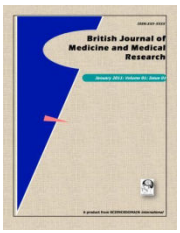

British Journal of Medicine & Medical Research
1(4): 501-507, 2011

SCIENCEDOMAIN *international*
www.sciencedomain.org

Psychological Reactions to Ischemic Stroke in the Young

Huanmin Gao[1*], Xia Gao[2], Guixia Liang[1], Yunzhen Yang[1] and Benxu Ma[2]

[1]Department of Neurology, People's Hospital of Ningxia Hui Autonomous Region, Ningxia Hui Autonomous Region 750021, P. R. China.
[2]Department of Rehabilitation, Second Affiliated Hospital of Qingdao University Medical College, Qingdao 266042, P. R. China.

Research Article

Received 18th July 2011
Accepted 21st September 2011
Online Ready 29th September 2011

ABSTRACT

Aims: To analyze various degrees of psychological status of ischemic stroke in the young population with different age, sex, degrees of education, injured regions and ways of medical expense payment.
Study design: Cross-sectional study.
Place and Duration of Study: Department of Neurology, People's Hospital of Ningxia Hui Autonomous Region and Department of Rehabilitation, the Second Affiliated Hospital of Qingdao University Medical College, between March 2008 and March 2010.
Methodology: We included 90 patients (58 men, 32 women; age range 21-45 years) with ischemic stroke. Psychological distress was evaluated with Symptom Distress Checklist (SCL-90, Chinese version). The 90 patients with ischemic stroke at the acute stage have completed the SCL-90 and the scores were analyzed statistically against the national Norm of China.
Results: Compared with the national norm of China, there were great differences in almost all aspects such as depression, anxiety, somatization, phobia and psychoticism ($P < 0.01$, $P < 0.001$, respectively) except for obsessiveness-compulsiveness, hostility and paranoid ideation ($P > 0.05$ respectively). Among 90 stroke patients, the occurrence of Depression/Anxiety was 39 (43.33%). Female patients took up 75%, while male for 25% ($P < 0.01$). Education levels made no difference ($P > 0.05$). Different payments brought out marked differences; the occurrence of Depression/Anxiety was 29.2% for the group where the medical expense paid by medical insurance, but 66.7% paid at one's own expense ($P < 0.05$). Different injured regions brought out marked difference in the psychological reaction ($P < 0.05$), the occurrence of Depression/Anxiety was 75% with bilateral hemispheres injures.

**Corresponding author: Email: huanmgao@yahoo.com.cn;*

Conclusion: The psychological reactions of the young to the ischemic stroke are depression, anxiety, somatization, interpersonal sensitivity, phobic anxiety, and psychoticism except for obsessive-compulsiveness, hostility and paranoid ideation. Ischemic stroke in the young of different sex, payment method and injured regions resulted in different psychological reactions.

Keywords: Stroke; young; psychological status; acute; Ischemia;

1. INTRODUCTION

The occurrence of stroke among the young is rare, so that it is not easy to get enough young stroke patients in a study. Therefore it is important and clinically relevant to describe the prevalence of psychological reactions among stroke patients. Depression and other emotional disturbances are psychological disorders that are widespread after stroke with the incidence rate of 40%~50% in China (Beijing Neurologist Club, 2003). In China, the morbidity of stroke patients aged < or = 45 took up 9.77% in all stroke patients, with the majority seen in ischemic stroke among male patients (Beijing Neurologist Club, 2003). Hypertension, smoking and drinking were main risk factors for male patients. The morbidity of younger aged who suffered stroke tended to increase with the increase of age, and concentrates in the age group of 40-45 (62.4%) (Beijing Neurologist Club, 2003).

Unfortunately stroke brings about sudden and unexpected changes to young patients' normal life, with more or less serious and lasting disabilities, functional impairments, and complications as its consequences contributing to the dramatic psychological changes. The young population in China is especially at the key period of their life: working for academic degree and career promotion. The roles of the younger stroke patients in families and among their social network also change subtly with the consequences, which may in turn lead to further distress. Depression, functional disability, impaired social network, gender, large volume of infarction, and aphasia may contribute to the poor quality of everyday life, which may lead to less satisfaction with their daily life (Löfgren et al., 1999).

Although literatures of psychological status after stroke are available in large quantities, very little has been known about the psychological impacts of stroke on the young population (Matsuo et al., 2011; Larrue et al., 2011; Putaala et al., 2011a, 2011b; Salisbury et al., 2011; Martínez-Sánchez et al., 2011; Tan and Tan 2011). Therefore this study was designed to investigate the psychological reactions in the young who suffer ischemic stroke, while the hemorrhagic stroke will be the topic of our next study.

