CLINICAL STUDIES

Comparison of mental disorders between stroke patients and healthy people in Karaj

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ABSTRACT

Background and aim. In stroke, one of the most debilitating chronic diseases, various degrees of cognitive impairment and non-vascular neuropathology may occur. This study was done with the aim of comparing the mental disorders in stroke patients and healthy people in Karaj, Iran.

Methods. This cross-sectional study was carried on 60 people in Karaj, in which sample group consists of 30 stroke patients who were receiving rehabilitation and medication and in Ghaem, Sarollah hospitals and in Mehrshahr rehabilitation and occupational therapy centers, and 30 healthy residents. People were selected using the purposeful sampling method. The instruments were the reconstructed Minnesota Multidimensional Personality Inventory Form 2 and Millon Clinical Multi-Axis questionnaire. Data analysis was performed using SPSS software version 22 and independent samples t-test.

Results. The components of personality traits in stroke reference include internal aggression, irresponsibility and introversion, which significantly increased compared to the healthy group. The components of clinical syndromes in stroke patients such as mania, anxiety, alcoholism, drug dependency and PTSD also increased in comparison with the healthy group. Moreover, the components of clinical personality patterns including the levels of schizoid, avoidance, depression, pessimism, sadism were meaningfully increased in the stroke group compared to the healthy group.

Conclusion. The results showed that personality trauma and clinical disorders were more common in stroke patients than in healthy group. Therefore, necessary measures should be taken in order to reduce mental disorders in stroke patients.

Keywords: mental disorders, personality disorders, stroke

INTRODUCTION

Stroke is considered a neurological defect associated with local injury of the central nervous system and is one of the leading causes of death and long-term disability. After cardiovascular disease and cancer, stroke is the second cause of cognitive disorders and the third rank in mortality in industrialized countries and also is the second leading cause of death in Iran [1]. Although stroke deaths have dropped worldwide over the past two decades, approximately 17 million people worldwide suffer from stroke each year, with an estimated 6 million dying, according to the WHO. Many patients who have survived an acute stroke have significant complications. So, they have to learn how to live with different degrees of disability and mental disorders [2].

The incidence of stroke varies greatly depending on the age structure of the population. The clinical mani-

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festations of stroke can quickly lead to mild to severe nerve damage, mainly due to a lack of cerebral blood flow. However, the effects of stroke go beyond primary brain damage and lead to a variety of complex and devastating diseases, including Alzheimer's, depression, and cognitive impairment [3,4].

The ICD-10 list of diagnostic disorders, personality disorders and behavioral disorders includes brain damage and dysfunction, as well as organ personality disorder, post-encephalitis syndrome, and post-pathology tic stress disorder. Characteristic of personality change due to general medical illness is a significant change in a person's style and personality traits compared to his previous level of functioning. In this case, evidence of a member factor prior to the onset of the change in personality must be found. Structural brain damage is usually the cause of this personality change, and perhaps the most common cause is head injury [5].

Personality pathology is a set of traits that are uniquely expressed and affect people's behaviors, emotions, thoughts, and interactions. Specific personality traits, often called personality traits, cause them to react in a relatively predictable way. However, the person's personality also becomes flexible. This is a flexibility that people with personality disorders do not usually have [6].

Cognitive and mood problems are common after stroke and both are associated with poor consequences [7]. After stroke, the rate of dementia is reported to be 10% and increases to 30% with recurrent accidents [7,8]. At any given time, approximately one-third of stroke survivors experience depression, which is associated with increased disability and mortality. Perhaps the most compelling reason for the importance of the psychological aspects of stroke stems from stroke survivors themselves, as they voted that the cognitive aspects of stroke are their top priority [7]. Mood disorders that occur after a stroke are a major public health concern because they occur frequently and are difficult to diagnose and treat and can have a major impact on the quality of life of patients and caregivers [7,9].

Personality change is one of the most common complaints of caregivers after a stroke, involving a friend or relative, and the general clinical problem of post-stroke personality change has received almost no attention. The study Kwakkel et al, there were significant negative changes in caregivers' perceptions of traits such as frustration, dissatisfaction, anxiety, patience and control, being energetic, self-confidence and ease of understanding [10].

