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Observational Study

Analysis of mental health status and related factors in patients with acute cerebral infarction

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Abstract

BACKGROUND

Acute cerebral infarction (ACI) is characterized by a high incidence of morbidity, disability, recurrence, death and heavy economic burden, and has become a disease of concern in global researchers. As ACI has serious effects on patients' physical status, life and economy, often causing anxiety, depression and other psychological problems, these problems can lead to the aggravation of physical symptoms; thus, it is very important to understand the factors affecting the mental health of these patients.

AIM

To understand the elements that affect the mental health of patients who have suffered an ACI.

METHODS

A questionnaire survey was conducted among patients with ACI admitted to three tertiary hospitals (Quanzhou First Hospital, Fuqing City Hospital Affiliated to Fujian Medical University, and the 900 Hospital of the Joint Service Support Force of the People's Liberation Army of China) in Fujian Province from January 2022 to December 2022 using the convenience sampling method. ACI inpatients

who met the inclusion criteria were selected. Informed consent was obtained from the patients before the investigation, and a face-to-face questionnaire survey was conducted using a unified scale. The questionnaire included a general situation questionnaire, Zung's self-rating depression scale and Zung's self-rating anxiety scale. All questionnaires were checked by two researchers and then the data were input and sorted using Excel software. The general situation of patients with ACI was analyzed by descriptive statistics, the influence of variables on mental health by the independent sample *t* test and variance analysis, and the influencing factors on psychological distress were analyzed by multiple stepwise regression.

RESULTS

The average age of the 220 patients with ACI was 68.64 ± 10.74 years, including 142 males and 78 females. Most of the patients were between 60 and 74 years old, the majority had high school or technical secondary school education, most lived with their spouse, and most lived in cities. The majority of patients had a personal income of 3001 to 5000 RMB yuan per month. The new rural cooperative medical insurance system had the largest number of participants. Most stroke patients were cared for by their spouses and of these patients, 52.3% had previously smoked. Univariate analysis showed that gender, age, residence, course of disease, number of previous chronic diseases and smoking history were the main factors affecting the anxiety scores of patients with ACI. Age, living conditions, monthly income, course of disease and knowledge of disease were the primary variables influencing the depression score in patients with ACI. The findings of multivariate analysis revealed that the course of disease and gender were the most important factors influencing patients' anxiety scores, and the course of disease was also the most important factor influencing patients' depression scores.

CONCLUSION

Long disease course and female patients with ACI were more likely to have psychological problems such as a high incidence of emotional disorders. These groups require more attention and counseling.

Key Words: Acute cerebral infarction; Mental health; Self-rating depression scale; Self-rating anxiety scale; Influencing factor; Correlation analysis

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Core Tip: In recent years, research on acute cerebral infarction has not only focused on the effects of the infarction on the body, but also the psychological effects. In this study, we found that long disease course may be the main factor leading to psychological problems in patients, and female patients with a high incidence of emotional disorders are more likely to have psychological problems. Such groups require more attention and psychological counseling.

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INTRODUCTION

Acute cerebral infarction (ACI) has become a disease of concern in global researchers due to its high incidence of morbidity, disability, recurrence, death and heavy economic burden[1,2]. Most patients have different degrees of limb function, cognitive function and other disorders following sudden ACI. Patients find it difficult to accept physical changes which have a greater impact on their psychological status. These cannot be resolved in a short period of time, and there are some emotional changes such as suspicion and anxiety. Long-term negative emotions are psychological burdens, which affect physical and mental health[3-5]. Early detection of psychological problems, exploring the source of these psychological problems, providing targeted solutions, reducing patients' psychological disorders while improving the recovery in limb function or cognition, and promoting rehabilitation are essential. Therefore, it is necessary to carry out a cross-sectional survey to understand the influencing factors on mental health status in patients with ACI, examine the key factors affecting mental health, improve the mental health status of patients with ACI, and pave the way for early clinical intervention.

