

Research Progress on Traditional Chinese Medicine Treatment of Recurrent Oral Ulcers in Children

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Abstract: ***Objective:** To analyze and discuss the treatment of recurrent oral ulcers with traditional Chinese medicine (TCM), in order to provide a reference for the treatment of recurrent oral ulcers and other related oral diseases with TCM in the future. **Methods:** The key words “recurrent oral ulcers in children” or “recurrent aphthous ulcers in children” and the Chinese medical names “aphthous ulcers”, “aphthous ulcers”, “mouth ulcer”, “mouth erosion”, etc., and secondary searches with “Chinese medicine”, “combination of Chinese and Western medicine”, etc. were performed. A secondary search with “Chinese medicine” and “combination of Chinese and Western medicine” was performed to screen the eligible literature for review. **Results:** More than 30 articles were retrieved from the literature on the treatment of recurrent oral ulcers by TCM from 2014 to 2024. **Conclusion:** TCM recurrent oral ulcers have a variety of modalities, with the advantages of high cure rate and low recurrence rate.*

Keywords: Recurrent oral ulcers in children, TCM treatment, Literature review.

1. Introduction

Recurrent oral ulcer (ROU), also known as recurrent aphthous ulcers or recurrent aphthous ulcers, is a common and frequent disease among oral mucosal diseases that can occur at any age. According to relevant statistics, the incidence of pediatric oral ulcers is about 10% [1], the ulcers are round or oval, with clean edges, surrounded by a narrow red halo, with obvious burning pain, preferably occurring on the lips, cheeks, tongue edges and other mucous membranes, and the main symptom is the pain triggered by irritating foods. The disease is characterized by periodic recurrent episodes, and although it can heal on its own, with the progression of the disease, in some children the size of the mouth ulcers will gradually increase, and the number of ulcers will increase, which will lead to worsening of pain, increase the frequency of episodes, and even interfere with eating and speaking. Many researchers believe that the onset of mouth ulcers is closely related to low immune function, and that the development of the immune system in children is not yet perfect, so mouth ulcers have a higher chance of occurring. Although modern medicine has some effect in treating pediatric mouth ulcers, sometimes the effectiveness is not ideal. According to its unique method of diagnosis and treatment, Chinese medicine can basically diagnose and treat recurrent mouth ulcers. Clinical studies have shown that the combined treatment of recurrent oral ulcers with Chinese and Western medicine is more effective. By reviewing the literature on recurrent oral ulcers in children in the past 10 years, the author summarizes the results of TCM in the treatment of recurrent oral ulcers in children

2. Analysis of the Etiology and the Pathogenesis

2.1 The Knowledge of the Ancient Physicians About the Aetiology and Pathogenesis of Recurrent Oral Ulcers

The understanding and exploration of this disease by ancient medical practitioners is of great significance in guiding the research and development of modern medicine. Chinese

medicine theory believes that the oral cavity is the main path of the meridians, the hands and feet of the Shaoyin and Shaoyang, feet of the Taiyin and Syncope, the hands and feet of Yangming and Ren, Governor and Chong veins are surrounded by this. Feng's bag of secret records: “the mouth, the five intestines and six intestines through also, for the spleen's orifice, the gas of the intestines, all in and out of this”. The stomach meridian runs along the cheeks and connects to the gums, the tongue is the orifice of the heart, the tongue is connected to the pharynx and the kidney veins, and the fluids come out under the tongue. It can be seen that although the lesions of oral ulcers are located in the mouth and tongue, their relationship with the internal organs is very close. The disorder of internal organs is an important internal factor and the root cause of the disease, and most doctors believe that the disease is mainly located in the heart, spleen, stomach and kidney. In the “Nei Jing” it was already pointed out that fire and heat are the main causes of mouth sores, i. e. “Su Wen - Zhi Zhen Yao Dai Lun”: “The resurrection of Shaoyang, the great heat will come, the fire gas will be internalized, and the upper part of the mouth will be blistered.” Children's internal organs are delicate, the shape of the gas is not yet full. In the “General Record of Sheng Ji - Children's Mouth Sores” it is said that the overfullness of qi and blood leads to fullness and overflow, and the heat evil accumulated in the heart and spleen organs and evaporated upward will form mouth sores, indicating the relationship between the heat contained in the heart and spleen organs and the mouth sores of children. Wang Shuhe mentioned in his “Pulse Diagnosis” that “the right side of the pass is dull and solid, the mouth is sweet with spleen heat, and mouth sores are caused by flooding. He pointed out that spleen heat alone could also cause mouth sores.

