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Original Article

Comparison of Chinese and Western medicine therapy for children with Hashimoto's thyroiditis combined hypothyroidism

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Abstract: Objective: Chinese medicine and Western medicine were used for treatments for children with Hashimoto's thyroiditis combined hypothyroidism to confirm clinical value of traditional Chinese medicine therapies. Methods: 42 cases of child with Hashimoto's thyroiditis combined hypothyroidism, who admitted to our hospital between December 2012 and December 2014, were enrolled in the study. Based on random number table, they were divided into the study group and control group with 21 cases in each group. In the control group, they were treated with euthyrox sheet; In the study group, they were treated with Chaihushugan on the basis of the control group. The efficacy of treatment, changes of thyroid function before and after treatment, and safety were analyzed. Results: In the study group, curative effect was significantly better than the control group ($P < 0.05$) after treatment; Test of thyroid function after treatment showed that TSH levels of the two groups were significantly lower than before with statistical difference ($P < 0.05$) between the two groups; FT3 and FT4 levels were decreased but without significant difference ($P > 0.05$) between the two groups. After treatment, serum TGAb and TGOAb levels decreased significantly than before in two groups ($P < 0.05$); the safety factor of the study group was significantly higher than the control group. Conclusion: Chinese medicine in the treatment of children with Hashimoto's thyroiditis combined hypothyroidism, not only improves the clinical efficacy and reduce the incidence of adverse reactions, but also improve the quality of life for patients.

Keywords: Euthyrox, CHSGS, Children Hashimoto's thyroiditis, hypothyroidism

Introduction

Hashimoto's thyroiditis, which is also known as chronic lymphocytic thyroiditis, is an autoimmune disease [1]. The disease occurs mainly in the middle-aged, but occurs in all ages. The incidence of disease for male is more than female. Onset of this disease is quite occult and developed slowly. Few patients have bureau discomfort, pain, which is easily confused with subacute thyroiditis phase [2]. Hashimoto's thyroiditis has symptoms of hypothyroidism at late stage. Clinical use of levothyroxine sodium is used for replace therapy, but other western medicine treatment has larger adverse reactions, especially for children. The urgent need is to find a more reasonable approach. Therefore, the TCM was introduced to children with Hashimoto's thyroiditis combined hypothyroidism and played a good effect. In the following we will review the research process and results.

Subjects and methods

The clinical data

42 cases of child with Hashimoto's thyroiditis combined hypothyroidism, who admitted to our hospital between December 2012 and December 2014, were enrolled in the study as shown in **Figure 1**. They were divided into the study group and control group with 21 cases in each group. Clinical data for the two groups were as follows: (1) control group: 18 males and 24 females; aged between 7 and 12 years with a

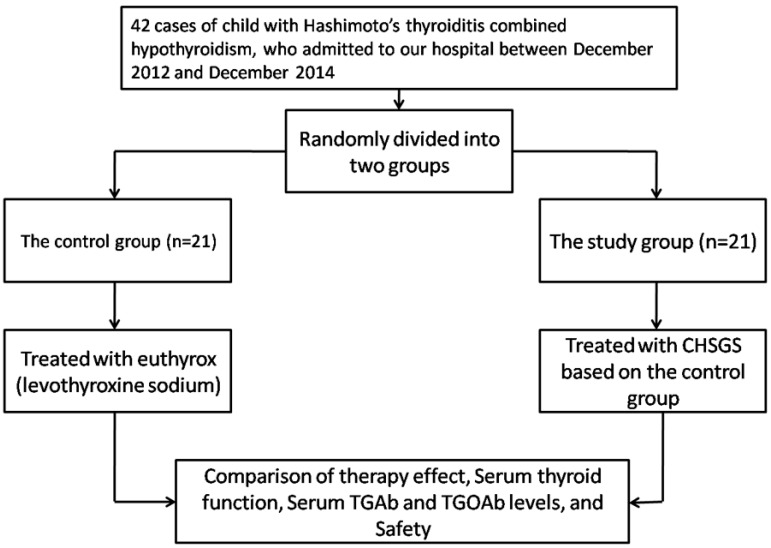

Figure 1. Flow chart for patient's recruitment.

mean age of (7.9±1.4) years; course was between three months and 3 years with a mean disease duration of (1.7±0.2) years; (2) study group: 20 males and 21 females; aged between 6 and 12 years with a mean age of (8.1±1.3) years; duration was between 3.5 months and 3 5 years with an average duration of (1.9±0.3) years. No other disease was found in other organ diseases for all the patients, and all the patients understood the whole process. They were voluntarily participated in the study. The clinical data of the two studies were compared between groups without significant difference ($P > 0.05$) [3].

