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A Clinical Case Report on Eczema Treatment through Liver Heat Clearance and Detoxification

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Abstract

Eczema, a common non-communicable skin disorder, has been a long-standing concern. Current treatment protocols primarily focus on the skin itself, often relying on corticosteroids and other palliative drugs that can lead to significant side effects. Traditional Chinese Medicine (TCM) offers an alternative approach by addressing the underlying liver-skin axis. This case report describes the successful treatment of an 11-year-old girl with chronic eczema using TCM, specifically through liver clearing and detoxification. The patient was treated with the well-known TCM formula, long dan xie gan tang, which resulted in significant improvement and even complete resolution of eczema. Our clinical findings are consistent with those of the Chinese Society and provide new insights into the potential of liver detoxification and heat reduction in the treatment of eczema. This new approach to the liver-skin relationship may provide an effective strategy for managing eczema in patients.

Keywords: Eczema, Traditional Chinese Medicine (TCM), Liver-Skin Axis, Liver Detoxification, Novel Treatment, Case Report

Introduction

Eczema, or dermatitis, is a common skin condition that affects individuals worldwide. It encompasses various types, including atopic, contact, dyshidrotic, stasis, nummular, and seborrheic eczema. In China, the prevalence of clinically diagnosed atopic eczema stands at 12.94%, with varying severities: mild (74.6%), moderate (23.96%), and severe (1.44%) [1-3]. Atopic eczema is a chronic inflammatory skin disorder characterized by intense itching and eczematous lesions, often worsening over time with recurrent flare-ups. This condition can significantly affect the life quality of those affected. A recent meta-analysis suggests that genetic factors, along with environmental triggers like smoking, contribute to the development of atopic eczema [4]. Although eczema can occur at any age, it is most prevalent during childhood [5]. Preventing and managing eczema remains a challenge, and commonly prescribed corticosteroids and palliative treatments often lead to various clinical complications with long-term use [6]. Traditional Chinese Medicine (TCM), with its long history of effectively addressing skin conditions, offers a holistic approach. In TCM, eczema is often classified as wind, dampness, or heat syndrome. TCM has been widely used to treat pediatric eczema and other skin disorders with no harmful side effects, making it a preferred choice for many parents and caregivers in dermatology clinics [7]. This case report explores the therapeutic potential of TCM, specifically through the

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novel concept of the liver-skin axis, to offer alternative treatment options for dermatitis.

Case study

On August 3, 2020, an eleven-year-old girl was admitted to the Clinical Teaching Centre at the Li Ka Shing Faculty of Medicine, University of Hong Kong (case number: SC46823), with complaints of rashes and itching on her upper limbs and face, which had persisted for 4-5 years. After further investigation, it was revealed that consuming tropical fruits, particularly mango and lychee, triggered severe skin rashes. The rashes initially appeared during the summer of 2015 on her limbs and face and worsened after a few days. She had been diagnosed with eczema and received treatment from both Western and Chinese medical practitioners. Over the past five years, her condition fluctuated despite receiving both Western and TCM treatments, including antihistamines, glucocorticoids, and numerous topical treatments such as hydrocortisone and emollients, but with minimal relief.

The patient's condition was assessed following the TCM diagnostic approach, which includes inspection, listening, inquiry, and pulse-taking, the patient's condition was assessed. During the inspection, she appeared calm and had a stable mental state. Rashes and erythema were observed on her head, neck, hands, and the back of both arms, with a notable presence of erythema on the palmar side of her hands, commonly referred to as the liver palm. Despite previous treatments, including both modern and TCM therapies, her symptoms showed little improvement. She was also noted to be highly nervous, likely due to her high expectations for treatment. Her appetite and bowel movements were normal, and her tongue was thick and yellowish, with red patches on the lateral and medial sides. Her pulse was thin and string-like. Given the presence of palmar erythema, she was advised to undergo a liver function test (LFT).

