

## Original Article

# Effects of TCM combined with western medicine therapy on progressive symmetric erythrokeratoderma

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**Abstract:** Objective: To explore the clinical effects of the combination of Traditional Chinese Medicine (TCM) and Western medicine therapy on progressive symmetric erythrokeratoderma (PSEK). Methods: Thirty patients with PSEK treated in Inner Mongolia People's Hospital from January 2011 to December 2017 were included in this study. The patients were divided into the observation group (n = 15) and the control group (n = 15) according to a random number table method. Patients in the control group were singly applied with 2.0% salicylic acid ointment, 3 times per day, lasting for 1 month. Patients in the observation group were treated with Qingzi Decoction on the basis of the treatment in the control group, lasting for 1 month. The effective rate, patients' satisfaction rate, and dermatology life quality index (DLQI) were compared between the two groups. Results: The effective rate in the observation group was significantly better than that in the control group (P = 0.031). The patients' satisfaction rate was increased significantly in the observation group compared with that in the control group (P = 0.042). The DLQI after treatment in both groups was significantly lower than that before treatment, and the DLQI in the observation group after treatment was significantly lower than that in the control group (all P < 0.001). Conclusion: The combination of TCM and Western medicine presents outstanding curative effects on PSEK. It can significantly improve patients' satisfaction rate and quality of life, and is thus worthy of clinical application.

**Keywords:** Progressive symmetric erythrokeratoderma, curative effect, traditional Chinese medicine treatment, quality of life

## Introduction

Progressive symmetric erythrokeratoderma (PSEK), also known as Gottron syndrome, was first reported by Darier in 1911 [1, 2]. This disease is relatively rare in clinical practice. It is a dermatosis inherited as an autosomal dominant trait. At present, the loricrin gene may be considered as the virulence gene, but the specific pathogenesis is still unclear [3, 4]. The onset of disease usually occurs within a few months after birth. The typical clinical manifestation is primary skin lesions. It is mostly with palmoplantar keratinized erythema, accompanied by pieces of scales and in symmetrical distribution. Late lesions are developed proximally to the limbs. The lesions can affect several body parts, such as the digitorum, opisthenar, acrotarsium, knees, elbow extensions, etc. The toenails can be affected, with the features of unequal hypertrophy and allochromasia. A few

patients may have lesions in the trunk and oral cavity. However, most skin lesions are limited [5, 6]. Histopathological features are hyperkeratosis of the epidermis, with mild parakeratosis, hypertrophy in the tunica granulosa, psoriasis-like hyperplasia in the stratum spinosum, mild dilatation, and congestion in the small dermal vessels. Small blood vessels of the dermis are slightly dilated and congested, and the peritubular vessels are accompanied by different degrees of inflammatory cell infiltration [7, 8]. At present, there is no specific treatment for the disease in clinic. The routine treatment of Western medicine is symptomatic treatment, such as topical salicylic acid ointment [9, 10]. PSEK is not named in Traditional Chinese Medicine (TCM). However, TCM can exert the advantages of overall and local argumentation. In the aspect of TCM, the disease is induced by congenital insufficiency in natural endowment and imbalance of Yin and Yang. Nourishing the

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blood and promoting blood circulation, as well as nourishing Yin and emolliating the liver are applied in the TCM treatment. However, curative effects of the combination of TCM and Western medicine for treating PSEK have not been reported. The aim of this study was to explore the curative effects of the combination of TCM and Western medicine in the treatment of PSEK and provide an experimental basis for clinical treatment of PSEK.

### Materials and methods

#### *Objectives of the study*

A total of 30 patients with PSEK treated in Inner Mongolia People's Hospital from January 2011 to December 2017 were selected as objectives of the study, including 17 males and 13 females, with an average age of (32.6±2.8) years. The patients were divided into the observation group (n = 15) and the control group (n = 15) according to random number table method.

**Inclusion criteria:** Clinical manifestations of patients were in varying degrees of pruritus, night sweats, low-grade fever, consistent with the diagnostic criteria of PSEK [11]. Patients cooperated voluntarily with the study.

**Exclusion criteria:** Patients allergic to the treated drugs, with the history of taking Qingzi Decoction or topical salicylic acid ointment; patients accompanied by liver and kidney dysfunction, severe cardiovascular and cerebrovascular diseases, hypertension and diabetes mellitus and other basic diseases; patients with acute or chronic infectious diseases; patients with psychiatric diseases or malignant tumors.

The study was approved by the Ethics Committee of Inner Mongolia People's Hospital and all selected patients signed the informed consent.

#### *Treatment methods*

Patients in the control group were singly applied with Western medicine consisting of topical 2.0% salicylic acid ointment, 3 times per day, lasting for 1 month.

