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Document heading

# Clinical effects of comprehensive therapy of early psychological intervention and rehabilitation training on neurological rehabilitation of patients with acute stroke

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## ABSTRACT

**Objective:** To evaluate the clinical effects of comprehensive therapy of psychological intervention and rehabilitation training on the mental health of the patients with acute stroke. **Methods:** A total of 120 patients with acute stroke were randomly divided into trial group and control group. Both groups were given the corresponding drug therapy, medical basic nursing and convention nursing. Besides, psychological intervention and comprehensive rehabilitation training were added to the trial group. SCL–90, Europ stroke scales (ESS) score were assessed with each patient on day 3 for the first time and on day 21 for the second time; Barthel index was assessed on the day 90. **Results:** After psychological intervention, SCL–90 declined significantly in the trial group comparing with the control group, there were significant differences in the somatization, obsession, depression, anxiety, fear, ESS score, Barthel index and other psychological factors between the trial group and control group ( $P < 0.05$ ). **Conclusions:** Comprehensive therapy of early psychological intervention and rehabilitation training can significantly improve the mental health, limb movement function, stress ability and activity of daily living on the patients with acute stroke.

## 1. Introduction

Acute stroke is a serious threat to the human health life as a common and frequently–occurring disease with the characteristics of high morbidity, high disability rate and high fatality rate. About 75% of survival patients have obstructions of limb ability and language function, which seriously affect the life quality of patients and place an enormous burden on the society and families[1]. In recent years, psychological intervention and comprehensive rehabilitation training have become important parts of acute stroke treatment uni to promote the neurological function recovery and improve the life quality[2]. The present study aims to assess the effects of early psychological intervention and comprehensive rehabilitation training on the mental and

functional recovery of the patients with acute stroke, and to provide scientific evidence for the treatments of patients with acute stroke.

## 2. Materials and methods

### 2.1. Patients selection

A total of 120 patients (male 62, female 58) with an average age of 56.4 with acute stroke admitted in People's Hospital, Hainan Province were selected: hemorrhagic stroke 48 cases and ischemic stroke 72 cases. Selection criteria: all the cases were with the diagnosis standard of Conference of Cerebrovascular Disease[1]; acute stroke or cerebral infarction in internal carotid testified by head CT or MRI; patients with stable physical station, without rapid progress in 48 h, Glasgow is above score of 8. Ruleout criteria: the patients with recurrent stroke, unstable physical station, progressive course of disease and disorders of consciousness were ruled out.

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## 2.2. Methods

The samples were randomly divided into trial group and control group with 60 cases in each, using prospective cohort study, and there was no significant differences on general information between the two groups ( $P<0.05$ ) as shown in Table 1. Both groups were given the corresponding drug therap, medical basic nursing and convention nursing. Besides, psychological intervention and comprehensive rehabilitation training were added to the trial group.

**Table 1**

General information of the trial group and control group.

Group	Age (year)	Types (n)		Gender	
		Infarction	Hemorrhage	Male	Female
Trial	56.10±1.06	35	25	30	30
Control	56.70±0.98	37	23	32	28

## 2.3. Intervention methods

### 2.3.1. Early psychological intervention

Psychological intervention was given by professional psychologists. Open-ended question was used to provide the patients with positive regards and reponse. Rehabilitation training outcomes of hemiparalysis were ensured and further protocol was designed to relieve the patients' mental obstructions by positive or imply methods. Appropriately reduce the expectations to help the patients analyze their feasibility of health recovery and improve the compliance and confidence. The families were trained to supervise patients to fullfil daily psychological therapy. The psychological therapy was given for 20 min each time and 5 times per week.

### 2.3.2. Early rehabilitation training

Early rehabilitation trainings include: the paralysis limbs were placed in functional position in bed, passive joint movment was given and posture was changed to prevent joints and limbs from deforming, and to improve ulcers

healing and lung function; Turnover training; Sitting position balance training to 3rd level; Standup and sitdown training; Standing position balance and movement training; Walking training. The trainings were operated by professionals according to the muscle force condition of the paralysis limbs. The trainings were operated for 30 min, twice each day with active participation of families.