Treatment method

Therapy in the control group: All the patients were treated with Euthyrox (levothyroxine sodium) in the control group. The specific methods were as follows: (1) drugs: approval number is 15H000142, Merck KGaA production with specifications for the 50 ug × 25 tablets × 4 board/boxes left thyroxine sodium tablets; (2) delivery method: start from small dose, each time 25-50 ug, every day once, according to the weight of 2-3 ug/kg; (3) delivery time: three months was a course of treatment for patients [4].

Therapy in study group: All the patients in the study group were given CHSGS based on the control group. The specific steps were as follows: (1) euthyrox treatment was taken as the control group; (2) given additional CHSGS: 1) ingredients: Peony Paper 10 g, Scutellaria 10 g, Bupleurum 10 g, white peony root 20 g, Citrus aurantium 10 g, Atractylodes 10 g, Zhejiang Fritillaria 10 g, Poria 10 g, peach kernel 6g, triangular 6 g, licorice 6 g; 2) delivery method: Every day once with every agent about 150 ml. separately taken in the morning and in the afternoon [5]; 3) delivery time: during the treatment according to the severity and the symptoms to add and subtract dose. Taking the drug a month for a course and continuous taking three months to observe the effect [6].

Evaluation criteria

(1) Therapy effect: 1) Cured: The symptoms were disappeared. After examination, there was no goiter and thyroid function returned to normal. Serum TGAb and TGOAb was close to negative or negative, and the improve situation was more than 70%; 2) effective: After examation, thyroid function returned to normal or markedly improved, and serum TGAb (+) and TGOAb (+) improved more than 30%; 3) Ineffective: After treatment, symptoms, thyroid function, serum TGAb and TGOAb and signs of improvement or improvement was less than 30% [7]; (2) Security: The incidence of adverse reactions was used to evaluate the safety standards, safety ratio = (total number of study cases - the number of cases with adverse reactions)/total cases × 100%.

Statistical analysis

Statistical data were analyzed using statistical software SPSS19.0; count data were expressed as X (%) and compared by X^2 test; measurement data were expressed as Mean ± SD and compared by t test; when $P < 0.05$, there was a significant difference.

Results

Efficacy

The total efficiencies of the study group and control group were 95.2% and 85.7%, respectively; between the two groups, the observation group was better than the control group, with a

Table 1. Comparison of two groups of subjects in efficacy

Group (n)	Cured	Effective	Ineffective	The total effective rate (%)
Observation group (21)	12	8	1	95.2
Control group (21)	6	12	3	85.7
X^2				4.362
P				0.036

significant difference (P < 0.05); the specific data were shown in **Table 1**.

Serum thyroid function

Before treatment, there was no significant difference in serum FT3, FT4, TSH between two groups (P > 0.05); TSH levels of the two groups of patients were significantly lower than those before treatment (P < 0.05), and the difference was significant between the two groups (P < 0.05); while FT3 and FT4 levels had decreased, with no significant difference (P > 0.05), and no significant difference between the groups (P > 0.05); the specific data were shown in **Table 2**.

Serum TGAb and TGOAb levels

Serum levels of TGOAb and TGAb in two groups after treatment significantly decreased compared with before treatment (P < 0.05), and there were significant differences between groups (P < 0.05); the specific data were shown in **Table 3**.

Safety

Statistics of fever, sweating, diarrhea and vomiting in two groups showed that there was one case of vomiting in the study group; the safety rate reached 95.2%, significantly better than the 76.2% in the control group, and the difference was significant (P < 0.05), as shown in **Table 4**.

Discussion

Hashimoto's thyroiditis is a clinically common autoimmune disease, with unclear causes, long duration, and complex pathogenesis [8]. Western medicine uses thyroid hormone replacement therapy to maintain thyroid function, but lacking effective treatment for the increasing levels of serum TGAb and TGOAb [9]. TGAb and TGOAb are the important flag antibodies of autoimmune thyroid disease, both of which often exist simultaneously; their increased concentration indicates the abnormal performance in thyroid function and morphology [10]. Related studies have confirmed that lymphocytic infiltration in the thyroid gland is closely related to the autoantibodies of thyroid, which is a major risk factor for thyroid dysfunction [11].