When stroke causes physical and cognitive disabilities, emotional adjustment can be very difficult. Patients with stroke are highly prone to depression. When the patient realizes that his recovery speed is slowing down, he believes in the extent of his disabilities, his feelings of hopelessness and need increase, and these cases lead to depression. Disabilities resulting from stroke have significant social effects on the patient and his family, especially when the patient is severely paralyzed or has paralysis. In addition, the affected person's social interactions and recreational activities with friends and the spouse are reduced. In short, the more residual disabilities after rehabilitation, the more likely a person is to develop psychological problems [11].

Intuitions seem to be essential for a brain disease such as stroke, memory assessment, thinking, and mood for clinical evaluation. However, we tend to pay attention to the physical manifestations of stroke, and the neuropsychological aspects, if any, have received little attention, and fortunately the outlook is changing, with increasing emphasis on the psychological consequences of stroke. The growth of evidence and standardization around evaluators increases. However, a basic understanding of how to achieve cognitive assessment and mood should now be mandatory for all stroke care workers [7]. Therefore, this study is a comparison of mental disorders in stroke patients and healthy people in Karaj, Iran.

METHODS

This is a cross-sectional study that compared mental disorders in two groups of mild stroke patients and healthy people. The statistical population of the present study included healthy people and mild stroke patients referring to the rehabilitation and drug centers of Ghaem and Sarollah hospitals, and the rehabilitation and occupational therapy center in Mehrshahr Karaj. The samples included 60 people (30 patients and 30 healthy people) that were selected by purposeful sampling.

The criteria for entering the study included age 40 to 60 years. Exclusion criteria included not having the minimum literacy required to complete the questionnaires and was according to the test instructions, as well as having serious cognitive defects and unwillingness to cooperate.

After obtaining permission from the management of the hospitals and the rehabilitation center, the hospitalized patients referred to centers were examined and identified by a neurologist, in accordance to the definition of WHO (sudden onset of clinical symptoms caused by nervous system dysfunction, lasting at least 24 hours with vascular origin). Then, people were introduced to the researcher after stroke diagnosis. In order to participate to the research, questionnaires were provided to them to complete. Because the patients were not able to complete the questionnaires alone due to movement problems and, in some cases, due to the failure of the hand or fingers of the dominant hand, after estab-

lishing a good relationship with the patients and motivating them to participate in the research, the questions of the questionnaire were played individually to the patients with a recorded voice by someone outside the researcher and they answered and due to the high number of questions, each of the questionnaires was taken in one day. For patients whose stroke was mild, the questionnaires were completed by the subjects themselves.

This research was conducted in compliance with ethical principles, including confidentiality and commitment, and the research objectives were explained to the patients, from which informed consent was obtained, while participation in the research was optional.

Millon 4 Multi-Axis Clinical Questionnaire (MCMI-IV): The original version of the Multi-Axis Clinical Questionnaire was developed and presented in 1977 by Theodore Millon and has since been revised twice [12]. It is a standardized self-assessment questionnaire which measures a wide range of information about personality, emotional adjustment and attitudes of clients to the test. This questionnaire is designed for adults 18 years and older who are at least able to read. MCMI emphasizes personality disorders and the symptoms that are often associated with these disorders. Millon et al. tested the internal consistency of the scales, along with their constituents, and they were related to Millon's personality theory and the DSM-IV and Millon's theory. MCMI-4 has a total of 25 clinical scales and 5 validity indices. Out of these 25 scales, 15 scales measure personality disorders based on the DSM-IV axis and the other 10 scales measure clinical symptoms based on the first axis. The reliability of the MCMI test was relatively high and was reported to be around 0.69 to 0.71 [13]. Sharifi studied validity of 3-MCMI scales through diagnostic validity and with operating problems (positive predictive power, negative predictive power and total predictive power) and all scales were very well estimated. Example: Positive predictive power of scales ranged from 0.58 (dramatic personality disorder) to 0.83 (delusional disorder) and negative predictive power from 0.93 (negative personality disorder) to 0.99 (anxiety disorder) [14]. The Validity of the test in the present study was reported using Cronbach's alpha coefficient of 0.73.