## 2.4. Evaluation index

TSCL-90 scoring were used in both groups to evaluate the psychological condition after and before the interventions<sup>[3]</sup>, Europ stroke scales was adopted to evaluate the neurological function by scored on day 3 and day 21. Barthel index was evaluated on the day 90 to assess the ability of daily life<sup>[4]</sup>.

## 2.5. Statistical analysis

SPSS software 12.0 was used in this study.

## 3. Results

### 3.1. SCL-90

The SCL-90 factors increased obviously on day 3 in both groups, but there was no significant differences between the two groups. The factors declined on day 21 in different degree in both groups, somatization, obsession, depression, anxiety, hostility and psychological factors declined obviously in trial group than in the control group ( $P<0.05$ ) as shown in Table 2.

### 3.2. ESS and Barthel index

There was no significant difference on ESS between the two groups on day 3 ( $P>0.05$ ) but there was significant difference on Barthel index between the two groups on day 90 ( $P<0.05$ )

**Table 2**

SCL-90 factors before and after therapy (mean±SD).

Factors	Before therapy		After therapy	
	Trial(n=60)	Control(n=60)	Trial(n=60)	Control(n=60)
Somatization	1.56±0.45	1.59±0.63	1.50±0.40	1.40±0.48 <sup>a</sup>
Obsession	2.08±0.71	2.13±0.65	1.95±0.57	1.75±0.48 <sup>a</sup>
Interpersonal sensitivity	1.80±0.62	1.82±0.58	1.78±0.61	1.72±0.61
Depression	1.90±0.73	1.93±0.62	1.85±0.61	1.63±0.53 <sup>a</sup>
Anxiety	1.69±0.45	1.73±0.60	1.67±0.39	1.44±0.39 <sup>a</sup>
Hostility	1.78±0.39	1.74±0.70	1.69±0.58	1.59±0.46 <sup>a</sup>
Fear	1.56±0.38	1.55±0.43	1.38±0.71	1.29±0.71 <sup>a</sup>
Paranoia	1.88±0.55	1.90±0.67	1.71±0.52	1.65±0.45
Mental disease	1.71±0.56	1.75±0.81	1.60±0.63	1.45±0.67 <sup>a</sup>

a:  $P<0.05$ .

as shown in Table 3 .

**Table 3**

ESS and Barthel index before and after therapy ( $\bar{x} \pm s$ ).

Group	ESS		Barthel index
	Day 3	Day 21	Day 90
Trial	58.03±1.56	80.09±2.31 <sup>a</sup>	88.86±3.26 <sup>a</sup>
Control	57.89±1.43	69.97±2.19 <sup>a</sup>	75.93±3.01 <sup>a</sup>

<sup>a</sup> $P < 0.05$ .

#### 4. Discussion

Acute stroke is a continuous stressor for the patients and families, especially for the patients, the disease will bring about emotional changes or even serious psychological trauma, depression or suicide. The present study showed that SCL-90 factors increased obviously on Day 3, indicates that the mental health was influenced due to the disease stressor. After psychological intervention, the factors declined, especially the condition of somatization, obsession, depression, anxiety, fear and psychological factors declined significantly in trial group than in control group, indicates that early psychological intervention can improve the patients' consciousness and mental health[5]. And appropriate psychological therapy can evoke the positive emotion, bring functional defense mechanism into effect to improve the depression symptom and neurological function. As an important part of psychological treatment, supportive psychological treatment can lessen the pessimism and evoke positive mood while guiding the patients to reinforce body and mind exercise, actively cooperating with treatments promoting neurological recovery[6].

The ESS scores and Barthel index were much higher in the trial group than in the control group, further indicates that early rehabilitation training play an key role for improving the functional conditions of the patients with acute stroke. The mechanism may be have something to do with the fact that the central nervous system's structure and function are not definite, the central nervous system can reform its functional and structural ability after injuries. The highly plasticity of human brain is due to the dynamic restructure or adaptation, rather than regeneration[7,8]. Early rehabilitation training for the patients can prevent disuse

and misapply syndrome, restore the physical function as much as possible and improve the life quality.

It is suggested that early positive psychological intervention can provide patients with psychological support to promote the neurological improvement and recovery. And the longer the time for treatment, the better the outcomes will exerts. Combined with appropriate rehabilitation training can place a positive effects to improve recovery and life quality without delay.

#### Conflict of interest statement

We declare that we have no conflict of interest.

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