MATERIALS AND METHODS

Study population and data collection

From January 2022 to December 2022, a questionnaire survey was conducted in patients with ACI admitted to three tertiary hospitals in Fujian Province (Quanzhou First Hospital, Fuqing City Hospital Affiliated to Fujian Medical University, and the 900 Hospital of the Joint Service Support Force of the People's Liberation Army of China).

Inclusion criteria were: (1) Diagnosis consistent with that in the Chinese acute stroke clinical research consensus; (2) High research compliance; (3) Basic listening and speaking ability; and (4) Patients with a temporary stable condition and clear consciousness.

Exclusion criteria were: (1) Patients with language communication, cognitive, hearing or mental disorders; (2) Those with severe respiratory failure, malignant tumor, liver, renal, and cardiac dysfunction; and (3) Incomplete clinical data or participation in other research.

All patients with ACI who met the inclusion requirements were included in the study. Before the investigation, consent was obtained from the subjects and the informed consent was signed. A unified scale was used to conduct a face-to-face questionnaire survey. Those with good reading and writing ability completed the questionnaire. If the patients had difficulty in completing the questionnaire, the researcher used a unified guidance language to describe the questions. When the patient understood the questions, the survey was completed according to the patient's opinions. The researcher collected and checked the questionnaires, and corrected any errors.

General information questionnaire

This questionnaire included demographic characteristics (gender, age, education level, marital status, medical insurance type, inpatient caregivers, smoking history, *etc.*) and disease-related data (course of disease, type of stroke, number of strokes, past chronic disease status, *etc.*).

Assessment of anxiety and depression

To evaluate potential anxiety and depression, the Chinese versions of Zung's self-rating depression scale (SDS) and Zung's self-rating anxiety scale (SAS) were utilized. The commonly used SAS and SDS measures are quick and practical tools for assessing respondents' signs of anxiety and depression, and they have strong reliability and validity in the Chinese population. Each scale has 20 items that are rated on a scale of 1 to 4 to evaluate the assertions (rarely, occasionally, frequently, or always). The standard scale was created by multiplying the 20-80 point range of the overall score by 1.25. The higher the score, the more severe the anxiety or depression. According to the findings of the Chinese norm, the cut-off value of the SDS standard score was 53 points; mild depression was defined as 53-62 points, moderate depression as 63-72 points, and severe depression as more than 73 points. The SAS standard deviation cutoff was 50 points, with mild anxiety being between 50 and 59 points, moderate anxiety being between 60 and 69 points, and severe anxiety being more than 69 points.

Statistical analysis

All questionnaires were checked by two researchers, and then Excel software was used for data entry and collation. The SPSS26.0 program was utilized for data analysis. Descriptive statistical analysis was used for the general situation of patients with ACI. The independent sample *t* test and variance analysis were used to analyze the influence of each variable on mental health. Multiple stepwise regression analysis was used to analyze the influencing factors of psychological distress. $P < 0.05$ was considered statistically significant.

RESULTS

Demographic characteristics of patients with ACI

Demographic characteristics of the 220 patients with ACI (Table 1).

Disease-related information on patients with ACI

The disease course, frequency of onset, history of hypertension, history of diabetes, history of coronary heart disease, and history of chronic diseases patients with ACI was counted (Table 2).

Mental health status of patients with ACI

Among the 220 patients with ACI in this survey, 122 had depression, including 73 cases of mild depression, 39 cases of moderate depression, and 10 cases of severe depression. One hundred and sixty-three cases had anxiety, including 65 cases of mild anxiety, 61 cases of moderate anxiety, and 37 cases of severe anxiety (Table 3).

Effects of demographic sociological characteristics on mental health

The SAS score and SDS score of ACI patients were used as dependent variables, and gender, age, occupation, education level, marital status, living conditions, place of residence, personal monthly income, type of medical insurance, inpatient nursing staff, and smoking history were used as independent variables for univariate analysis. The results showed that gender, age, living conditions and smoking history were the main factors affecting the SAS score of ACI patients. Age, living conditions and personal monthly income were the main factors affecting the SDS score of ACI patients (Table 4).