Table 1. Prescriptions (Variations of long dan xie gan tang (龍膽瀉肝湯加減) for the 1st consultation on August 03, 2020

	Latin name	Chinese name	Dosage (g)
1.	Cicadae Periostracum	Chantui	6
2.	Sophorae Flavescentis Radix	Kushen	15
3.	Glycyrrhizae Radix et Rhizoma	Gancao	5
4.	Bombyx Batryticatus	Jiangcan	6
5.	Dictamni Cortex	Baixianpi	15
6.	Lithospermum erythrorhizon Sieb. et Zucc.	Zicao	12
7.	Moutan Cortex	Mudanpi	15
8.	Atractylodis Rhizoma	Cangzhu	10
9.	Rehmanniae Radix (raw)	Shengdihuang	30
10.	Forsythiae Fructus	Lianqiao	18
11.	Gentianae Radix et Rhizoma	Longdancao	3
12.	Taraxacum mongolicum and. Mazz.	Pugongying	15
13.	Lonicerae Japonicae Caulis	Rendongteng	40
14.	Cynanchum paniculatum (Bge.) Kitag. ex Hara Dosage: oral intake for 7 days, twice a day, one bag of decoction per dosage	Xuchangqing	12

The prescription of long dan cao is utilized to clear liver damp heat and excess heat **(Table 1)**, while Kushen and Baixianpi are used to eliminate damp heat from various organs. Cangzhu is included to tonify spleen Qi and address the root cause of dampness in the body. Mudanpi, Zicao, and Shengdihuang are incorporated to clear damp heat from the blood. Lianqiao, Rendongteng, and Pugongying work to clear heat and toxins. Xuchangqing is included for its role in invigorating blood and removing toxins **(Table 1)**.

We advised the patient to continue with the internal therapy and prescribed a topical application of the boiled herbs for use in the main areas. The patient's ALP levels were within normal limits. During this consultation, we made adjustments to the prescription by adding 10 grams of Rendongteng to help clear heat and toxins from the

liver Qi. We discontinued Shengdihuang due to its role in causing a thick white-yellow tongue coating, as observed with the original formula **(Table 1)**.

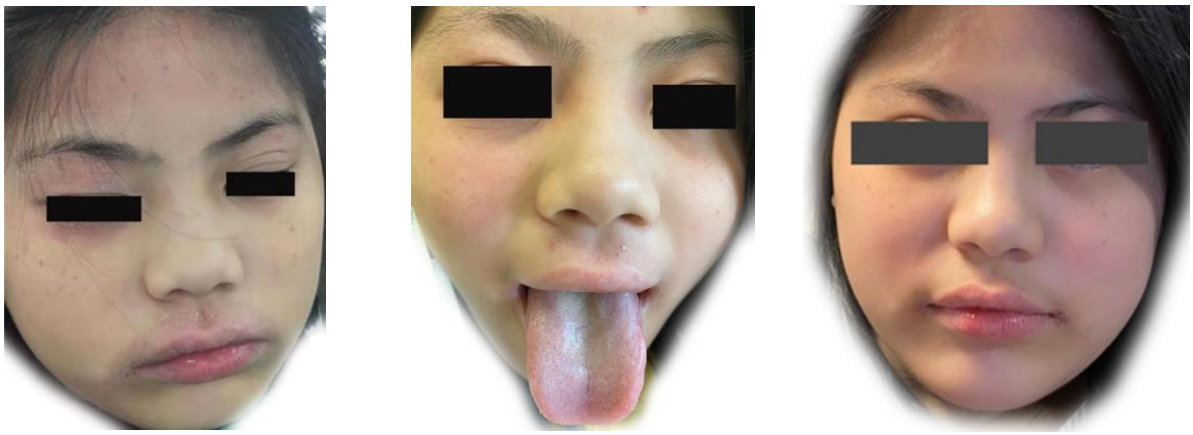
During the third follow-up consultation on August 24, 2020, we observed a complete resolution of rashes and itching on the face and limbs, though small patches of dermatitis remained on the face. The palmar erythema had significantly improved, and the patient's menstrual cycle was normal. We further adjusted the prescription by increasing Cangzhu from 2 g to 10 g to enhance spleen Qi tonification and added 40 g of Rendongteng. Additionally, 10 g of Wuweizi was included as an astringent, 20 g of Tufuling was added to remove excess dampness, and 35 g of Jixueteng was incorporated to invigorate and tonify blood. Chantui was removed as wind syndrome was no longer prominent **(Table 1)**.

In the follow-up consultation on January 5, 2021, we noted significant improvement, with only small areas of rashes present on the peripheral limbs. The palmar erythema had completely resolved **(Figure 1)**, and the patient's menstrual cycle showed no abnormalities, including no signs of amenorrhea or dysmenorrhea.

1st consultation (2020/08/03) 3rd consultation (2020/08/24) Follow-up consultation (2021/01/05)

a) b) c)

d) e) f)



g) h) i)

Figure 1. Comparison of the affected area during pre- and post-treatment

As illustrated in **Figure 1**, the patient's eczema had shown considerable improvement. The dermatitis area had decreased by nearly half, as depicted in the image. Additionally, the palmar erythema had lessened, suggesting enhanced liver detoxification function.