Reconstructed Minnesota Multifaceted Personality Form (MMPI-2RF): The MMPI test was first introduced by Hathaway and McKinley in 1943. This tool can be useful in psychological assessment related to psychopathological screening [15]. The MMPI has 338 two-choice questions that can provide a total of 50 scales, of which 8 scales are considered as validity scales and 42 scales are considered as main scales. Of the 8 validity scales included in MMPI-2RF, 7 validity scales were already in MMPI-2RC and only 1 new validity scale was developed. In addition, of the 42 major scales included in the MMPI-2RF, 9 clinical scales were reconstructed in the MMPI-2RC. 33 scales of the 42 major scales of the MMPI-2RF have recently been developed. Of these 33 scales, 3 holistic scales show a wide range of failures in the areas of emotion - internalization, thinking and behavioral - extrapolation, known as first-degree scales or higher-level scales [16]. In this questionnaire, F minus K index was compiled to discover profiles with good and bad pretending. The score of this index is obtained by subtracting the raw score of F from the raw score of K. If the result of this subtraction is higher than 11, a profile is called with bad pretense. A person tries to make himself look worse than he really is. If the remainder of the subtraction is negative, the calculated profile is considered as a well-pretended profile. Translation and adaptation of MMPI-2-RF was done by Shokrzadeh et al., in Iran. The reliability coefficients for clinical scales were higher than 0.80. Also, they stated that the MMPI-2-RF has acceptable validity and the coefficients correlation between scores with emphasis on clinical subscales RC1 to RC9 was in the range of 0.50 to 0.65 [17].

Data analysis was done using SPSS version 22 software and two groups were analyzed using t test.

RESULTS

The demographic characteristics of the study participants are shown in Table 1. The results of comparing variables of the two groups of stroke patients and healthy participants in the study showed a significant difference.

The results of the Kolmogorov-Smirnov test showed that the distribution is normal. In this study the scales of personality disorders in stroke patients and healthy group are shown in Table 2, which is related to MCMI-IV. The results of comparing the two groups showed that in the stroke group, there was a significant difference in the variables of internal aggression, irresponsibility and introversion compared to the healthy group (P <0.05).

Also, Table 3 presents the scales of clinical syndromes related to the MCMI-IV in stroke patients and healthy group. The results of comparing the two groups showed that in the stroke group, there was a significant difference in the variables of modified, mania, anxiety, alcoholism, drug dependency and PTSD compared to healthy group (P <0.05).

According to the results of MMPI-2RF in Table 4, comparing the results of clinical personality style scales in two stroke and healthy groups showed that there is a significant difference between the levels of schizoid, avoidance, depression, pessimism, sadism variables.

TABLE 1. Demographic characteristics of the participants

Variable		Patient (P)	Healthy group (P)	Sig.
Age, M± SD		49.02 ± 8.70	48.09 ± 7.04	0.031
Gender	Male	15 (50%)	15 (50%)	0.041
	Female	15(50%)	15 (50%)	
Marital status	Married	24 (80%)	21 (70%)	0.007
	Single	6 (20%)	4 (13/2%)	
	Divorced	0	5 (16%)	
Educational level	Diploma	17 (63%)	14 (43%)	0.002
	Bachelor degree	10 (23%)	15 (46%)	
	Master degree and higher	3 (10%)	1 (3/3%)	
Employment status	Employed	15 (50%)	11 (36%)	0.041
	Retired	5 (16%)	7 (23%)	
	Housekeeper	10 (23%)	12 (40%)	

TABLE 2. Results of T test in subtype of personality disorders of the two group

Personality disorders	Healthy, Mean ± SD	Patient, Mean ±SD	t value	df	Sig.
Internal aggression	34.20±2.13	51.27±9.03	-8.32	58	0.001
Psychosis	61.15±9.67	71.37±14.34	2.4	58	0.021
Irresponsibility	26.53±2.33	48.93±8.47	-10.83	58	0.001
Neurosis	43.58±5.38	60.90±11.42	-1.96	58	0.059
Introversion	36.28±0.02	48.83±10.04	-8.81	58	0.001

TABLE 3. Results of T-test in sub-test of clinical symptoms of the two groups

Clinical syndromes	Healthy, Mean ± SD	Patient, Mean ±SD	t value	df	Sig.
Anxiety disorder	24.03±4.5	33.79±6.60	2.74	58	0.010
modified	15.80±1.4	43.63±2.05	-0.048	58	0.633
Manic	79.60±1.49	87.76±22.95	2.83	58	0.008
Dysthymia	89.10±23.53	93.70±35.60	0.091	58	0.369
alcoholism	1.13±0.06	03.06±0.11	-6.13	58	0.001
drug dependent	6.47±0.71	27.54±2.77	-3.31	58	0.004
PTSD	3.87±0.02	10.57±3.24	-1.86	58	0.037

TABLE 4. T-test results in sub-test of clinical patterns of personality of the two group