Table 1 Demographic characteristics of acute cerebral infarction patients

Characteristics	Classification	<i>n</i>	Constituent ratio
Gender	Male	142	64.5%
	Female	78	35.5%
Age (yr)	≤ 59	49	22.3%
	60-74	94	42.7%
	≥ 74	77	35.0%
Degree of education	Primary school and below	39	17.7%
	Junior middle school	54	24.5%
	High school/technical secondary school	91	41.4%
	College degree or above	36	16.4%
Marital status	Married	134	60.9%
	Bereft of one's spouse	26	11.8%
	Divorce or other	60	27.3%
Living situation	Live with parents	10	4.5%
	Live with children	41	18.6%
	Live with partner	108	49.1%
	Living alone	61	27.7%
Domicile	City	114	51.8%
	Village	106	48.2%
Monthly profit (yuan)	≤ 1000	17	7.7%
	1001-3000	75	34.1%
	3001-5000	76	34.5%
	≥ 5001	52	23.6%
Medical insurance type	Medical insurance for urban employees	63	28.6%
	Medical insurance for urban residents	40	18.2%
	New rural cooperative	95	43.2%
	Self-paying	22	10.0%
Caregiver	Parents	11	5.0%
	Spouse	114	51.8%
	Children	76	34.5%
	Other	19	8.6%
History of smoking	No	105	47.7%
	Yes	115	52.3%

Effects of ACI on mental health

The SAS score and SDS score of stroke patients were used as dependent variables, and the duration of disease, number of strokes, history of hypertension, history of diabetes, history of coronary heart disease, number of previous chronic diseases, and knowledge were used as independent variables for univariate analysis. The results showed that the course of disease, chronic history and the number of previous chronic diseases were the main factors affecting the SAS score of ACI patients. The course of disease and the status of knowledge of the disease were the main factors affecting the SDS score of patients with ACI (Table 5).

Multivariate analysis of anxiety in patients with ACI

The data obtained from this survey were analyzed by stepwise regression analysis, the SAS score in patients with ACI was used as the dependent variable, and the variables that showed statistically significant SAS scores in the patient data (gender, age, location, disease course, number of chronic diseases, and smoking history) as independent variables. The

Table 2 Disease-related data of acute cerebral infarction patients

Factors	Classification	<i>n</i>	Constituent ratio
Course of disease	1-6 mo	96	43.64%
	7-12 mo	73	33.18%
	1-2 yr	36	16.36%
	More than 2 yr	15	6.82%
Number of ACIs	One	122	55.45%
	More than two	98	44.55%
History of hypertension	Yes	132	60.00%
	No	88	40.00%
History of diabetes	Yes	117	53.18%
	No	103	46.82%
History of coronary heart disease	Yes	109	49.55%
	No	111	50.45%
Number of previous chronic diseases	0	17	7.73%
	1	75	34.09%
	2	101	45.91%
	3	27	12.27%
Informed status of ACI	Fully informed	97	44.09%
	Partially informed	73	33.18%
	Completely uninformed	50	22.73%

ACI: Acute cerebral infarction.

Table 3 Mental health status of acute cerebral infarction patients

Factors	Classification	Number	Constituent ratio	mean \pm SD
SDS	Without	93	42.27%	43.31 \pm 7.49
	M	73	33.18%	57.29 \pm 2.74
	M	39	17.73%	66.51 \pm 2.68
	S	10	4.55%	76.30 \pm 1.64
SAS	Without	57	25.91%	43.09 \pm 8.86
	M	65	29.55%	52.85 \pm 10.03
	M	61	27.73%	60.38 \pm 8.28
	S	37	16.82%	75.92 \pm 4.97

SDS: Self-rating depression scale; SAS: Self-rating anxiety scale.

findings demonstrated that gender and progression of the illness were factors in the regression model (Table 6).

Multivariate analysis of depression in patients with ACI

The data obtained from this survey were analyzed by stepwise regression analysis, the SDS score in patients with ACI was used as the dependent variable, and the variables that showed statistically significant SAS scores in the patient data (age, place of residence, disease course, personal monthly income, and disease awareness) as independent variables. The findings demonstrated that the disease course was a factor in the regression equation (Table 7).

