

Brief Communication

Epidemiological evaluation of post stroke depression in Babol, Northern Iran

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Stroke is one of the most common neurological disorders, and ischemic stroke is the most common type of stroke. Since approximately one-third of stroke survivors experience depression, post-stroke depression (PSD) is considered as the most frequent and important neuropsychiatric consequence of stroke. Moreover, this condition can have an adverse effect on cognitive function, functional recovery, and survival. Since these epidemiological factors have not been previously studied in our region, this study was conducted to assess the epidemiological aspects of PSD in Babol, Northern Iran.

We carried out this historical cohort and hospital-based study in a descriptive and analytic manner on 392 consecutive and first-ever stroke patients, admitted to Yahanejad Hospital, Babol, Northern Iran from April 2001 to April 2003 to monitor the occurrence of depression. Yahanejad University Hospital, the only Neurological Department in our region manages most of the patients with neurological problems living in the city of Babol, and all the villages around it with a total population of approximately 550,000 (census data).¹ Most of the residents obtain some or all of their neurological care at Yahanejad University Hospital. Stroke was defined according to the World Health Organization as “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin.” Stroke subtypes were classified as ischemic or hemorrhagic based on the international classification of diseases, ICD10. The diagnosis of stroke in all cases was confirmed by neuroimaging procedures (brain CT scan or MRI). The DSM-IV criteria were used for the diagnosis of the depressive disorders. Post Stroke Depression Rating Scale (PSDRS) was used for assessment of severity of depression, and depression was classified as the mild or moderate to severe type.² Female stroke cases, after discharge, were categorized in 2 groups: cases who had been cared for at home, and cases that had been institutionalized. The decision to care in home or in a nursing home for female patients was made by their family and not related to severity of stroke. We did not find any significant difference between the severity of stroke in the 2 groups. All male cases were cared for at home, as in our region there are no places to institutionalize them, although there is a nursing home for mentally retarded people, and a nursing home for aged and disabled women. These stroke patients returned to the neurology clinic after discharge for follow-up every month after stroke onset

for up to 2 years. Patients with a history of depression before stroke, patients who did not return to follow-up, and cases that died, were excluded from the study. We obtained ethical approval for this study from the Ethical Committee of Babol University of Medical Sciences. Data were analyzed by chi-square test, and relative risk (RR) with 95% confidence interval (CI) was calculated, and $p < 0.05$ was considered significant.

Over 2 years (April 2001 to April 2003), 392 consecutive stroke patients were admitted to Yahanejad Hospital. Two hundred and ninety-four (75%) cases were of the ischemic type, and studied for 2 years (study period). Eighty-nine patients were excluded from the study, 14 (4.8%) had a history of depression, 33 did not return after discharge for follow-up, and 42 died. Finally, 205 cases were enrolled in the study. The most common age of stroke in our study was between 65-74 years. Of these cases, 108 (52.7%) were female and 97 (47.3%) were male. Thirty-seven patients (18%), had depression during this 2 year follow-up of these ischemic stroke patients, comprising 16 (43.2%) females, and 21 males (56.8%) (RR=1.46, CI=0.8-2.64, $p=0.2$) (Table 1). Nineteen (51.35%) cases had mild depression, and 18 cases (48.65%) suffered from moderate to severe depression. Seventy-six female cases were cared for at home, and 32 cases were institutionalized. Among the first group, 9 (11.8%) cases were depressed, while in the second group this rate was 7 (21.9%) (RR=1.85, CI=0.75-4.5, $p=0.18$).

The rate of PSD in this study was 18%, which is less than the findings in other studies. Early detection and successful intervention of PSD may help reduce patients' post stroke healthcare use, reduce overall cost of care, prevent premature deaths, and improve functional recover and quality of life.³ The reported prevalence of PSD varies from 20-65%, and the low incidence in our patients may be due to the short time period of our study, which was 2 years, although in some studies, the estimated prevalence was as high as 30% in the first year after the event.⁴ Cultural characteristics and life styles may influence mood,⁵ and the other reason for this low prevalence can be either the cultural background of

Table 1 - Post stroke depression distribution in Babol, Iran.

Ischemic stroke cases	Depression, n (%)		Total
	Yes	No	
Male	21 (21.6)	76 (78.4)	97 (47.3%)
Female	16 (56.8)	92 (45.2)	108 (52.7%)
Total	37 (18.0)	168 (82.0)	205 (100%)

our patients, or that they had been cared for at home. Living and being cared for at home plays an important role in prevention of PSD in Iran, which is based on our culture. The higher incidence of PSD in institutionalized females in comparison with females cared for at home in this study is in accordance with the influence of care at home on stroke prognosis. The higher incidence of PSD in males in comparison with females in this study has no clear cause, but it could be due to some social causes. In Iran, especially in our region, men are heads of the family and they are responsible for the family's financial matters. Stroke may prevent them from performing their jobs, and make them lose their source of income; although nearly all our people are under cover of health insurances (both private and governmental ones) it can still be a cause of depression. Another point is that in our culture, fathers provide a great value of emotional support for their family and if the father is deceased the whole family seems to give up. Mild depressive symptoms were more common than major depression after stroke in this study, which is in agreement with other reports.

The limitations of our study were mostly that in our study we did not differentiate the left and right hemisphere stroke cases for determination of influence of aphasia in PSD, another limitation was that we did not determine the onset of PSD during the follow-up study period.

In conclusion, in this study the rate of PSD was lower than other reports, PSD was more frequent in

males, and it was more frequent in institutionalized patients than home cared for patients.

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