

Progress in the Treatment of Hashimoto's Thyroiditis with Traditional Chinese Medicine

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Abstract: Hashimoto's thyroiditis is a common clinical autoimmune thyroid disease. It is mainly characterized by goiter and tough texture. The pathological feature is lymphocyte infiltration, which leads to gradual atrophy and fibrosis of the thyroid gland. Western medicine believes that the pathogenesis of HT is related to genetic susceptibility and environmental factors. In addition, intestinal flora, trace element deficiency, drugs, age and gender also have a certain impact on its pathogenesis. In traditional Chinese medicine, HT is attributed to the category of "gall disease" in traditional Chinese medicine. It is believed that its pathogenesis is mainly related to constitution, emotional disorder and improper diet. The disease is located in the liver, spleen and kidney. The main pathological factors are phlegm coagulation, blood stasis and qi stagnation. The pathogenesis is spleen and kidney yang deficiency, liver and spleen imbalance, and the nature of the disease is deficiency in origin and excess in superficiality. Based on the holistic concept and the concept of syndrome differentiation and treatment, TCM treatment of HT can effectively improve the clinical symptoms, delay the progression of the disease and has good safety, showing the broad prospects of TCM in this research field. This article reviews the clinical research on the etiology and pathogenesis, syndrome differentiation and treatment, special prescription treatment, acupuncture treatment and Chinese patent medicine treatment of HT in recent years, in order to provide reference for later clinical and basic research.

Keywords: Hashimoto's thyroiditis; Traditional Chinese medicine; Clinical research

1. Introduction

Hashimoto's thyroiditis (HT) is a common autoimmune thyroid disease in clinical practice, as shown in Figure 1. It is mainly characterized by goiter and tough texture. The pathological feature is lymphocyte infiltration, which leads to gradual atrophy and fibrosis of the thyroid gland ^[1]. Thyroid function examination showed that thyroid peroxidase antibody and thyroglobulin antibody were significantly increased, and B-ultrasound examination showed diffuse enlargement of the thyroid gland. In recent years, with the change of people's lifestyle, the prevalence of Hashimoto's thyroiditis has increased year by year. According to statistics, the increase rate of autoimmune antibodies in China is about 14.19%. The incidence of women is higher than that of men, and it is more common in women aged 30-50 years ^[2]. HT is considered to be a potential risk factor for thyroid cancer ^[3]. Western medicine often uses methimazole and levothyroxine sodium to treat HT. In recent years, western medicine such as selenium yeast has also achieved good results in the treatment of HT, but western medicine treatment is not obvious in alleviating the systemic symptoms of patients, accompanied by different degrees of side effects. In the treatment of Hashimoto's thyroiditis with traditional Chinese medicine, it is usually treated by oral decoction, external application of traditional Chinese medicine, acupuncture, moxibustion and other ways. It has the advantages of small side effects, effective improvement of systemic symptoms and delay of disease progression. Therefore, the treatment of Hashimoto's thyroiditis with traditional Chinese medicine has great research prospects and is the future development trend.

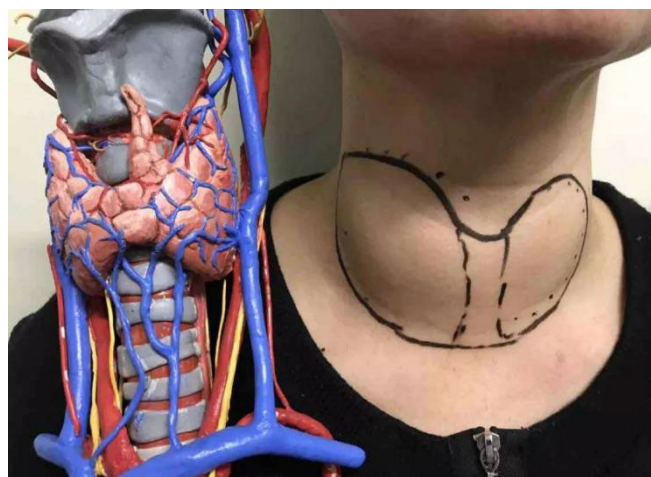


Figure 1: Hashimoto's thyroiditis (HT)