Table 4 Influence of sociological characteristics of the population on mental health

Factors	Classification	SAS (mean ± SD)	F/t value	P value	SDS (mean ± SD)	F/t value	P value
Gender	Male	54.74 ± 11.05	8.577 ¹	0.004	52.36 ± 11.31	0.293 ¹	0.589
	Female	62.5 ± 13.63			57.59 ± 11.78		
Age (yr)	≤ 59	51.33 ± 12.67	10.504	< 0.001	49.35 ± 11.18	8.878	< 0.001
	60-74	57.49 ± 11.42			53.67 ± 11.39		
	≥ 74	61.42 ± 12.38			57.97 ± 11.34		
Degree of education	Primary school and below	58.05 ± 12.82	0.494	0.687	55.38 ± 13.83	1.096	0.352
	Junior middle school	58.3 ± 11.05			53.15 ± 10.13		
	High school/ technical secondary school	57.67 ± 13.43			55.33 ± 11.25		
	College degree or above	55.22 ± 12.36			51.72 ± 12.60		
Marital status	Married	57.51 ± 12.32	1.687	0.188	53.88 ± 11.88	1.559	0.213
	Bereft of one's spouse	61.23 ± 12.30			57.96 ± 9.28		
	Divorce or other	55.83 ± 13.04			53.33 ± 12.18		
Living situation	Live with parents	48.00 ± 10.71	3.849	0.01	44.40 ± 11.32	3.923	0.009
	Live with children	61.83 ± 10.76			57.88 ± 11.32		
	Live with partner	57.36 ± 12.82			53.61 ± 11.99		
	Living alone	56.36 ± 12.61			54.43 ± 10.72		
Domicile	City	55.97 ± 12.30	3.494 ¹	0.063	54.18 ± 11.05	0.002 ¹	0.96
	Village	59.12 ± 12.69			54.25 ± 12.46		
Monthly profit (yuan)	≤ 1000	56.35 ± 12.52	1.9	0.131	50.00 ± 15.36	2.845	0.039
	1001-3000	56.57 ± 11.94			54.13 ± 12.24		
	3001-5000	60.17 ± 12.45			56.88 ± 10.45		
	≥ 5001	55.27 ± 13.26			51.81 ± 10.76		
Medical insurance type	Medical insurance for urban employees	57.25 ± 13.46	1.245	0.294	55.60 ± 10.69	1.063	0.366
	Medical insurance for urban residents	54.3 ± 11.02			51.43 ± 11.08		
	New rural cooperative	58.78 ± 12.79			54.40 ± 12.64		
	Self-paying	58.41 ± 11.14			54.50 ± 11.53		
Caregiver	Parents	48.55 ± 5.09	2.189	0.09	51.36 ± 12.75	1.012	0.388
	Spouse	58.00 ± 13.10			53.80 ± 11.29		
	Children	58.41 ± 11.36			55.84 ± 12.41		
	Other	55.95 ± 15.26			51.84 ± 10.81		
History of smoking	No	55.63 ± 12.16	5.422 ¹	0.021	53.39 ± 11.91	1.186 ¹	0.277
	Yes	59.53 ± 12.77			55.11 ± 11.51		

¹t value.

ACI: Acute cerebral infarction; SDS: Self-rating depression scale; SAS: Self-rating anxiety scale.

DISCUSSION

ACI is a sudden cerebrovascular disease. It is an acute attack when the patient's brain is blocked by blood vessels such as coronary arteries[6,7]. Due to the close connection between the cerebrovascular and central nervous system, patients with ACI often have a poor prognosis. Even after treatment, neurological dysfunction may persist. Some patients are prone to unpleasant feelings such as depression and anxiety during the onset of the disease, and then sleep disorders, neurasthenia and other symptoms, such psychological changes may be related to the occurrence of nerve defects[8-10]. In recent years, the study of ACI has not only focused on the effects on the body, but psychological effects have received more and more attention[11-13]. Patients with anxiety and depression often have a poor prognosis, longer recovery time and are