2.2 The Understanding of the Etiology and Pathogenesis of Recurrent Oral Ulcers by the Modern Medical Practitioner

With the development of science and technology and the progress of medical level, people are more and more concerned about the special group of oral mucosal diseases, i.

e. children's diseases, and have a better understanding of their etiology, pathogenesis and treatment. "Based on the theory of fire and poison in wounds, Professor Lei Xiong [2] believes that recurrent oral ulcers in children are mostly caused by "fire and poison", which is related to the five viscera, and there is a difference between cold and heat, and there is a difference between cold and heat, and there is a difference between reality and emptiness. Xu Pengling found that in addition to the manifestations of oral ulcer disease, the patient also saw symptoms of the spleen and stomach, combined with the theory of traditional Chinese medicine, it is believed that the spleen and stomach disharmony is the basic mechanism of this disease, so it should be from the spleen and stomach to start the treatment. Director Shuping Hu [3] believes that children's mouth ulcers are related to all the internal organs, including the heart, spleen and kidney, which are most closely related. Mouth ulcers in children are mainly caused by solid heat in the heart and spleen organs, and with the development of the disease, the deficiency of fire and yin in the kidneys, the upper heat and lower cold, accompanied by the deficiency of spleen and stomach, are also common. Song Hongyan believed that due to the prevalence of grain qi in the fetus, dampness and heat evaporate the heart and spleen, or are infected with evil poisons during childbirth. Professor Yongnian Liu [4] first seize the body of pure yang children, young yin and young yang physiological characteristics, and found that children do not know the temperature and cold self-regulation, diet does not know the self-setting, easy to make the spleen and stomach heat, the accumulation and deposition of fire, the upward flow of fumigation of the mouth and tongue, resulting.

3. Clinical Report on the Treatment of Recurrent Oral Ulcers in Children with Chinese Herbal Tonics

3.1 The Role of Local External Treatment of Traditional Chinese Medicine in Recurrent Oral Ulcers in Children

Generally speaking, topical Chinese medicine dispersions are made of herbs with the effects of clearing heat and removing toxins, astringent wounds and muscle growth, activating blood circulation and relieving pain, etc., and are prepared by reasonable compounding. There are many reports on the clinical application of localized topical application of traditional Chinese medicine to treat oral mucosal diseases in children. Jingjing Wu [5] collected 120 cases of children with recurrent oral ulcers and randomly divided them into 60 cases each in the treatment group and the control group. The control group was treated with chlorhexidine compound gargle, and the observation group was treated with Ganhua gargle based on the control group, with the following formulas: Honeysuckle 6-10 g, Wild Chrysanthemum 6-10 g, Mutong 3-6 g, Radix et rhizoma 10-15 g, Salvia miltiorrhiza 9-12 g, Rhizoma coptidis 6-10 g, Radix et rhizoma 6-12 g, Radix et rhizoma 6-12 g, Rhubarb 6 g, rhubarb 6-12 g, mannitol 3-6 g. The results showed that the efficacy rate of the control group was 86.7%, the efficacy rate of the observation group was 96.7%, the recurrence rate of the control group was 65.5% within 6 months, and the recurrence rate of the observation group was 24.4% within 6 months, which indicated that Ganhua gargle formula for the treatment of children's ROU could improve the clinical symptoms of children, promote the

