



Effect of systemic family therapy on rehabilitation in patients with schizophrenia

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ABSTRACT

Objective: To explore the effect of systemic family therapy on the rehabilitation in patients with schizophrenia. **Methods:** A total of 86 patients with schizophrenia who were admitted in our hospital from February, 2011 to February, 2014 were included in the study and randomized into the observation group and the control group. A total of 43 healthy individuals for physical examinations were served as the healthy group. The patients in the control group were given risperidone in a single dose, and telephone follow-up. On this basis, the patients in the observation group were given systemic family therapy. The morning fasting venous blood before treatment and 3 months after treatment in the healthy group and patients with schizophrenia was collected. BDNF, NGF, GFAP, IL-6, and TNF- α were detected. After 6-month treatment, SCL-90 was used to evaluate the psychological state. **Results:** The serum BDNF and NGF levels before and after treatment in the observation group and the control group were significantly lower than those in the healthy group, while GFAP level was significantly higher than that in the healthy group ($P < 0.05$). After 3-month treatment, BDNF, NGF, and GFAP levels in the observation group and the control group were significantly reduced when compared with before treatment ($P < 0.05$), but the comparison of protein factors between the two groups was not statistically significant ($P > 0.05$). The serum IL-6 and TNF- α levels before and after treatment in the observation group and the control group were significantly higher than those in the healthy group ($P < 0.05$). After 3-month treatment, IL-6 and TNF- α levels in the observation group and the control group were significantly reduced when compared with before treatment, but the difference of protein factors between the two groups was not statistically significant ($P > 0.05$). After 6-month treatment, the scores of somatization, interpersonal relationship, fear, anxiety, hostility, paranoid, depression, obsession, and mental disorder in the observation group were significantly reduced when compared with before treatment ($P < 0.05$), while the above indicators in the control group were not significantly changed ($P > 0.05$). **Conclusions:** The systemic family therapy is an effective adjuvant method for the rehabilitation in patients with schizophrenia, and can effectively improve the mental health status; therefore, it deserves to be widely recommended in the clinic.

1. Introduction

Schizophrenia is a kind of the most serious and most common mental disease, mostly occurring in the young adults, with slow onset and delayed course, and has the possibility of chronic

tendency and recession[1]. The pure antipsychotics in the treatment of schizophrenia can effectively control the mental symptoms, but the effect on the functional recovery has a certain defect; therefore, the mental rehabilitation, recurrence reduction, and social function improvement have been the prevention emphasis on the schizophrenia[2,3]. The systemic family therapy is a kind of special family psychotherapy. Family, as a whole system, attaches the relationships among the family members, and comprehends the family structure and function, which is of great significance in the recovery of patients with schizophrenia[4]. The study is aimed to

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explore the effect of systemic family therapy on the rehabilitation in patients with schizophrenia.

2. Materials and methods

2.1. Clinical materials

A total of 86 patients with schizophrenia who were admitted in our hospital from February, 2011 to February, 2014 were included in the study. Inclusion criteria: (1) those who were in accordance with the related criteria of schizophrenia in ICD-10 Mental and Behavior Disorder Classification; (2) those who were treated with antipsychotic drugs with stable condition for more than 1 month; (3) those who had normal heart, liver, and renal function, and no serious physical diseases; (4) those whose PANSS score was greater than 60; (5) those who could complete the cognitive function questionnaire; (6) those who had signed the informed consents. Exclusion criteria: (1) those who had dementia and mental retardation; (2) those who had serious physical diseases, and were receiving anti-inflammation or immunosuppression treatments; (3) those who were pregnant or at the lactation period. The patients were randomized into the observation group and the control group, with 43 cases in each group. In the observation group, 27 were male, and 16 were female; aged from 19 to 48 years old, with an average age of (25.7 ± 10.6) years old; course from 5 months to 5 years, with an average course of (15.2 ± 5.1) months. In the control group, 26 were male, and 17 were female; aged from 18 to 47 years old, with an average age of (25.5 ± 10.7) years old; course from 5 months to 5 years, with an average course of (15.4 ± 5.2) months. Moreover, 43 healthy individuals for physical examinations were served as the healthy group, among which 24 were male, and 19 were female; aged from 19 to 47 years old, with an average age of (25.7 ± 9.8) years old. The difference of age and gender among the three groups was not statistically significant ($P > 0.05$).