2. METHODOLOGY

2.1 Patients

All the 90 patients with ischemic stroke were in-patients of the authors' hospitals from March 2008 to March 2010. Individual participants in this study gave written, informed consent after the experimental procedures had been fully explained, and all research procedures were approved by the People's Hospital of Ningxia Hui Autonomous Region and the Second Affiliated Hospital of Qingdao University Medical College Subcommittee on Human Studies. The study was also conducted in accordance with the Declaration of Helsinki and the

Medical Research Council's Good Clinical Practice Guidelines (Medical Research Council, 1998). Brain CT and MRI confirmed the ischemic stroke. There were 58 males and 32 females, 21 to 45 years old, 35.6±9.8 years on average.

Years of education ranged from 0 to 19 years with a mean of 13.2 years. 12 patients received college education, 51 patients had high school education, 21 had primary school education, and 6 were illiterates.

69 patients' medical expense was paid by the medical insurance while that of other 21 was paid at their own expense.
The number of patients who had first-time stroke was 62, and 28 had recurrent stroke without neurological deficits before.

45 patients were with lesion of dominant (left) hemisphere, 29 were injured the right hemispheres and 16 with bilateral involvement.

2.2 Exclusion Criteria

- Patients with severe diseases in heart, liver, and kidney.
- Coma, Aphasia, Epicophosis.
- Less than 15 years old or more than 45 years old.
- With formerly psychiatric history.
- With formerly neurological deficits.

2.3 Assessing the Psychological State with the Symptom Check List-90 (Scl-90)

The diagnostic criteria for the different psychiatric disorders were based on the Chinese Classification of Mental Disorders third version, the CCMD-3 (Wang, 1984). The versions of the Symptom Check List are evaluated on several criteria (e.g., factor stability, factor loadings, proportion of variance, etc.). SCL-90 is a useful clinical assessment tool as a measure of independent dimensions of symptom distress (Cyr et al., 1985; Wang, 1984; Shi, 1998). This SCL-90 includes 90 items with 5 grades. Nine dimensions were calculated respectively for the symptoms after ischemic stroke in the young adults.

The ascertainment was conducted and measured when patients' condition stabilized or before discharged under the guidance of physicians. Values obtained from the patients were compared with the Norm for Chinese (Wang Zhengyu, 1984).

The values obtained are shown in table 1. The scores of somatization, interpersonal sensitivity, depression, anxiety, phobic anxiety, psychoticism, the positive items and the total score are significantly higher than that of national Norm values ($P<0.01$, $P<0.001$ respectively). These data are in agreement with stroke in the general population or un-grouped data except for special items such as obsessive-compulsiveness, hostility and paranoid ideation.

2.4 Statistical Analysis

Numerical data are presented as mean ± SD. Differences between groups were analyzed with Analysis of Variance (ANOVA). $\chi 2$ -test was used for the enumerative data. Ridit

analysis was used for the ranked data. α level was set at 0.05 to determine the statistical significance, and all statistical testing was 2-tailed.

3. RESULTS AND DISCUSSION

Scores of SCL-90 for ischemic stroke in the young was compared with the national Norm value. The values obtained were shown in table 1. The scores of somatization, interpersonal sensitivity, depression, anxiety, phobic anxiety, psychoticism, the positive items and the total score were significantly higher than that of national Norm values ($P<0.01$, $P<0.001$ respectively). No difference was found between the scores of obsessive-compulsiveness, hostility and paranoid ideation and the national Norm values ($P>0.05$ respectively). These results showed that there were significant differences between the scores of the stroke in the young and the national Norm value in almost all aspects except for obsessive-compulsiveness, hostility and paranoid ideation.

These results suggested that ischemic stroke impacts the psychological status heavily and results in psychological distress in the young. These results were in agreement with stroke in the general population or un-grouped data except for special items such as obsessive-compulsiveness, hostility and paranoid ideation.