Table 5 Effects of acute cerebral infarction on mental health

Factors	Classification	SAS (mean ± SD)	F/t/Welch value	P value	SDS (mean ± SD)	F/t/Welch value	P value
Course of disease	1-6 mo	47.66 ± 9.80	72.127	< 0.001	46.36 ± 10.63	56.835 ²	< 0.001
	7-12 mo	62.97 ± 7.48			59.12 ± 7.83		
	1-2 yr	68.17 ± 9.99			58.81 ± 8.51		
	More than 2 yr	68.13 ± 6.55			69.53 ± 5.76		
Number of ACIs	One	56.63 ± 13.34	1.286 ¹	0.258	53.10 ± 13.18	2.674 ¹	0.103
	More than two	58.56 ± 11.48			55.60 ± 9.50		
History of hypertension	Yes	57.11 ± 12.28	0.309 ¹	0.579	53.86 ± 11.60	0.293 ¹	0.589
	No	58.07 ± 13.01			54.74 ± 11.96		
History of diabetes	Yes	57.14 ± 13.01	0.198 ¹	0.657	54.09 ± 10.83	0.03 ¹	0.863
	No	57.89 ± 12.07			54.36 ± 12.72		
History of coronary heart disease	Yes	57.02 ± 12.43	0.305 ¹	0.581	54.36 ± 11.54	0.033 ¹	0.857
	No	57.95 ± 12.72			54.07 ± 11.96		
Number of previous chronic diseases	0	64.94 ± 12.36	2.595	0.050	59.53 ± 10.33	2.277	0.081
	1	55.73 ± 12.07			52.09 ± 13.20		
	2	57.76 ± 12.34			55.13 ± 10.78		
	3	56.67 ± 13.67			53.33 ± 10.71		
Informed status of ACI	Fully informed	57.04 ± 12.63	2.444	0.089	55.14 ± 11.22	5.161	0.006
	Partially informed	55.84 ± 11.99			50.88 ± 12.02		
	Completely uninformed	60.78 ± 12.87			57.28 ± 11.31		

¹t value.²Welch value.

ACI: Acute cerebral infarction; SDS: Self-rating depression scale; SAS: Self-rating anxiety scale.

Table 6 Multivariate analysis of anxiety in patients with acute cerebral infarction

Variable	B	SE	Beta	t value	P value	95%CI
Constant	29.551	2.164		13.654	< 0.001	25.286-33.817
Course of disease	8.918	0.638	0.658	13.981	< 0.001	7.661-10.176
Sex	8.356	1.232	0.319	6.781	< 0.001	5.928-10.785

CI: Confidence interval.

Table 7 Multivariate analysis of depression in patients with acute cerebral infarction

Variable	B	SE	Beta	t value	P value	95%CI
Constant	41.149	1.457		28.252	< 0.001	38.279-44.02
Course of disease	8.769	0.7	0.647	12.524	< 0.001	7.389-10.149

CI: Confidence interval.

more likely to relapse[13,14]. Therefore, this study analyzed the influencing factors on mental health in patients with ACI, with the hope of identifying the key factors affecting mental health.