2.2. Methods

The patients in the control group were given risperidone in a single dose (produced by Xian Janssen Pharmaceutical Co. Ltd, Approval No. H20010309), 2-5 mg/d, and telephone follow-up. On this basis, the patients in the observation group were given systemic family therapy, 60-90 min/time, 2 times/month, for 12 times in each family. The specific methods were listed in the following: (1) establishing the preferable treatment alliance; (2) enhancing the acquaintance to the disease in order to strengthen the compliance; (3) carefully listening to the family members describing the problems and their opinions, and given the reinterpretations; (4) expressing the psychological features in a way of sculpture and exchanging the role undertaken in the family, and blending into the situation associated with the current tissue; (5) proposing hypothetical question, circular

question, and miracle question to the family conflict, giving sufficient encouragement to the patients' answers, and assisting in finding the methods to deal with the conflict in order to help the patients being liberated from the conflict; (6) communicating with the patients to understand their psychological problems, searching for parts of the patients' family health, supporting the family resource, strengthening the protection potential of family, training the relatives to be the collaborative therapists, reducing the control of relatives to the patients, strengthening the confidence of relatives to the treatment, and improving the relatives' negative psychological barrier; (7) guiding the family members to find and resolve the attacking, self-injury, and suicide events; (8) teaching the knowledge associated with love and marriage, fertility, and survival, and performing self-management training with drugs and doctor resorting skill training.

2.3. Observation indicators

The morning fasting venous blood before treatment and 3 months after treatment in the healthy group and patients with schizophrenia was collected. ELISA was used to detect BDNF, NGF, GFAP, IL-6, and TNF- α . After 6-month treatment, SCL-90 was used to evaluate the psychological state[5].

2.4. Statistical analysis

SPSS 18.0 software was used for the statistical analysis. The measurement data were expressed as mean \pm SD, and *t* test was used. *Chi*-square test was used for the enumeration data. $P < 0.05$ was regarded as statistically significant difference.

3. Results

3.1. Comparison of serum protein factor levels before and after treatment

The serum BDNF and NGF levels before and after treatment in the observation group and the control group were significantly lower than those in the healthy group, while GFAP level was significantly higher than that in the healthy group ($P < 0.05$). After 3-month treatment, BDNF, NGF, and GFAP levels in the observation group and the control group were significantly reduced when compared with before treatment ($P < 0.05$), but the difference of protein factors between the two groups was not statistically significant ($P > 0.05$) (Table 1).

3.2. Comparison of serum cytokine levels before and after treatment

The serum IL-6 and TNF- α levels before and after treatment in the observation group and the control group were significantly higher

than those in the healthy group ($P<0.05$). After 3-month treatment, IL-6 and TNF- α levels in the observation group and the control group were significantly reduced when compared with before treatment, but the difference of protein factors between the two groups was not statistically significant ($P>0.05$) (Table 2).

Table 2

Comparison of serum cytokine levels before and after treatment (pg/mL).

Groups	n	Time	IL-6	TNF- α
Healthy group	43		4.27 \pm 0.87	29.82 \pm 13.47
Observation group	43	Before treatment	6.31 \pm 0.38 [*]	57.18 \pm 17.82 [*]
		After treatment	5.65 \pm 0.27 ^{*#}	45.74 \pm 26.73 ^{*#}
Control group	43	Before treatment	6.28 \pm 0.51 [*]	56.27 \pm 18.68 [*]
		After treatment	5.69 \pm 0.37 [*]	46.67 \pm 27.64 [*]

^{*} $P<0.05$, when compared with the healthy group; [#] $P>0.05$, when compared with the control group.

3.3. Comparison of SCL-90 scores before and after treatment

After 6-month treatment, the scores of somatization, interpersonal relationship, fear, anxiety, hostility, paranoid, depression, obsession, and mental disorder in the observation group were significantly reduced when compared with before treatment ($P<0.05$), while the above indicators in the control group were not significantly changed ($P>0.05$). The reduced degree in the observation group was significantly superior to that in the control group ($P<0.05$) (Table 3).

4. Discussion

Schizophrenia is a kind of chronic and common severe mental disease, and is characterized by alteration of basic personality, mental

activity isolated from the reality or not being coordinated with the reality, with manifestations of thought, emotion, consciousness, and perception disorders, which can bring huge pain to the patients, and heavy burden to the family and society[6,7].

The modern researches demonstrate that the schizophrenia is associated with the abnormality of embryo development, among which the neurotrophin plays a vital role in maintaining the central and peripheral nervous system[8]. BDNF can promote and repair the neuron growth, and alleviate the stress reaction of neurons[9]. Some researches demonstrate that when the central nervous system is damaged in patients with first-episode schizophrenia, the serum GFAP content is increased, whose abnormal expression can cause the abnormality of astrocyte structure and function; therefore, astrocyte function disorder in patients with first-episode schizophrenia can elevate GFAP level[10]. NGF has dual biological regulating functions of providing nutrition to the neurons and promoting the growth of nervous process, and has a more significant effect on the ganglion in growth[11]. The results in the study showed that the serum BDNF and NGF levels before and after treatment in the observation group and the control group were significantly lower than those in the healthy group, while GFAP level was significantly higher than that in the healthy group ($P<0.05$); after 3-month treatment, BDNF, NGF, and GFAP levels in the observation group and the control group were significantly reduced when compared with before treatment ($P<0.05$), but the difference of protein factors between the two groups was not statistically significant ($P>0.05$), showing that nerve injury and neurotrophin deficiency are already existing in the early stage of schizophrenia, and are aggravated with the course progression, and 3-month treatment with risperidone can not significantly improve BDNF, NGF, and GFAP, which is

Table 1

Comparison of serum protein factor levels before and after treatment (pg/mL).