Table 1: Score of SCL-90 for stroke in the young versus Norm values ($\bar{x} \pm s$)

	Patients (n=90)	Norm Values (n=1388)	t value	P value
Total score	160.00±47.11	129.96±38.76	3.862	<0.001
Somatization	1.85±0.58	1.37±0.48	4.966	<0.001
Obsessiveness-compulsiveness	1.70±0.59	1.62±0.58	0.508	>0.05
Interpersonal Sensitivity	2.03±0.83	1.65±0.61	2.964	<0.01
Depression	2.00±0.73	1.50±0.59	4.109	<0.001
Anxiety	1.65±0.69	1.39±0.43	3.652	<0.001
Hostility	1.61±0.72	1.46±0.55	1.250	>0.05
Phobic Anxiety	1.65±0.66	1.23±0.41	2.600	<0.01
Paranoid Ideation	1.46±0.50	1.43±0.57	0.360	>0.05
Psychoticism	1.57±0.45	1.29±0.42	3.733	<0.001
Number of Positive items	36.19±19.95	24.92±18.41	3.989	<0.001

Correlation between Depression/Anxiety and related factors were shown in table 2. In the present study, among 90 stroke patients aged less than 45 years old, the occurrence of Depression/Anxiety was 39; the total occurrence was 39/90 (43.33%).

The occurrence of Depression/Anxiety was 75% (24/32) in the female while 25% (15/58) in the male. This statistical difference implied the gender tendency of stronger psychological reaction to the ischemic stroke in young female patients.

The occurrence of Depression/Anxiety was 44.44% (12/27) in the below primary school subgroup and 42.86% (27/63) in the beyond primary school subgroup. There was no

statistical difference between the two subgroups, implying that education level interferes with the psychological status very slightly.

The occurrence of Depression/Anxiety in the bilateral hemispheres injury subgroup was 75% (12/16), significantly higher than that of 48.89% (22/45) in the left hemisphere injury subgroup and 17.24% (5/29) in the right hemisphere injury subgroup (P<0.05, respectively). This statistical difference implied larger lesion volume resulting in stronger psychological responses to the ischemic stroke in the young.

The occurrence of Depression/Anxiety in the subgroup who paid at own expense was 76.19% (16/21), versus 33.33% (23/69) who paid by medical insurance (P<0.05). This statistical difference implied that the way of medical expense payment has a dramatic psychological impact on the stroke in the young Chinese with different medical payment.

Table 2: Variables and Depression/anxiety after ischemic stroke in the young

Variable		n	Incidence	Incidence (%)	X^2 value	P value
Gender	male	58	15	25.86	8.32	<0.01
	female	32	24	75.00		
Education	below primary school	27	12	44.44	0.95	>0.05
	beyond primary school	63	27	42.86		
Medical expense payment	paid at one's own expense	21	16	76.19	4.63	<0.05
	paid by medical insurance	69	23	33.33		
Injured brain regions	Left hemisphere	45	22	48.89		
	Right hemisphere	29	5	17.24	7.50	<0.05
	Bilateral hemisphere	16	12	75.00		

The present study shows that the psychological reactions of the young people to the ischemic stroke are as follows: depression, anxiety, somatization, interpersonal sensitivity, phobic anxiety, and psychoticism except for obsessive-compulsiveness, hostility and paranoid ideation. Depression and anxiety often occur with a negative psychological state and pessimistic attitude for the future, sleep disorder and lost of appetite.

Many factors contribute to the psychological distress in the young stroke people. The young people are at the key period of their life. The disturbance caused by the stroke impairs many activities such as pursuing academic degree and longing for the position promotion. These catastrophic changes including functional disability and broken social network may in turn heavily impact young stroke patients' psychological status, resulting in disequilibrium such as depression and anxiety.

Clriki and her colleagues (Clriki et al., 2006) summarized that those who lived alone, who did not appear to have a stable social net work, who were denied one's disability and felt overwhelmed by one's illness were at a high risk for post-stroke depression and anxiety. Stroke takes place suddenly and brings about unexpected situation such as hospitalization

and this may be provocative to the young stroke patients to worry about. The young stroke patients would be examined by medical equipment, receive medical intervention such as intravenous injections, which also resulted in their anxiety.

The young stroke patients may worry about being denied by his or her classmates or colleagues and these would lower the self-estimation of the patients.

Gender plays an important role in unhealthy psychological states such as depression and anxiety. The occurrence in the young female stroke patients was higher than that of the young male, suggesting that women may play a leading role in families. Once the young hostess loses her power of taking care of her children and husband, she would be intensively worried (Lawrence M et al., 2010; Andersen et al., 1995; Schultz et al., 1997 Bi et al., 2010).

The present study shows that the education level makes no significant difference to the patients. The less educated or illiterate young stroke patients usually were employed to do physical work, which may be impacted greatly by post stroke disability.