healing of ulcers, alleviate the symptoms of pain, reduce recurrence, and improve the treatment effect. Haizhen Wang [6] compared the clinical therapeutic effects of watermelon cream spray and cedirubicin tablets, and found that after 7 days of continuous treatment, the overall response rate of the watermelon cream group was 92.9% and that of the cedirubicin group was 75.0%, with statistically significant differences ($P < 0.05$); at the end of treatment, the recurrence rate was 14.3% in the watermelon cream group and 21.4% in the cidarodine group, with statistically significant differences ($P < 0.05$); thus, it was concluded that the efficacy of watermelon cream spray was better than that of cidarodine tablets on oral ulcers. Similar results were obtained by other researchers [7] [8]. Dongmei Yan [9] et al. selected 102 cases of children with aphthous ulcers, randomly divided into 51 cases each in the observation group and the control group, the observation group was treated with diaqualonium chloride spray plus oral ulcer powder (Qingdai, Baifan, ice tablets), and the control group was treated with iodized glycerin. The total efficacy rate of the observation group was 94.1%, which was significantly higher than that of the control group. The total efficacy rate of the observation group was 94.1%, which was significantly higher than that of the control group. This indicates that the efficacy of the combination of diaqualinium chloride spray and oral ulcer powder in the treatment of recurrent oral ulcers in children is better than that of iodized glycerin, which can be used locally externally to reach the lesions directly, and it is less painful for the children with oral mucosal disease, with fewer adverse reactions, and can effectively and quickly promote wound healing, and it is easier for parents to use the local medicine, which is worthy of clinical popularization and use.

3.2 The Role of Chinese Herbal Soup Additions and Subtractions in the Recurrence of Oral Ulcers in Children

The efficacy of traditional Chinese medicine classic formula or home-made soup based on clinical evidence in the treatment of recurrent oral ulcers in children is good. Xuji Hu [10] collected 100 cases of children with recurrent oral ulcers with cold and heat syndrome, and divided them into 50 cases each in the control group and the treatment group by using the randomized numerical table method. The control group was given quinefonium chloride tablets, and the treatment group was given licorice diarrhea heart soup with additional subtraction based on the treatment method of the control group (Ingredients: 15 g burnt licorice, 3 g dried ginger, 10 g hemixia, 10 g codonopsis, 15 g dandelion, 12 g scutellaria, 10 g tiger's tail, 3 g coptis, 6 jujubes). (For those who have hot, dry mouth and want to drink, add maitake 8 g, xuan shen 8 g; for those who have constipation, add raw rhubarb 6 g, mudanpi 10 g, gardenia 10 g). 3 months after the treatment, the relapse rate of the control group was 23.3% (10/43), and the treatment group was 6.1% (3/49), and the difference between the two groups was statistically significant ($P < 0.05$). Xiaohui Liu [11] also had such a study. Jingwen Liao [12] divided the children into control group (46 cases) and treatment group (46 cases) according to the order of admission. Both groups received antibiotics, vitamin C, vitamin B2 and other conventional treatment. The control group was treated with oral zinc preparation, and the treatment group was treated with Yupingfeng granules on the basis of the control group. Results: The symptom

disappearance time and hospitalization time of the treatment group were better than that of the control group, and the difference was statistically significant ($P < 0.01$). This indicates that Yupingfeng granules are effective in the treatment of recurrent oral ulcers in children, which can promote the improvement of symptoms and reduce the recurrence of ulcers. Yaofeng Wen [13] believed that spleen and stomach heat is the root cause of pediatric aphthous ulcers, and Diaphragmatic Huangsan is a representative formula for diarrhea of spleen and stomach fire. Forty cases of pediatric oral mucosa patients were treated with Chinese and Western control, and the overall efficacy rate was 95%. Diarrhea Huang San is from "Direct Record of Pediatric Pharmacological Evidence", which is composed of Fangfeng, licorice, patchouli, gardenia, gypsum, etc.. In the formula, Fangfeng can disperse the spleen and stomach. In the formula, Fangfeng can disperse the surrounding fire of the spleen and stomach; licorice clears heat and toxins; Huo Xiang aromatizes and clears opacity, awakens the spleen and relieves summer heat; gardenia clears the accumulated heat of the spleen and stomach; gypsum clears the heat of the spleen and restores the qi of the spleen and stomach. Huixia Mao [14] used the randomized numerical method to divide the observation group and control group, 30 cases in each group. In the control group, children were given vitamin C, vitamin B complex, vitamin B2 supportive treatment, and antibiotics and dexamethasone were used in severe cases. The observation group was treated with traditional Chinese medicine Zi Yin Diarrhea Fire Healing Ulcer Soup on the basis of this treatment. (Formula composition: Huanglian 2-6 g, Lotus Heart 1-3 g, Zhimu 2-4 g, Rehmannia Glutinosa 5-10 g, Radix Rehmanniae Praeparata 3-10 g, Chasteberry 3-5 g, Radix Rehmanniae Praeparata 3-10 g, Paeoniae Lactiflorae 2-5 g, Dampi 2-4 g, Maitake Dung 3-10 g, Dendrobium 3-5 g, Bambootis Bambootis 3-5 g, Alchemilla zedoariae 2-4 g). The results of the control group, the time for ulcer healing was (5.6 ± 1) . The results of the control group, the time for ulcer healing was (5.6 ± 1.4) d, and the observation group, the time for ulcer healing was (5.6 ± 1.4) d. In the observation group, the ulcer healing time was 3.1 ± 0.7 d. The difference was statistically significant ($P < 0.05$), and the ulcer healing time in the observation group was significantly shorter than that in the control group. In the observation group, 22 cases were cured and only 2 cases recurred, with a recurrence rate of 9.1%; in the control group, 16 cases were cured and 7 cases recurred, with a recurrence rate of 43.8%. The recurrence rate of the observation group was significantly lower than that of the control group ($P < 0.05$). It shows that the combined use of traditional Chinese medicine nourishing yin and diarrhea fire healing ulcer soup in the treatment of recurrent oral ulcers in children can accelerate the healing of ulcers and reduce the recurrence of recurrence, and the effect is remarkable. Traditional Chinese medicine plays an important role in the prevention and treatment of children's oral mucosal diseases, and the application of traditional Chinese medicine soup treatment acts on the children's internal organs and qi, focusing on the treatment of symptoms, with good therapeutic effect, which is worthy of popularization.

