and in relation to the time periods from stroke onset, thus raising doubts about specific biological theories related to an acute stroke lesion as the major cause of depression in this condition. In addition, we found that few stroke patients receive effective management (antidepressants or psychotherapy) for their depression, although the limited data would suggest that these symptoms are self-limited in most after several months.

Because the design of observational studies, by their very nature, may differ in a number of important ways, it is useful to explore and quantify the reasons for such heterogeneity. We identified variation in the cut-points used to determine “caseness” in the standardized mood scales as one key source of variability in the data. It would appear that many studies failed to consider that older people, and those with physical illnesses, might require higher cut-points on these scales. Two other problems were that multiple methods were often used to diagnose depression, with few investigators clearly identifying an a priori primary endpoint in their study, so that the endpoints reported varied between “any depression,” “first-ever depression,” and “severity” of depression. Without greater uniformity or standardization of such methodological issues, it will remain difficult to determine whether heterogeneity in study findings represent true differences in characteristics of populations or simply artifact caused by measurement bias and other error. Of course, heterogeneity across studies can also be attributed to differences in case mix, including variation in stroke features, clinical characteristics, source of patient recruitment, and the timing of assessment. In this review, we have attempted to minimize heterogeneity by grouping

studies by source of case selection. It is particularly noteworthy that a number of studies excluded patients at the greatest risk for depression, that is those with a history of depression. Although a systematic review with meta-analysis can overcome some of the shortcomings of unstructured examination of individual studies, the gold standard review would include an individual patient data analysis with adjustment for potential confounding factors to calculate frequency estimates, but this is complex and challenging to undertake. There are other problems of study design that limit the reliability of the comparisons of frequency estimates between stroke patients and controls. It is important to note that stroke patients are generally older, female, and more likely to have concomitant illnesses and to have experienced some bereavement or other major life event than that of the general population (15).

References

- [1] Lökk J, Delbari A. Management of depression in elderly stroke patients. *Neuropsychiatr Dis Treat.* 2010; 6:539–49.
- [2] Paolucci S. Epidemiology and treatment of post-stroke depression. *Neuropsychiatr Dis Treat.* 2008; 4 (1):145–54. Epub 2008/08/30.
- [3] Berg A, Palomaki H, Lehtihalmes M, Lonnqvist J, Kaste M. Poststroke depression: an 18-month followup. *Stroke.* 2003; 34(1):138–43.
- [4] Hackett ML, Yapa C, Parag V, Anderson CS. Frequency of depression after stroke: a systematic review of observational studies. *Stroke.* 2005; 36(6):1330–40.
- [5] Whyte EM, Mulsant BH. Post stroke depression: epidemiology, pathophysiology, and biological treatment. *Biol Psychiatry.* 2002; 52(3):253–64.
- [6] Schwartz JA, Speed NM, Brunberg JA, Brewer TL, Brown M, Greden JF. Depression in stroke rehabilitation. *Biol Psychiatry.* 1993; 33(10):694–9.
- [7] Rush AJ, Trivedi MH, Ibrahim HM, Carmody TJ, Arnow B, Klein DN, et al. The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. *Biol Psychiatry.* 2003; 54(5):573–83.
- [8] Trivedi MH, Rush AJ, Ibrahim HM, Carmody TJ, Biggs MM, Suppes T, et al. The Inventory of Depressive Symptomatology, Clinician Rating (IDS-C) and Self-Report (IDS-SR), and the Quick Inventory of Depressive Symptomatology, Clinician Rating (QIDS-C) and Self-Report (QIDS-SR) in public sector patients with mood disorders: a psychometric evaluation. *Psychol Med.* 2004; 34(1):73–82.
- [9] Rush AJ, Carmody TJ, Ibrahim HM, Trivedi MH, Biggs MM, Shores-Wilson K, et al. Comparison of self report and clinician ratings on two inventories of depressive symptomatology. *Psychiatr Serv.* 2006; 57 (6):829–37.
- [10] Jiang XG, Lin Y, Li YS. Correlative study on risk factors of depression among acute stroke patients. *Eur Rev Med Pharmacol Sci.* 2014; 18(9):1315–23.
- [11] Nishiyama Y, Komaba Y, Ueda M, Nagayama H, Amemiya S, Katayama Y. Early depressive symptoms after ischemic stroke are associated with a left