Groups	n	Time	BDNF	NGF	GFAP
Healthy group	43		42 362.25 \pm 4174.36	53.17 \pm 6.52	1 687.43 \pm 352.26
Observation group	43	Before treatment	30 671.55 \pm 6687.17 [*]	35.17 \pm 11.43 [*]	2 732.68 \pm 581.16 [*]
		After treatment	25 416.61 \pm 8681.43 ^{*#}	26.16 \pm 5.42 ^{*#}	2 272.48 \pm 529.87 ^{*#}
Control group	43	Before treatment	30 734.34 \pm 6741.52 [*]	34.26 \pm 12.14 [*]	2 718.36 \pm 574.39 [*]
		After treatment	25 369.56 \pm 8753.51 [*]	25.29 \pm 5.24 [*]	2 285.57 \pm 539.28 [*]

^{*} $P<0.05$, when compared with the healthy group; [#] $P>0.05$, when compared with the control group.

Table 3

Comparison of SCL-90 scores before and after treatment.

Factors	Observation group(n=43)		Control group(n=43)	
	Before treatment	After treatment	Before treatment	After treatment
Somatization	1.94 \pm 0.70	1.44 \pm 0.42 ^{*#}	1.93 \pm 0.69	1.89 \pm 0.55
Interpersonal relationship	2.16 \pm 0.72	1.69 \pm 0.62 ^{*#}	2.15 \pm 0.81	2.11 \pm 0.58
Depression	1.95 \pm 0.70	1.63 \pm 0.39 ^{*#}	1.93 \pm 0.70	1.89 \pm 0.69
Obsession	2.05 \pm 0.80	1.75 \pm 0.46 ^{*#}	2.04 \pm 0.78	1.97 \pm 0.69
Anxiety	1.81 \pm 0.65	1.34 \pm 0.40 ^{*#}	1.79 \pm 0.66	1.70 \pm 0.52
Hostility	1.91 \pm 0.72	1.52 \pm 0.76 ^{*#}	1.92 \pm 0.73	1.84 \pm 0.71
Fear	1.66 \pm 0.69	1.32 \pm 0.61 ^{*#}	1.67 \pm 0.76	1.61 \pm 0.71
Mental disorder	1.77 \pm 0.66	1.32 \pm 0.43 ^{*#}	1.75 \pm 0.68	1.70 \pm 0.59
Paranoid	1.85 \pm 0.88	1.39 \pm 0.68 ^{*#}	1.84 \pm 0.87	1.78 \pm 0.64

^{*} $P<0.05$, when compared with the healthy group; [#] $P>0.05$, when compared with the control group.

consistent with the previous reports[12], indicating that risperidone can not significantly improve neurotrophin or neurotrophin deficiency caused by itself.

Some researches demonstrate that the serum IL-6 and TNF- α levels in patients with schizophrenia are mostly abnormally expressed, showing that the immunological dysfunction mediated by cytokines is existing in patients with schizophrenia and is involved in its pathogenesis[13]. IL-6 can activate the astrocytes and microglial cells, and promote the production of other cytokines; therefore, it is argued that IL-6 is probably the marker of schizophrenia at an acute attack[14]. TNF- α can act on the microglial cells, and is involved in the local inflammatory reaction of central nervous system; therefore, it is argued that it may be a distinctive marker[15]. The results in the study showed that the serum IL-6 and TNF- α levels before and after treatment in the observation group and the control group were significantly higher than those in the healthy group ($P < 0.05$); after 3-month treatment, IL-6 and TNF- α levels in the observation group and the control group were significantly reduced when compared with before treatment, but the difference of protein factors between the two groups was not statistically significant ($P > 0.05$), indicating that the alteration of cytokine levels in different degree is involved in the occurrence and development of schizophrenia. The conception of systemic family therapy is to regard family as a system to study the family inner communication and behavior, and the relationship and psychology of family member through the system theory, control theory, and information theory, understand and alter the family structure and function, mobilize the family members, transform the pathological conception to the positive one, form a kind of psychotherapy ideal and method, find out the methods to resolve the issues in order to promote the patients' rehabilitation[16,17]. The results in the study showed that after 6-month treatment, the scores of somatization, interpersonal relationship, fear, anxiety, hostility, paranoid, depression, obsession, and mental disorder in the observation group were significantly reduced when compared with before treatment ($P < 0.05$), while the above indicators in the control group were not significantly changed ($P > 0.05$), indicating that the systemic family therapy can significantly improve the mental in patients with schizophrenia.

In conclusion, the systemic family therapy is an effective adjuvant method for the rehabilitation in patients with schizophrenia, and can effectively improve the mental health status; therefore, it deserves to be widely recommended in the clinic.

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