Styles of clinical personality patterns	Healthy, Mean ± SD	Patient, Mean ±SD	t value	df	Sig.
Schizoid	61.80±7.82	79.03±11.63	6.61	58	0.001
Avoidance	70.03±8.13	76.23±11.60	5.30	58	0.001
Depression	68.70±18.51	79.20±27.78	2.79	58	0.009
Dependent	51.20±11.49	66.90±25.99	0.40	58	0.692
Hysteric	59.13±9.27	68.86±10.62	1.90	58	0.056
Chaos	61.33±11.08	67.06±13.21	0.85	58	0.398
Narcissist	65.53±15.84	70.73±23.40	1.34	58	0.190
anti-social	63.20±8.02	67.50±10.49	1.25	58	0.221
Coercive	57.57±10.25	61.30±12.09	-1.67	58	0.104
Pessimism	69.80±13.18	74.90±22.39	2.42	58	0.022
Sadist	66.60±8.09	74.13±13.57	3.68	58	0.001

DISCUSSION

In the present study, mental disorders were compared in stroke patients and healthy people. The results showed that mental disorders in stroke patients are different from healthy people. The results also showed that these patients had more internal aggression, psychosis, irresponsibility and introversion than healthy people. These results were consistent with the findings of Robinson and Jorge [18], Carota and Bogousslavsky [8], and Sarafino and Smith [11]. These researchers showed that brain injuries such as stroke can lead to personality and psychological damage such as aggression and depression, anxiety in these patients, and in addition, severe brain damage can predispose people to mental disorders. Also, Robinson and Jorge reported that cognitive impairment associated with major depression is more common in patients with stroke than in healthy group [18]. In explaining these finding and related researches, it can be said, cognitive impairment and other psychological symptoms may increase after neurological and brain damage [19]. In the present study, personality disorders including schizoid, avoidance, depression, dependency, hysteria, narcissism, anti-social behavior, sadistic behavior, coercive behavior, pessimism and masochism were examined in stroke patients. The results showed that schizoid, avoidance, depression, pessimism and masochism were more common in sick people than healthy people; Therefore, it can be said that personality disorders were higher in stroke patients except for dependency, hysteria, narcissistic, anti-social, sadistic and coercive characteristics. Kim [20] acknowledged that depression symptoms of guilt and suicidal ideation after stroke are less common than initially seen, with increasing emphasis on the psychological consequences of stroke and the growth of evidence and standardization around evaluators. However, a basic understanding of how to achieve cognitive and mood assessment should now be mandatory for all stroke care workers [20,21]. Explaining the results, it can be said that most patients with mild brain injury recover well and quickly and usually return to their previous level of function. On the other hand, a significant minority of patients with mild brain injury have long recovery periods and disproportionately worse consequences than what is predicted by the objective facts of the injury.

The researchers concluded that most patients have problematic recovery periods. Their findings showed that 76% of patients experienced post-traumatic stress disorder according to the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders [21]. In addition, higher rates of depression were reported in these patients after a stroke. On the other hand, brain injury such as stroke is one of the most important public health issues as patients often lose their functional abilities and develop dependency on others, so these patients will need a caregiver for care and support [22]. Mohagheghi et al. also found that anxiety-related depressive disorder was associated with injuries such as right hemisphere injury; and depressive disorder alone was associated with left hemisphere injuries [23]. In general, it can be argued that the connection between the brain and the psyche is obvious. Just as the body needs attention and treatment, so does the mind. In most mental disorders, there is damage to the brain area, and also, in most patients with brain injury, there is evidence of mental and personality disorders [24].

The limitation of this study was the limited sample of Mehrshahr stroke patients in Karaj, which could not be a sufficient indicator for the wider community. Measuring tools are self-reporting and these tools have inherent limitations such as measurement error and lack of self-observation. Therefore, the findings obtained from this measurement method cannot be generalized to other measurement methods. It is recommended that specialists pay enough attention to the personality disorders of stroke patients. Also, in addition to treatment programs, clinical disorders of stroke patients should also be considered in order to achieve positive results.

CONCLUSION

According to the results, mental disorders in stroke patients were more than in the healthy group. Given that the cost of treating stroke patients is high and also has a negative impact on the quality of life, including work and education, prevention is one of the best solutions. Before a stroke, especially for people who have other predisposing factors, it can be effective in preventing this disease. In addition, psychological interventions in people with stroke can prevent the disease from getting worse and reduce symptoms. Thus, the role of psychological interventions before and after stroke is important.

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