- lenticulocapsular area lesion. J Stroke Cerebrovasc Dis. 2010; 19(3):184–9. doi:
- [12] Singh A, Herrmann N, Black SE. The importance of lesion location in poststroke depression: a critical review. Can J Psychiatry. 1998; 43(9):921–7.
- [13] Carson AJ, MacHale S, Allen K, Lawrie SM, Dennis M, House A, et al. Depression after stroke and lesion location: a systematic review. Lancet. 2000; 356(9224):122–6.
- [14] Berg A, Lonnqvist J, Palomaki H, Kaste M. Assessment of depression after stroke: a comparison of different screening instruments. Stroke. 2009; 40(2):523–9. doi:
- [15] Kouwenhoven SE, Kirkevold M, Engedal K, Kim HS. Depression in acute stroke: prevalence, dominant symptoms and associated factors. A systematic literature review. Disabil Rehabil. 2011; 33(7):539–56. Acute Symptoms of Poststroke Depression PLOS

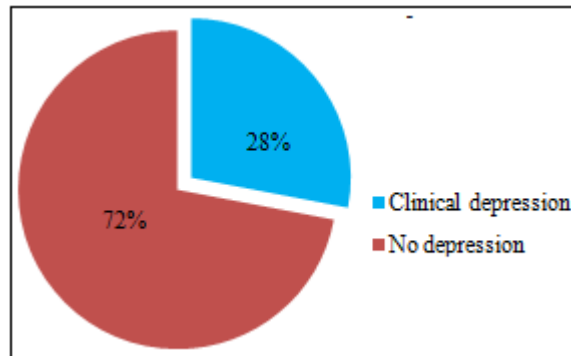


Figure 1: Frequency distribution of clinical depression in stroke patients.

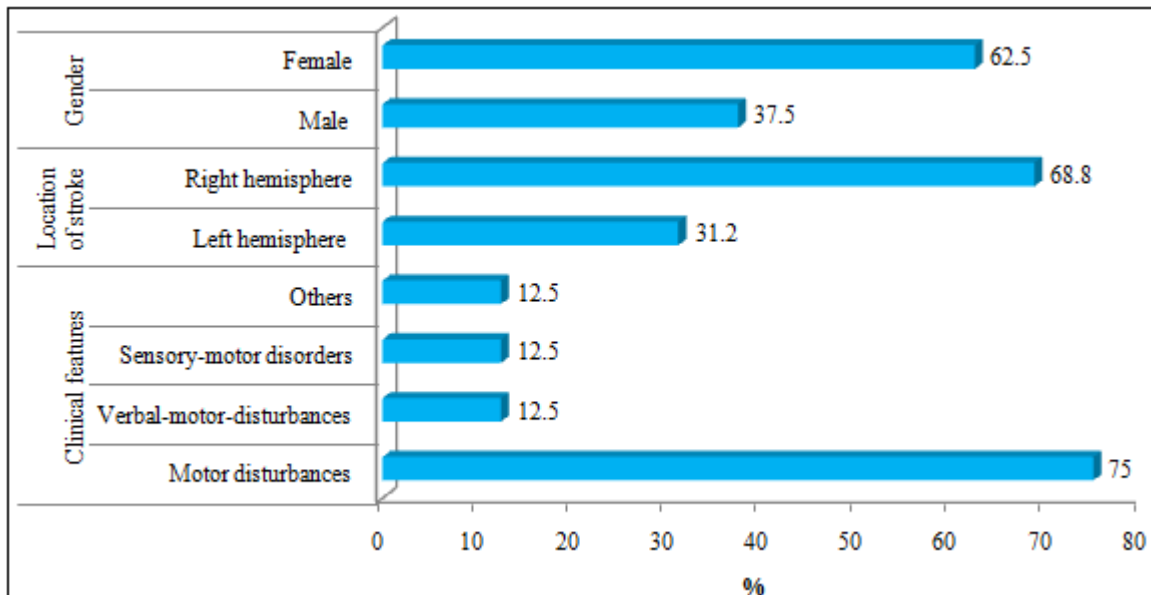


Figure 2: Frequency of depression in selected variables