Patients of the observation group were treated with the combination of TCM and Western

medicine. Western medicine treatment was the same as the control group, while TCM treatment was given as Qingzi Decoction, one dosage per day, taken twice a day in morning and evening, lasting for 1 month. The prescriptions of Qingzi Decoction included 10 g Licorice, 10 g Cortex Dictamni, 10 g Fructus Kochiae, 12 g Radix Gentianae Macrophyllae, 12 g Scutellaria Baicalensis, 15 g Radix Rehmanniae, 10 g Angelica Sinensis, 10 g Radix Rehmanniae Praeparata, and 15 g Radices Paeoniae Alba.

#### *Observation indicators*

**Curative effect of clinical treatment:** Psoriasis Area and Severity Index (PASI) was the most commonly used method for the measurement of severity of psoriasis. PASI combined the assessment of the severity of lesions and the area affected into a single score ranged from 0 (no disease) to 72 (maximal disease).

The area was estimated and transformed into a grade from 0 to 6: 0% (0 point), 0-10% (1 point), 10-29% (2 points), 30-49% (3 points), 50-69% (4 points), 70-89% (5 points), and 90-100% (6 points). The severity of lesions within each area was evaluated by symptoms of erythema, scaling, and infiltration. Each symptom was estimated and scored from 0-4: absent (0 point), mild (1 point), moderate (2 points), severe (3 points) and extremely severe (4 points).

$$\text{PASI score} = 0.1 * \text{head area score} * \text{head severity score} + 0.3 * \text{body area score} * \text{trunk severity score} + 0.2 * \text{upper limb area score} * \text{upper limb severity score} + 0.4 * \text{lower limb area score} * \text{lower limb severity score}.$$

The assessment criteria for curative effects: Symptoms and signs disappeared or almost disappeared, and the reduction rate of PASI score greater than 95% was considered to be cured. The symptoms and signs improved significantly and the reduction rate of PASI score between 70% and 90% were considered as remarkable effectiveness. The symptoms or signs were in obvious improvement and the reduction rate of PASI score between 30% and 70% were considered as effectiveness. Symptoms or signs were not obviously improved or even worsened and the reduction rate of PASI score less than 30% were considered

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**Table 1.** Comparison of basic patient information between two groups

Group	Case	Male/female	Age (year)	Course of disease (month)
Control group	15	9/6	32.7±2.9	10.4±0.5
Experimental group	15	8/7	32.4±2.7	10.6±0.7
t/X <sup>2</sup>		0.136	0.293	0.901
P		0.713	0.772	0.376

**Table 2.** Comparison of effective rate between two groups

Group	Case	Cure	Remarkable effectiveness	Effectiveness	Ineffectiveness	Effective rate (%)
Control group	15	2	3	4	6	60.0
Experimental group	15	3	6	5	1	93.3
X <sup>2</sup>						4.658
P						0.031

as ineffectiveness. Effective rate = (number of cases of cure + number of cases of remarkable effectiveness + number of cases of effectiveness)/total number of cases \* 100%.

*Comparison of the patients' satisfaction between two groups:* The patients' satisfaction was assessed by the satisfaction questionnaire, which was graded according to patients' self-perception of the therapeutic effect. The total score of patients' satisfaction is 100: 91-100, very satisfied; 81-90, satisfied; 71-80, generally satisfied; ≤70, dissatisfied. Satisfaction rate = (number of cases of very satisfied + number of cases of satisfied)/total number of cases \* 100%.

*Dermatology life quality index:* The dermatology life quality index (DLQI) referred to the influence of dermatosis on the patient's life in the past 1 week. The DLQI has only 10 sets of questions, including aspects of symptoms and feelings (such as pruritus, tingling), psychology (such as absence of confidence, frustration), social activities, interpersonal and occupational restrictions (contact dermatitis), family (such as restricting their care for family members, sexual life), treatment (time, side effects, and financial burden), etc. A 4-point scoring method is used in each question (absence, 0 point; less, 1 point; serious, 2 points; extremely serious, 3 points). The total score ranged from 0-30. The higher the score, the greater the influence of dermatosis on the patient's quality of life.

### Statistical analysis

SPSS 21.0 software was used to process the experimental data. Measurement data are

expressed as the mean ± standard deviation. Independent-samples t-test was used to compare the data in two groups. Paired t-test was used to compare the DLQI before and after treatment. Enumeration data are expressed as a percentage. The Chi-square test was used to compare the difference between two groups. If the P value was less than 0.05, it was considered statistically significant.

### Results

#### *Comparison of basic information of patients between two groups*

There was no statistically significant difference in basic information such as gender, age, and course of disease between the two groups (all P>0.05) as shown in **Table 1**.