The pathogenesis of Hashimoto's thyroiditis is due to stagnation of qi, phlegm coagulation and blood stasis Phlegm; the original cause is stagnation of liver-QI, so relieving the depressed liver is particularly important. Relieving the depressed liver focuses on the smooth breath, so that soothing liver-QI, living qi and blood, and eliminating fistula swelling [12]. Chaihu Shugan Powder is made of 12 kinds of Chinese medicine, including Scutellaria with the effects of heat-clearing and damp-drying and detoxification; moutan bark with the effects of eliminating pathogenic heat from the blood, promoting blood circulation and removing blood stasis, and clearing Heat of Deficiency type; Bupleurum with the effects of reconciling superficies and interior, soothing the liver and invigorating splenic yang [13]; White peony root with the effects of Nourishing blood and astringing Yin, Softening liver to relieve pain, and tranquillizing liver yang; Citrus aurantium with the effects of regulating qi-flowing for relieving stomach, activating stagnancy for eliminating flatulence; Angelica with the effects of enriching blood and promoting blood circulation, regulating menstruation for relieving pain, relaxing bowel; Atractylodes macrocephala with the effects of Invigorating qi and strengthening the spleen, drying dampness and diuresis, hidroschesis; Poria with the effects of eliminating dampness and diuresis, invigorating spleen for harmonizing stomach, calming the heart and tranquilizing the mind [14]; Fritillaria thunbergii Miq with the effects of clearing heat for removing phlegm, lowering adverse qi for relieving cough, softening and eliminating swellings and masses for detumescence; Rhizoma Sparganii with the effects of stasis-breaking and promoting the circulation of qi, removing qi stagnation for relieving pain; peach kernel with the effects of promoting blood circulation for removing blood

Table 2. Comparison of two groups of subjects in thyroid function

Group	TSH (mU/L)		FT_3 (mmol/ L)		FT_4 (mmol/ L)	
	Pretreatment	Posttreatment	Pretreatment	Posttreatment	Pretreatment	Posttreatment
Observation group	33.4±5.1	4.1±2.7[b,d]	2.1±0.4	4.3±0.2[c]	7.9±0.6	13.9±5.1[c]
Control group	33.3±6.9	8.8±4.1[d]	2.0±0.3	4.1±0.3[c]	8.1±0.7	11.2±5.9[c]
T	0.00	2.634	0.613	0.035	-1.566	0.383
P	1.00	0.012	0.541	0.969	0.122	0.699

Note: Between groups: compared with pretreatment: [b]P < 0.05; Compared with the control group: [c]P < 0.05, [d]P < 0.05.

Table 3. Comparison of two groups of subjects in serum TGAb and TGOAb levels

Group	TGAb (U/mL)		TGOAb (U/mL)	
	Pretreatment	Posttreatment	Pretreatment	Posttreatment
Observation group	315.5±133.6	193.6±130.5[a,d]	374.1±146.3	229.7±122.6[a,d]
Control group	299.9±136.2	253.3±144.2[d]	368.5±142.1	298.8±125.9[d]
T	-0.265	5.736	0.66	11.281
P	0.794	0.00	0.503	0.00

Note: Between groups: compared with pretreatment: [a]P < 0.05; Compared with the control group: [d]P < 0.01.

Table 4. Comparison of two groups of subjects in safety

Group (n)	Fever	Polyhidrosis	Diarrhea	Vomiting	The total effective rate (%)
Observation group (21)	0	0	0	1	95.2
Control group (21)	1	2	1	1	76.2
X^2					4.191
P					0.028

stasis, relaxing bowel, relieving cough and asthma; liquorice with the effects of invigorating spleen and replenishing qi, clearing heat-toxicity, expelling phlegm and arresting coughing, alleviating spasmodic pain, coordinating the drug actions of a prescription [15]; The combination of these drugs played a good effect in the treatment of Hashimoto's thyroiditis with hypothyroidism, especially in reducing the incidence of adverse reactions in pediatric patients.

This study showed that after treatment, the efficacy of traditional Chinese medicine group was significantly better than that of Western medicine group (P < 0.05); the detection of thyroid function after treatment found that TSH levels in two groups were significantly lower than those before treatment (P < 0.05), and the difference between groups was significant (P < 0.05); while FT3 and FT4 levels decreased, but there was no significant difference (P > 0.05), and no significant difference had been found between groups (P > 0.05). After treatment, serum levels of TGAb and TGOAb in two groups decreased significantly (P < 0.05), and there was a significant difference between groups (P < 0.05); finally, the statistics of adverse reactions of the two groups after treatment found that TCM group was better than Western medicine group (P < 0.05), which fully confirmed the importance of traditional Chinese medicine therapy for Children with Hashimoto's thyroiditis combined with hypothyroidism. This article focused on the adverse reactions in both groups, which is other studies have failed to improve; and the addition and subtraction of the dose of Chinese medicine were based on the different symptoms of pediatric patients, which reduced the incidence of adverse reactions.

In summary, Chinese medicine applied in the treatment for children with Hashimoto's thyroiditis combined with hypothyroidism not only improves the clinical efficacy but also reduces the incidence of adverse reactions, improving the quality of life of patients.

Disclosure of conflict of interest

None.

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