The SAS score and SDS score in the 220 patients with ACI included in this study were statistically significant. The total SAS score was 57.49 ± 12.56 , which was significantly higher than the standard cut-off value. The total SDS score was 54.21 ± 11.73 , which was significantly higher than the standard cut-off value, indicating that psychological problems are common in patients with ACI in China. The results of univariate analysis showed that gender, age, residence, course of disease, number of chronic diseases and smoking history were the primary elements influencing the anxiety score in patients with ACI. Age, living conditions, monthly income, course of disease and knowledge of ACI were primary elements influencing the depression score in patients with ACI. The analysis results showed that female patients had more severe anxiety than male patients. The levels of anxiety and depression increased with age. Similar to previous research results, a possible reason for this is that women and the elderly belong to a high-risk group with emotional disorders[15-17], and psychological problems are more likely to occur after ACI. The SAS and SDS scores of patients living with their children were higher, which matched the outcomes of earlier studies[18,19]. This may be because patients living with their children often need to take care of their families, and the lack of ability regarding family care after infarction leads to serious anxiety. The longer the disease course, the higher the SAS and SDS scores in patients, which matched the outcomes of earlier studies[20,21], and might be the result of an aggravation of psychological problems caused by long-term distress; the anxiety score in patients without a history of chronic disease was highest, which may be due to the increase in psychological pressure caused by the patient's abilities in their previous healthy state and their sudden need for care. The depression score in patients with ACI and higher monthly income was greatest, which may be due to the impact on work and income after illness, resulting in psychological problems. Patients who do not understand the disease have higher depression scores, which may be due to the fact that patients do not understand their disease status and do not know why they are more likely to worry about hospitalization, resulting in psychological problems. Furthermore, multivariate analysis showed that the course of disease and gender were the key factors affecting the anxiety score in patients, and the course of disease was also the key factor affecting the depression score in patients. According to these findings, psychological issues are more likely to occur in patients who have had their disorder for a longer period of time and in women.

The limitation of this study is that the sample size is too small to fully analyze more factors affecting the mental health status of ACI patients. In future studies, we will continue to collect data of ACI patients, and further evaluate the key factors affecting the mental health of ACI patients in a more comprehensive way, as well as the mediating and regulating effects of other influencing factors.

CONCLUSION

In summary, patients with ACI generally have psychological issues including despair and anxiety. A long disease course may be the main factor leading to psychological problems in patients, and female patients are more likely to have psychological problems such as a high incidence of emotional disorders. Such groups require more attention and psychological counseling.

ARTICLE HIGHLIGHTS

Research background

Acute cerebral infarction (ACI) is a sudden cerebrovascular disease. ACI occurs when the patient's brain is blocked by coronary arteries and other blood vessels, resulting in ischemia and hypoxia. Even after receiving treatment, there may be persistent neurological dysfunction. Patients with anxiety and depression tend to have a poor prognosis, take longer to recover and are more likely to relapse.

Research motivation

This study analyzed the factors affecting the mental health of patients with ACI, with the hope of identifying the key factors affecting mental health.

Research objectives

The object of this study is to improve the mental health status of patients with ACI, and pave the way for early clinical intervention.

Research methods

A questionnaire survey was conducted among patients with ACI admitted to three tertiary hospitals in Fujian Province from January 2022 to December 2022 using the convenience sampling method. Patients with ACI who were inpatients and met the inclusion criteria were selected. A face-to-face questionnaire survey was conducted using a unified scale. To evaluate potential signs of anxiety and depression, the Zung's self-rating depression scale and Zung's self-rating anxiety scale were used. All questionnaires were checked by two researchers and then the data were input and sorted using Excel software. The general situation of ACI patients was analyzed by descriptive statistics, the influence of variables on mental

health by the independent sample *t* test and variance analysis, and the influencing factors on psychological distress were analyzed by multiple stepwise regression.

Research results

Univariate analysis showed that gender, age, residence, course of disease, number of previous chronic diseases and smoking history were the main factors affecting anxiety scores in ACI patients. Age, living conditions, monthly income, course of disease and knowledge of ACI were the main factors affecting the depression score in ACI patients. According to the results of the multivariate analysis, the course of disease and gender were the key factors affecting the anxiety score, and the course of disease was also the key factor affecting the depression score.

Research conclusions

Patients with ACI generally have psychological issues including depression and anxiety. A long disease course may be the main factor leading to psychological problems in patients, and female patients are more likely to have psychological problems such as a high incidence of emotional disorders. Such groups require more attention and psychological counseling.

Research perspectives

More patient records should be collected to more comprehensively evaluate the key factors affecting the mental health of patients with ACI.

FOOTNOTES

Author contributions: Chen QQ and Lin FM contributed equally to this work and are co-first authors. Chen QQ and Lin FM contributed to the study design and manuscript preparation; Chen DH, Ye YM, and Chen FF involved in the data acquisition; Gong GM and Huang SF participated in the statistical analysis; Peng SL reviewed the manuscript.