Surprisingly enough, the ways of direct medical expense payment had made influence on the psychological well-being of the young Chinese stroke patients. Heavy medical expenses put high pressure on the young stroke patients, especially on the poor. The present data shows that about 1/3 stroke patients in the young population paid the direct medical expenses on their own. The present data from March 2008 to March 2010 discloses that nearly 1/3 stroke patients in the young population is not covered by medical insurance because they are from rural areas or undeveloped residence areas. Among these stroke patients who paid the medical expense on their own, 76.13% had psychological disorders such as anxiety and depression. These results suggested that those young people worried about the medical cost which will impact their financial situation in three ways: money directly paid to the hospital; indirectly decreased the family economical reservoir which is actually scanty; furthermore, the young patients may lose the working ability. These data imply that the economical burden of the young stroke patients and the families suffer from the post stroke psychological distress in China. This may be a special aspect contributing to post stroke depression in the young patients in China.

The hemorrhagic stroke is greatly different from the ischemic stroke with stronger impact on the young patients and their family. So the psychological reactions of the young people to the hemorrhagic stroke will be discussed in the next study.

4. CONCLUSION

The psychological reactions of the young population to the ischemic stroke were depression, anxiety, somatization, interpersonal sensitivity, phobic anxiety, and psychoticism except for obsessive-compulsiveness, hostility and paranoid ideation. Stroke in the young population with of different sex, payment method and injured regions resulted in different psychological reactions.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

Andersen, G., Vcstergaard, K., Ingeman, N.M. (1995). Risk factors for pos-stork depression. Acta Psychian Scand., 92, 193.

Beijing Neurologist Club. (2003). Study on the risk factors among stroke in young people. Chin J Epidemiol., 24, 106-108.

Bi, Q., Wang, L., Li, X., Song, Z. (2010). Risk factors and treatment of stroke in Chinese young adults. Neurol. Res., 32, 366-370.

Löfgren, B., Gustafson, Y., Nyberg, L. (1999). Psychological well-being 3 years after severe stroke. Stroke, 30, 567-572.

Clriki, L.S., Bullain, S.S., Stern, T.A. (2006). The recognition and management of psychological reactions to stroke: A case discussion. Prim Care Companion J Clin Psychiatry, 8,223-229.

Cyr, J.J., McKenna-Foley, J.M., Peacock, E. (1985). Factor Structure of the SCL-90-R. Is There One? Journal of Personality Assessment, 49, 571-578.

Larrue, V., Berhoune, N., Massabuau, P., Calviere, L., Raposo, N., Viguier, A., Nasr, N. (2011). Etiologic investigation of ischemic stroke in young adults. Neurology, 76, 1983-1988.

Lawrence, M. (2010). Young adults' experience of stroke: a qualitative review of the literature. Br J Nurs., 19, 241-248.

Matsuo, K., Fujii, C., Fuse, I., Nakajima, M., Takada, M., Miyata, K. (2011). Top of the basilar syndrome in a young adult initially presenting with a convulsive seizure. Intern Med., 50, 1425-1428.

Martínez-Sánchez, P., Fuentes, B., Fernández-Domínguez, J., Ortega-Casarrubios, Mde. L., Aguilar-Amar, M.J., Abenza-Abildúa, M.J., Idrovo-Freire, L., Díez-Tejedor, E. (2011). Young women have poorer outcomes than men after stroke. Cerebrovasc Dis., 31,455-463.

Medical Research Council. (1998). Guidelines for good clinical practice in clinical trials. London: MRC, 435p.

Putaala, J., Liebkind, R., Gordin, D., Thorn, L.M., Haapaniemi, E., Forsblom, C., Groop, P.H., Kaste, M., Tatlisumak, T. (2011). Diabetes mellitus and ischemic stroke in the young: clinical features and long-term prognosis. Neurology, 76, 1831-1837.

Putaala, J., Haapaniemi, E., Kurkinen, M., Salonen, O., Kaste, M., Tatlisumak, T. (2011). Silent brain infarcts, leukoaraiosis, and long-term prognosis in young ischemic stroke patients. Neurology, 76, 1742-1749.

Salisbury, M., Pfeffer, G., Yip, S. (2011). Stroke in young women. Can J Neurol Sci., 38, 404-410.

Schultz, S.K., Caltillo, C.S., Kosier, J.T. (1997). Generalized anxiety a depression: assessment over 2 years after stroke. Am J Geriatr Psychiatry., 5,229.

Shi, Yuquan. (1998). New theory and technique in Neurology. Shanghai Science and education Press, Shanghai

Tan, K.S., Tan, C.T. (2011). Ischaemic stroke in young Asian women: incomplete investigations and geographical bias. Cerebrovasc Dis., 31,416.

Wang, Zhengyu. (1984). Symptoms distress checklist (SCL-9O). Shanghai Psychiatry, 2, 69.