#### *Comparison of the effective rate of patients between two groups*

After treatment, the effective rate of treatment in the observation group was 93.3%, which was significantly higher than that in the control group (60.0%; P = 0.031) as shown in **Table 2**.

#### *Comparison of patients' satisfaction between two groups*

Follow-up was performed 3 months after treatment. The satisfaction rate in the control group was 66.67%, which was significantly lower than that in the observation group (100.0%; P = 0.042) as shown in **Table 3**.

#### *Comparison of DLQI between the two groups*

There was no significant difference in DLQI before treatment between the two groups (P =

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**Table 3.** Comparison of patients' satisfaction between two groups

Group	Case	Very satisfied	Satisfied	Generally satisfied	Dissatisfied	Satisfaction rate (%)
Control group	15	7	3	4	1	66.7
Experimental group	15	14	1	0	0	100.0
X <sup>2</sup>						7.938
P						0.042

**Table 4.** Comparison of DLQI between two groups

Group	Case	DLQI		t	P
		Before treatment	After treatment		
Control group	15	16.7±0.4	4.4±0.1	293.815	<0.001
Experimental group	15	16.6±0.3	9.7±0.2	102.113	<0.001
t		0.346	41.054		
P		0.746	<0.001		

Note: DLQI, dermatology life quality index.

0.746). DLQI after treatment was significantly lower than that before treatment in both groups (both  $P < 0.001$ ). DLQI was significantly lower in the observation group after treatment than that in the control group ( $P < 0.001$ ) as shown in **Table 4**.

### Discussion

PSEK is a rare hereditary dermatosis. Clinical features, such as erythema, scales, and keratinized lesions, seriously affect the patient's quality of life. The course of the disease is slow. It is symmetrical and progressively aggravated [12-14]. It can be diagnosed in clinical medicine according to its symptoms. Pathological examination is helpful to make a definite diagnosis. With in-depth study of the pathogenesis of hereditary dermatosis, new therapeutic methods are applied in the field, such as gene therapy, stem cell therapy, and drug therapy. However, there is still no effective etiological treatment for PSEK [15-17]. At present, treatment and intervention of PSEK is still a key and a difficult point in clinical practice.

Conventional Western medicine is symptomatic treatment, including oral administration of vitamin A and acitretin, and topical salicylic acid ointment. As a first-line clinical drug for keratinizing dermatosis, acitretin can regulate differentiation and hyperplasia of skin epithelial cells, promote normalization of parakeratotic skin epidermis, and regulate immunoreaction and inflammatory reaction of lesions, but

in the application process. However, acitretin can lead to hepatic lesion, skin lesions, and dyslipidemia and other side effects [18]. In addition, a study has shown that oral administration of vitamin A has no effects on the development of PSEK [19].

The topical salicylic acid ointment can relieve itching, reduce scales, and improve symptoms [20]. Topical salicylic acid ointment applied to avoid systemic adverse reactions was used on patients in this study.

There is no special name for PSEK in TCM. However, TCM believes that this disease is caused by blood deficiency and blood dryness, skin dystrophy, or blood deficiency, impairment of Yin, and hematozemia. The treatment of nourishing Yin and clearing heat and nourishing blood and activating blood circulation can be adopted. The licorice used in this study has the effects of sour-sweet herbs nourishing Yin and desensitization and relieving itching. The cortex dictam, fructus kochiae, and large-leaved gentian can clear heat and relieve itching. *Scutellaria baicalensis* can tonify Qi.

*Angelica* and *rehmannia glutinosa* can nourish blood and tonify deficiency. *Radix rehmanniae* recen and *radices paeoniae alba* have the effects of nourishing blood and moistening dryness. After taking this medicine, the patient can gain the great effects of supplementing Yin and increasing fluids, nourishing blood, and activating blood circulation, clearing and activating the channels and collaterals, nourishing Yin, and clearing heat, and nourishing skin.

The results of this study show that the effective rate and patients' satisfaction rate were significantly increased, DLQI decreased after treatment in the observation group, compared with those in the control group. The difference was

of statistical significance (all  $P < 0.05$ ). It shows great effectiveness in the combination of TCM and Western medicine for the treatment of PSEK. It effectively relieves the patients' symptoms and improves the quality of life of patients.

In conclusion, there is significant effects of the combination of TCM and Western medicine on treatment of PSEK, which is worthy of clinical use. However, there are certain limitations in this study, such as small sample size, single-center study, short follow-up time, etc. In the future study, additional sample size and long-term follow-up are needed. Randomized controlled multicenter clinical studies are needed for further confirmation.

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### Disclosure of conflict of interest

None.

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