2. The etiology of HT

At present, it is believed that the main etiology and genetic susceptibility of HT are related to environmental factors. In addition, intestinal flora, trace element deficiency, drugs, age and gender also have certain effects on its pathogenesis [4]. Modern clinical studies have shown that the occurrence of autoimmune thyroiditis may be related to bacterial microbial infection. In clinical practice, many patients have a history of bacterial and viral infections. It may be related to Th1 / Th2 imbalance (TNF- α), B7-H3, MCP-1, TH17/CD4 + T and so on. During the formation of Hashimoto's thyroiditis, chemokine CXCL9 and CCL2 are associated with Hashimoto's thyroiditis, with CX-CL10 being the most closely related. NF-K8 may be involved in the occurrence of Hashimoto's thyroiditis. IL-10 plays a protective role in the progression of Hashimoto's thyroiditis; in the early stage of the disease, the thyroid function was normal, and some patients had transient hyperthyroidism. With the further development of the disease, hypothyroidism occurred. Western medicine divides HT into hyperthyroidism, subclinical hyperthyroidism, normal thyroid function, subclinical hypothyroidism and hypothyroidism [1]. The pathological features of HT are mainly lymphocyte infiltration, especially T cell infiltration and follicular destruction and parenchymal atrophy. Cellular immunity and humoral immunity are related to the pathogenesis of HT. (Figure 2)

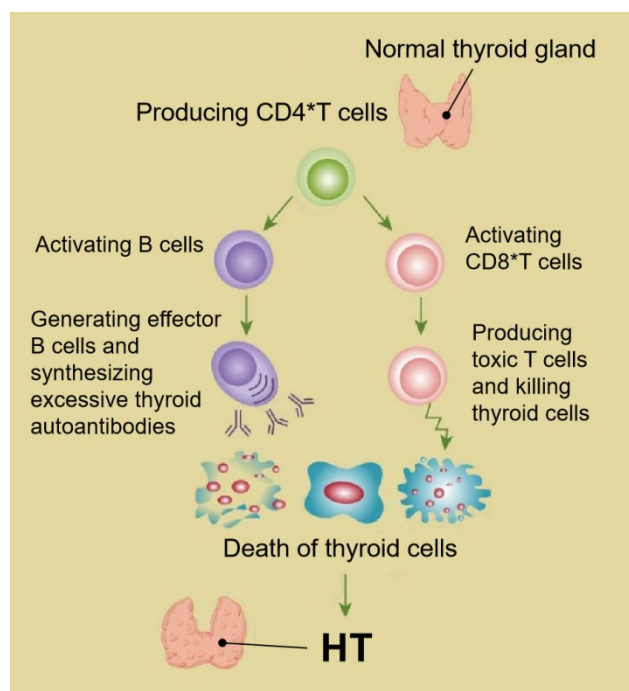


Figure 2: The pathogenesis of HT

3. The treatment of HT

The treatment of HT includes: (1) Hormone replacement therapy, such as oral levothyroxine; (2) Immunomodulatory therapy, such as oral methylprednisolone; (3) Nutritional therapy, such as vitamin D supplementation, selenium, iron, iodine and other trace elements; (4) Surgical treatment [5]. To maintain normal thyroid function, in addition to the need for iodine, many other elements are also needed, such as selenium, iron, zinc, calcium, etc. Selenium is considered to be an important element to maintain the human system. Selenium regulates immune function through the redox of selenoproteins, protects cells from immune stress, and supports cell survival and growth. Leaf wavelet will be 60 cases of HT patients with hypothyroidism. The study group took levothyroxine + selenium yeast tablets + vitamin D orally. After 12 weeks of treatment, the levels of FT4 and 25 (OH) VD in the study group were higher than those in the control group, and the levels of TPOAb and TSH were lower than those in the control group, with statistical differences ($P < 0.05$) [6]. Fan Huijie et al. randomly divided 80 HT patients with hypothyroidism into a control group and a study group with 40 cases in each group. The control group was given oral levothyroxine sodium tablets, and the study group was given selenium yeast tablets on the basis of the control group. After 6 months of treatment, it was found that the total effective rate of the study group was higher than that of the control group. The FT3 and FT4 of the two groups were higher than those before treatment, and the TSH was lower than that before treatment ($P < 0.05$). There was no significant change in TPOAb and TGAb in the control group before and after treatment. TPOAb and TGAb in the study group were lower after treatment than before treatment ($P < 0.05$) [7].