Institutional review board statement: The study was approved by the Ethics Committee of Fuqing City Hospital Affiliated to Fujian Medical University.

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REFERENCES

- 1 Mo Z, Tang C, Li H, Lei J, Zhu L, Kou L, Luo S, Li C, Chen W, Zhang L. Eicosapentaenoic acid prevents inflammation induced by acute cerebral infarction through inhibition of NLRP3 inflammasome activation. *Life Sci* 2020; **242**: 117133 [PMID: 31830477 DOI: 10.1016/j.lfs.2019.117133]
- 2 Zhao Y, Zhang X, Chen X, Wei Y. Neuronal injuries in cerebral infarction and ischemic stroke: From mechanisms to treatment (Review). *Int J Mol Med* 2022; **49** [PMID: 34878154 DOI: 10.3892/ijmm.2021.5070]
- 3 Tu J, Wang LX, Wen HF, Xu YC, Wang PF. The association of different types of cerebral infarction with post-stroke depression and cognitive impairment. *Medicine (Baltimore)* 2018; **97**: e10919 [PMID: 29879031 DOI: 10.1097/MD.00000000000010919]
- 4 Zhao XJ, Li QX, Liu TJ, Wang DL, An YC, Zhang J, Peng YB, Chen RY, Chang LS, Wang Y, Zhang L, Fan HY, Wang XJ, Zheng FX. Predictive values of CSS and NIHSS in the prognosis of patients with acute cerebral infarction: A comparative analysis. *Medicine (Baltimore)*