Results and Discussion

Eczema is a chronic condition that poses significant treatment challenges in Western medicine despite extensive research on its mechanisms and therapeutic approaches in clinical environments [8-11]. TCM offers various treatment methods for eczema, including the elimination of wind, expulsion of dampness, strengthening of the spleen, and others. Many studies have delved into the potential role of TCM in managing eczema [12-14], focusing on both systemic organ regulation and topical skin treatments.

The liver plays a crucial role in the body's metabolic processes and detoxification [15, 16]. When detoxification is impaired, hepatotoxicity may occur, often manifesting on the skin [17]. It has been established that liver diseases can lead to increased melanin production, which causes symptoms such as darker skin tone, brown streaks on nails, and liver palms in affected individuals [17, 18]. The concept of the 'liver-skin axis' highlights the critical relationship between liver function and skin health, although its application in eczema treatment remains unclear to many practitioners [19], with limited evidence supporting this connection.

Eczema's underlying mechanisms are driven by inflammatory mediators, which are activated by lymphocytes and keratinocytes in the skin of psoriasis patients. Liver dysfunction or hepatotoxicity can contribute to the production of pro-inflammatory mediators, exacerbating inflammation in conditions like psoriasis [20]. These findings suggest a connection between liver function and skin inflammation. Additionally, conditions like primary biliary cirrhosis (PBC) have been shown to have strong links to skin manifestations, including the development of cutaneous xanthomas due to hypercholesterolemia [21, 22]. Hypercholesterolemia, driven by cytokines like interleukin-1, interleukin-6, and TNF-α, can spill into the skin, triggering inflammation [23]. However, the evidence for these connections remains largely theoretical, with insufficient clinical trials and robust analysis to confirm these hypotheses.

In this case study, although the patient exhibited palmar erythema on her hands, her liver function tests (LFTs) returned normal results, suggesting that the presence of palmar erythema might not be directly linked to liver dysfunction. This finding aligns with a previous report [24]. However, from a TCM perspective, palmar erythema can be associated with liver imbalances. Following the prescribed treatment, the palmar erythema gradually disappeared, implying that the liver may have been restored through TCM interventions.

The approach taken in this study represents a novel TCM treatment strategy for eczema aimed at clearing liver heat, dampness, and toxins. Eczema is thought to be

influenced by both internal and external factors [19]. Internal factors such as chronic digestive disorders, mental stress, insomnia, fatigue, emotional changes, hormonal imbalances, infections, and metabolic disturbances, combined with external factors like environmental conditions, climate, and diet, can contribute significantly to the development of eczema [19].

In this case, the prescription focused on clearing liver heat, using long dan xie gan tang, as the patient displayed signs of liver heat and dampness syndrome, such as a red and yellow tongue coating and a string-like pulse. The dermatitis also corresponded with the liver meridian, reinforcing the presence of liver-related heat and dampness. This prescription primarily contains Gentianae Radix et Rhizoma (Long Dan), a well-known herb for clearing liver heat and dampness, alongside other ingredients like Rehmanniae Radix (Sheng Di Huang), *Scutellaria baicalensis* (Huang Qin), and *Gardenia jasminoides* (Zhi Zi) to clear heat and dampness. Alismatis Rhizoma (Zexie), Plantago asiatica (Che Qian Zi), and *Clematis armandii* (Mu Tong) help remove excess dampness from the body [25]. By combining both internal and external remedies, the patient's condition improved significantly.

From a modern medical standpoint, the liver plays a key role in detoxifying harmful substances from the body. In this case, TCM's approach of clearing liver heat and dampness could offer a new and effective way to treat recurrent eczema. While emollients and corticosteroids are commonly used for eczema treatment, addressing liver heat and dampness through TCM may provide a promising alternative for managing severe dermatitis. This method holds potential for wider application in TCM clinics as a novel protocol for eczema treatment.

Conclusion

In this case, TCM proved to be a valuable adjunct to conventional Western treatments for eczema. Just in a few months, our patient experienced full recovery from severe chronic dermatitis and palmar erythema after receiving long dan xie gan tang, with no adverse effects observed. The results highlight the significance of the liver in TCM as a key organ responsible for detoxification and the clearing of liver heat and dampness. Therefore, targeting liver health through TCM may not only improve overall liver function but also play a crucial role in addressing skin conditions.

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