4. The etiology and pathogenesis of HT in traditional Chinese medicine

There is no clear record of HT in ancient books of traditional Chinese medicine, but according to its clinical symptoms, it is classified into the category of "gall disease" in traditional Chinese medicine. Zhang Fuli [8] believes that based on the theory of taiyin-yangming, spleen and taiyin are consistent, stomach and yangming are consistent, and the incidence of gall disease is closely related to spleen and stomach. The spleen and stomach are damaged by eating fat and sweet, spicy, tobacco and alcohol, and the spleen and stomach are damaged. Phlegm is generated when the spleen and stomach function is damaged, and the phlegm is blocked in the pharynx. It is a gall disease. The main etiology is related to constitution, emotion, diet and seasonal changes. The main pathogenesis is spleen deficiency and dampness. Feng Jianhua [9] believes that the lack of congenital endowment is the main cause of this disease. Because HT patients have a family history of inheritance, lack of endowment, vulnerable to external evils, loss of vitality, kidney qi weakness, congenital influence, spleen and kidney deficiency, the pathogenesis is mixed deficiency and excess. Huang Lijuan [10] believes that the cause of HT is related to emotional, dietary and physical factors. Qi stagnation leads to phlegm coagulation, phlegm and qi stagnation, blood stasis occurs when blood supply is blocked, and qi stagnation, phlegm coagulation and blood stasis are knotted in front of the neck for a long time, resulting in gall disease; phlegm heat and blood stasis for a long time, liver depression fire, fire heat injury, Yin deficiency fire; or acquired deficiency, eating disorders, prolonged course of disease is not more than a long time to damage the day after tomorrow, spleen and stomach loss of transport, long damage to kidney yang, spleen and kidney yang deficiency. Xu Yunsheng believes that the pathogenesis of HT is mainly liver depression and spleen deficiency, accompanied by qi stagnation, phlegm coagulation, blood stasis, emotional discomfort, liver failure, liver and spleen. Over time, the spleen and stomach function is impaired, and the spleen qi cannot disperse the fluid. Bu Xianchun [11] believed that HT is mainly related to the spleen, kidney, liver, gallbladder and stomach. It is congenitally deficient, acquired dystrophy, weak anti-evil ability, susceptible to wind-heat toxin, refining fluid into phlegm, phlegm obstruction and blood stasis, and pathogenic toxin intersects with phlegm, qi, blood stasis and blood stasis in the front of the neck. For a long time, qi and yin deficiency and spleen and kidney yang deficiency are more common. This disease is based on deficiency and is more common in deficiency and excess.

In summary, the pathogenesis of HT is mainly related to constitution, emotional disorders and improper diet. The disease is located in the liver, spleen and kidney. The main pathological factors are phlegm coagulation, blood stasis and qi stagnation. The pathogenesis is spleen and kidney yang deficiency, liver and spleen disorders. The nature of the disease is deficiency in origin and excess in superficiality, and deficiency and excess are mixed.

5. TCM treatment

5.1. Treatment based on syndrome differentiation

Bu Xianchun ^[11] divided HT into 5 types, 1 liver depression and phlegm coagulation syndrome: the symptoms are full in front of the neck, interlaryngeal infarction, irritability, good sigh, and the treatment is to regulate qi movement. 2 Hyperactivity of liver fire syndrome: neck swelling and pain, dry mouth and bitter mouth, chest tightness and discomfort, treatment with mild diarrhea of liver fire, detoxification and swelling, Danzhi Xiaoyao Powder, supplemented by Xiaojin Pill; 3 Phlegm coagulation and blood stasis syndrome: neck fullness, soreness and weakness of waist and knees, pale complexion, swelling of limbs, treatment with warming and tonifying spleen and kidney, removing blood stasis and resolving phlegm, kidney qi pill addition and subtraction; 4 Qi and Yin deficiency syndrome: Symptoms see the neck swelling, five upset hot, body fatigue, treatment with Yiqi Yangyin, clearing heat and resolving masses, selected from HT Qi and Yin deficiency experience side (drug composition: Astragalus, Ligustri Lucidi Fructus, Rehmanniae Radix, Pseudostellariae Radix, Dandelion, Prunella vulgaris, Dendrobium, Ophiopogonis Radix, Poria, Yam, licorice); 5 Spleen and kidney yang deficiency syndrome: symptoms of cold limbs, fatigue, anorexia, soreness and weakness of waist and knees, kidney qi pill addition and subtraction. Tang Hanjun ^[12] believes that the main cause of HT is the deficiency of vital qi and the invasion of external evils. Therefore, Fuzheng Qingying Decoction (drug composition: Codonopsis pilosula, Poria cocos, Atractylodes macrocephala, Glycyrrhiza uralensis, Astragalus membranaceus, Ganoderma lucidum, Epimedium sagittatum, Bupleurum chinense, Prunella vulgaris, Xiangbei, Scutellaria baicalensis) was established with Fuzheng Qingying Decoction as the treatment rule. Huang Huangping ^[13] divides HT into three stages of treatment, which are normal thyroid function period and syndrome differentiation of liver depression and qi stagnation syndrome. Chaihu Shugan Powder is commonly used for treatment. In hyperthyroidism period, Pinggan Xifeng is used as the treatment principle, and oysters, magnet, keel, pearl mother, stone cassia, uncaria and other drugs are often used. In hypothyroidism period, Buzhong Yiqi Decoction is often used, and good curative effect is achieved in clinical practice.