- 2018; **97**: e12419 [PMID: [30278519](#) DOI: [10.1097/MD.00000000000012419](#)]
- 5 **Prussien KV**, Jordan LC, DeBaun MR, Compas BE. Cognitive Function in Sickle Cell Disease Across Domains, Cerebral Infarct Status, and the Lifespan: A Meta-Analysis. *J Pediatr Psychol* 2019; **44**: 948-958 [PMID: [31050352](#) DOI: [10.1093/jpepsy/jsz031](#)]
- 6 **Kubota M**, Yoshida Y, Kobayashi E, Matsutani T, Li SY, Zhang BS, Mine S, Machida T, Takizawa H, Hiwasa T, Iwade Y. Serum anti-SERPINE1 antibody as a potential biomarker of acute cerebral infarction. *Sci Rep* 2021; **11**: 21772 [PMID: [34741085](#) DOI: [10.1038/s41598-021-01176-8](#)]
- 7 **Shao H**, He X, Zhang L, Du S, Yi X, Cui X, Liu X, Huang S, Tong R. Efficacy of Ligustrazine Injection as Adjunctive Therapy in Treating Acute Cerebral Infarction: A Systematic Review and Meta-Analysis. *Front Pharmacol* 2021; **12**: 761722 [PMID: [34880757](#) DOI: [10.3389/fphar.2021.761722](#)]
- 8 **Deng M**, Zhong X, Gao Z, Jiang W, Peng L, Cao Y, Zhou Z, Huang L. Dynamic changes in Beclin-1, LC3B and p62 at various time points in mice with temporary middle cerebral artery occlusion and reperfusion (tMCAO). *Brain Res Bull* 2021; **173**: 124-131 [PMID: [33974897](#) DOI: [10.1016/j.brainresbull.2021.05.002](#)]
- 9 **Sun Z**, Xu Q, Gao G, Zhao M, Sun C. Clinical observation in edaravone treatment for acute cerebral infarction. *Niger J Clin Pract* 2019; **22**: 1324-1327 [PMID: [31607719](#) DOI: [10.4103/njcp.njcp_367_18](#)]
- 10 **Lyketsos CG**, Kozauer N, Rabins PV. Psychiatric manifestations of neurologic disease: where are we headed? *Dialogues Clin Neurosci* 2007; **9**: 111-124 [PMID: [17726911](#) DOI: [10.31887/DCNS.2007.9.2/clyketsos](#)]
- 11 **Wang X**, Chen J, Liu YE, Wu Y. The Effect of Acceptance and Commitment Therapy on Psychological Nursing of Acute Cerebral Infarction with Insomnia, Anxiety, and Depression. *Comput Math Methods Med* 2022; **2022**: 8538656 [PMID: [35785139](#) DOI: [10.1155/2022/8538656](#)]
- 12 **Xu T**, Tao F, Dong P, Wang H, Shi Z. A Psychological Intervention Program for Patients with Cerebral Infarction. *Dement Geriatr Cogn Disord* 2023; **52**: 83-90 [PMID: [37004504](#) DOI: [10.1159/000529601](#)]
- 13 **Xie R**, Chen Y, Chen K, Chen Z. Intervention Effect of Rapid Rehabilitation Nursing Combined with Continuous Nursing after Discharge on Patients with Cerebral Infarction in Recovery Period and the Changes in Motor Function, Mental State, and Quality of Life. *Evid Based Complement Alternat Med* 2021; **2021**: 8065868 [PMID: [34691226](#) DOI: [10.1155/2021/8065868](#)]
- 14 **Otte C**. Incomplete remission in depression: role of psychiatric and somatic comorbidity. *Dialogues Clin Neurosci* 2008; **10**: 453-460 [PMID: [19170402](#) DOI: [10.31887/DCNS.2008.10.4/cotte](#)]
- 15 **Rapee RM**, Oar EL, Johnco CJ, Forbes MK, Fardouly J, Magson NR, Richardson CE. Adolescent development and risk for the onset of social-emotional disorders: A review and conceptual model. *Behav Res Ther* 2019; **123**: 103501 [PMID: [31733812](#) DOI: [10.1016/j.brat.2019.103501](#)]
- 16 **Bixo M**, Johansson M, Timby E, Michalski L, Bäckström T. Effects of GABA active steroids in the female brain with a focus on the premenstrual dysphoric disorder. *J Neuroendocrinol* 2018; **30** [PMID: [29072794](#) DOI: [10.1111/jne.12553](#)]
- 17 **Ciasca EC**, Ferreira RC, Santana CLA, Forlenza OV, Dos Santos GD, Brum PS, Nunes PV. Art therapy as an adjuvant treatment for depression in elderly women: a randomized controlled trial. *Braz J Psychiatry* 2018; **40**: 256-263 [PMID: [29412335](#) DOI: [10.1590/1516-4446-2017-2250](#)]
- 18 **Cheng LS**, Tu WJ, Shen Y, Zhang LJ, Ji K. Combination of High-Sensitivity C-Reactive Protein and Homocysteine Predicts the Post-Stroke Depression in Patients with Ischemic Stroke. *Mol Neurobiol* 2018; **55**: 2952-2958 [PMID: [28456936](#) DOI: [10.1007/s12035-017-0549-8](#)]
- 19 **Jiménez I**, Sobrino T, Rodríguez-Yáñez M, Pouso M, Cristobo I, Sabucedo M, Blanco M, Castellanos M, Leira R, Castillo J. High serum levels of leptin are associated with post-stroke depression. *Psychol Med* 2009; **39**: 1201-1209 [PMID: [19356259](#) DOI: [10.1017/S0033291709005637](#)]
- 20 **Geraets AF**, Köhler S, Jansen JF, Eussen SJ, Stehouwer CD, Schaper NC, Wesselijs A, Verhey FR, Schram MT. The association of markers of cerebral small vessel disease and brain atrophy with incidence and course of depressive symptoms - the maastricht study. *J Affect Disord* 2021; **292**: 439-447 [PMID: [34144369](#) DOI: [10.1016/j.jad.2021.05.096](#)]
- 21 **Hung CY**, Wu XY, Chung VC, Tang EC, Wu JC, Lau AY. Overview of systematic reviews with meta-analyses on acupuncture in post-stroke cognitive impairment and depression management. *Integr Med Res* 2019; **8**: 145-159 [PMID: [31304087](#) DOI: [10.1016/j.imr.2019.05.001](#)]



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