4. Conclusion

Recurrent oral ulcers are a type of oral mucosal disease that is

common, recurrent, and difficult to heal rapidly. Its etiology is complex and complicated and has not yet been determined, resulting in a lack of standardized and comprehensive diagnostic and therapeutic protocols for this disease in the current medical community. Currently, Western medicine treats RAU with symptomatic therapy aimed at reducing inflammation, relieving pain, and accelerating wound healing using drugs such as antibiotics, glucocorticoids, and immunomodulators. Although these drugs can improve patients' symptoms, they have greater side effects when used for long periods of time, and their clinical application is extremely limited, especially in children. Children as a special group, in the process of continuous growth and development, many organs are not yet mature, liver, kidney detoxification, excretion function is not perfect, in the application of drugs and adults are different, in different age groups of children's response to drugs are not the same [15]. Therefore, in the diagnosis and treatment of children with oral mucosal diseases, more attention should be paid to the actual situation of children, and the individual differences of children should be used to make the diagnosis and treatment program suitable for children themselves. For oral mucosal diseases in children, the healing effect of antibiotics alone is not satisfactory. The advantages of TCM in treatment are that the available options are more suitable to the characteristics of the child than Western medicine, with high safety and good compliance, and can shorten the disease cycle and reduce the recurrence rate of the disease. In addition, when treating children with recurrent oral ulcers, it is necessary to adopt a rationalized treatment plan according to the developmental characteristics of the disease and the age of onset, as well as the physical condition of the child, in order to actively improve the symptoms of oral mucosal disease, so as to reduce the discomfort and impact of this disease on the child's life. In this regard, Chinese medicine can also bring its unique advantages to bear by combining various therapies to maximize the improvement of children's symptoms, minimize children's pain, and reduce eating problems caused by oral mucosal diseases. At the same time, a wide range of external therapies can minimize children's difficulties in taking medication, and these aspects have an important positive effect on children's oral and physical health. Summarizing the research progress of TCM in the treatment of children's oral mucosal diseases in the past 10 years or so, it can be said that it has a wider range of therapeutic options and better clinical efficacy. However, there are still problems that need to be solved in clinical research, including the fact that the pathogenesis of recurrent oral ulcer disease in children is still unclear and the reasons for recurrent episodes are not known, which leads to a lack of intrinsic linkage between various therapeutic methods in the treatment process; in addition, its diagnostic criteria are poorly standardized and its therapeutic efficacy is highly subjective, which makes it difficult to accurately evaluate the clinical efficacy and its accuracy. There is a lack of specific drugs and a large amount of clinical data on the treatment of pediatric oral mucosal diseases by TCM. In conclusion, although the treatment of children's oral mucosal diseases with Chinese medicine has made great breakthroughs in shortening the course of the disease and alleviating the pain of children, showing its therapeutic advantages, it still needs to be further explored and improved.

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