5.2. Special treatment

Xu Wei ^[14] randomly divided 97 patients with HT into control group and treatment group. Both groups had low-iodine diet and regular work and rest. The control group was given a placebo of traditional Chinese medicine, and the treatment group was given Qingying Powder (drug composition: Astragalus, calcined oysters, Codonopsis, Salvia, Caulis Polygoni Multiflori, Poria, Bupleuri, Scutellaria, Atractylodes, Pinellia, Cyperus, Gardenia, Carapax Trionycis). After 12 weeks of treatment, it was found that TPOAb and TgAb decreased in the treatment group, while only TgAb decreased in the control group. SF-36 quality of life score in the treatment group was better than that in the control group. Ouyang Yi ^[15] randomly divided 60 patients with qi stagnation and phlegm obstruction type HT into two groups. Both groups had low iodine and low protein diet, regular work and rest, and moderate exercise. On this basis, the control group was treated with levothyroxine sodium tablets. The treatment group was treated with Jiawei Banxia Houpu Decoction (drug composition: Fabanxia, Houpu, Dangshen, Zisuye, Shengjiang, Fuling, Xiakucao, Yujin, Haifushi, Cangzhu, Xiangfu, Zhizi, Chenpi, Maozhangcao, Shudi, Zhebeimu). After 8 weeks of treatment, it was found that the treatment group was superior to the control group in TCM syndrome score, TPOAb and TGAb, and the difference was statistically significant. Xu Yan ^[16] randomly divided 96 patients with HT into control group and study group, 48 cases in each group. The control group was treated with levothyroxine sodium tablets 50µg / day, and the study group was treated with Buzhong Yiqi Decoction on the basis of the control group (drug composition: astragalus, atractylodes, tangerine peel, ginseng, bupleurum, angelica, cohosh, licorice, ginger, jujube). After 12 weeks of treatment, it was found that the toxic and side effects of the treatment group were lower than those of the control group. The scores of TCM symptoms such as irritability, less gas and laziness, aversion to cold, anorexia, abdominal distension, and soreness and weakness of waist and knees in the treatment group were lower than those in the control group, indicating that Buzhong Yiqi Decoction was safer than western medicine and the symptoms were relieved more significantly. Zhao Yue ^[17] randomly divided 60 patients with HT into two groups. All patients were treated with basic treatment such as iodine-restricted diet and regular life. On this basis, the control group was treated with selenium yeast tablets 100µg / time, 2 times / day. The study group was treated with Qicao Decoction on the basis of the control group (drug composition: Radix Astragali seu Hedysari, Radix Bupleuri, Prunella vulgaris, Pericarpium Citri Reticulatae, Rhizoma Cyperi, Fritillaria thunbergii, Rhizoma Atractylodis Macrocephalae, Radix Platycodonis, Radix Curcumae, Radix Glycyrrhizae). After 12 weeks of

continuous medication, the levels of TPO-Ab and Tg-Ab in the study group and the total score of clinical symptoms of traditional Chinese medicine decreased significantly. The total effective rate of the comprehensive efficacy of the study group was 96.7 %, and that of the control group was 40 %, indicating that Qicao Decoction has a good effect in improving the symptoms and antibody levels of patients.

5.3. Acupuncture treatment

Zhao Jiping^[18] believes that the hand and foot Yangming meridians and the circulation pass through the neck. A total of 30 HT patients were selected for treatment (acupoints: Quchi, Jianyu, Hegu, Shuitu, Zusanli, Binao, Renying, Shuitu, Zhongwan). During the treatment, patients with hypothyroidism continued to take euthyrox. After 12 weeks of acupuncture, the VAS score of neck discomfort, TCM syndrome score and TPOAb level were lower than those before treatment. Among them, 2 patients with HT and hypothyroidism returned to normal TSH, FT3 and FT4 levels after treatment. Zhou Danni^[19] randomly divided 120 patients with HT into acupuncture and massage group, euthyrox group and combined treatment group, 40 people in each group. Acupuncture and massage group: massage at Qiaogong + acupuncture (acupoints: Zusanli, Naohui, Guanyuan, Tiantu, Sanyinjiao, Fenglong, Hegu), 3 times / week, euthyrox group: oral levothyroxine sodium tablets 25 μ g / day, combined treatment group: acupuncture and massage + oral euthyrox. After 8 weeks of treatment, the results showed that FT3 and FT4 were higher than those before treatment. The level of TSH was lower than that before treatment. Compared with the other two groups, the increase of FT3 and FT4 in the combined treatment group was more obvious, and the difference was statistically significant. After treatment, the thyroid volume and thyroid isthmus thickness of the patients decreased, and the decrease in the combined treatment group was more obvious. The total effective rate of acupuncture and massage group and euthyrox group was 77.50 %, and the total effective rate of combined treatment group was 92.50 %, indicating that acupuncture and massage combined with euthyrox had better clinical efficacy. Bai Yinhao^[20] divided 60 cases of HT patients into 30 people of the drug-separated umbilical moxibustion group and the starch-separated umbilical moxibustion group. After 3 courses of treatment, it was found that the patient 's chills, neck swelling, and mood improved significantly. The effective rates of the two groups were 80.95 % and 42.11 %, respectively. In terms of thyroid hormone improvement, the drug-separated umbilical moxibustion group FT3, FT4, TSH, TPOAb, TGAb improved significantly, while the starch-separated umbilical moxibustion group only FT3 improved significantly, indicating that the drug-separated umbilical moxibustion has a good clinical effect.

5.4. Chinese patent medicine treatment

Xiaojin capsule is mainly composed of Aconiti Kusnezoffii Radix, Musk, Angelicae Sinensis Radix, Earthworm, Frankincense, Myrrh and other traditional Chinese medicines. It has the effect of promoting blood circulation and removing blood stasis, resolving masses and dredging collaterals. Zhou^[21] selected 80 patients with HT and thyroid nodules with normal thyroid function. The patients were randomly divided into control group and treatment group with 40 patients in each group. The control group was given selenium yeast tablets orally, two tablets at a time, twice a day. On the basis of the control group, the treatment group was given Xiaojin capsule four tablets at a time, twice a day. After 12 weeks of treatment, it was found that the total effective rate of the treatment group was 80 %, and that of the control group was 52.50 %. The nodules of the two groups were smaller than before. The TGAb and TPOAb of the two groups were lower than before, but the decrease of the treatment group was higher than that of the control group, the difference was statistically significant, indicating that Xiaojin Capsule was effective in the treatment of HT patients with thyroid nodules. Bailing capsule is a kind of Chinese patent medicine made by fermentation of Cordyceps sinensis, which has the effect of regulating immunity. Zhang Weiwei^[22] randomly divided 110 patients with HT into control group and observation group of 55 people in each group. The control group took levothyroxine sodium tablets and selenium yeast tablets. The observation group took Bailing capsule. After 16 weeks of treatment, the total effective rate of the observation group was 94.55 %, and the total effective rate of the control group was 81.82 %. The difference was statistically significant. The TCM syndrome score, TSH level, TPOAb and TGAb of the observation group were lower than those of the control group, indicating that Bailing capsule can alleviate the clinical symptoms of patients, improve the antibody level and improve the therapeutic effect.

6. Summary and outlook

The pathogenesis of HT is complex and the clinical manifestations are diverse. Combined with the

clinical research literature of traditional Chinese medicine in the treatment of HT, the clinical use of syndrome differentiation and treatment, special prescription treatment, acupuncture treatment, Chinese patent medicine treatment and other methods can effectively alleviate the clinical symptoms of patients, improve TSH, TPOAb, TGAb and other thyroid function indicators, showing the advantages and potential of traditional Chinese medicine in the treatment of HT. However, there are still many shortcomings in the above clinical studies. For example, most of the clinical studies are limited to single-center, small-sample, non-double-blind clinical observations, and the credibility and repeatability of the research results are questionable. Secondly, based on the clinical research of HT TCM syndrome differentiation and treatment, there is a lack of unified TCM syndrome type and curative effect evaluation standard, which makes the results lack of universality. In view of the core problems to be solved in the diagnosis and treatment of HT, multi-center, large-sample, high-quality randomized controlled trials or real-world studies should be carried out to promote the formation of a unified diagnosis and treatment standard for MS and provide basis and reference for clinical diagnosis and treatment.

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