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Effect of Yinxieling decoction on PASI, TNF-α and IL-8 in patients with psoriasis vulgaris

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ABSTRACT

Objective: To study the effect of Yinxieling decoction on PASI, TNF-α and IL-8 in patients with psoriasis vulgaris. **Methods:** A total of 120 cases of psoriasis vulgaris were divided into 4 groups according to syndrome differentiation of TCM and randomized controlled method: wind heat syndrome group (group A), blood stasis syndrome group (group B), blood dryness syndrome group (group C) and control group (group D) (n=30 per group). Patients in observation groups were treated with Yinxieling decoction, while patients in control group were treated by placebo for 8 weeks. Levels of TNF-α and IL-8 were determined before treatment, 4 and 8 weeks after treatment. psoriasis area and severity index score was also performed before and after treatment. **Results:** psoriasis area and severity index score and serum level of TNF-α, IL-8 were significantly decreased in all groups. The decrease in three observation groups was more significant (P<0.05 or P<0.01), and the decrease in wind heat syndrome group was the most significant (P<0.01). psoriasis area and severity index was positively correlated with TNF-α and IL-8, respectively (P<0.05). **Conclusions:** Yinxieling decoction has therapeutical effect on psoriasis vulgaris via regulating TNF-α and IL-8.

1. Introduction

Psoriasis vulgaris is the most common type of psoriasis, with the highest morbidity. Because of the complicated pathogenesis and etiology, symptomatic treatment with west medicine is not efficient. Besides, due to high cost and several side effects, it brings huge disturbance to patients[1]. Treatment based on syndrome differentiation is the key of traditional Chinese medicine (TCM). There are many retrospective case reports about treatment for psoriasis with TCM, and are few clinical trials bases on 4R (rationality, representativeness, randomness, repeatability) principal, especially trials using syndrome differentiation and molecular biological indexes. This study aims to explore the effect of Yinxieling decoction on psoriasis area and severity index (PASI), TNF-α and IL-8 in psoriasis vulgaris patients with different syndrome.

2. Materials and methods

2.1. General data

All 120 cases were in according with prognosis standard for psoriasis vulgaris in west medicine and for psoriasis in TCM[2], and were admitted from March 2010 to December 2013. They aged 19-68 years old and didn't have medicine therapy in 2-3 months. All cases were divided into 4 groups based on syndrome differentiation of TCM and randomized controlled method (n=30 per group). There were 18 females and 12 males, aged 18-67 years old, with average age as (38.77±11.8) years old, course as (9.62±5.33) years in group A; 19 females and 11 males, aged 17-69 years old, with average age as (36.48±12.34) years old, course as (8.51±7.69) years in group B; 17 females and 13 males, aged 17-68 years old, with average age as (36.3±12.7) years old, course as (8.59±5.44) years in group C; 16 females and 14 males, aged 18-70

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years old, with average age as (37.39±13.04) years old, course as (6.45±8.15) years in group D. There was no significant difference in gender, age, course or disease condition among 4 groups (P>0.05). All patients were in according with ethnic review and signed informed consent.

2.2. Treatment methods

Patients in treatment group were treated with Yinxieling decoction (composed of radix rehmanniae recen, angelica sinensis, radix paeoniae rubra, ligusticum wallichii, radices lithospermi, curcuma zedoary, chloranthus spicatus, rhizome smilacis glabrae, smoked plum, liquorice *etc*)[3]. All materials were soaked in water at 1:10 for 0.5 h, then they were boiled followed by filtration. The water was added at 1:8. It was boiled again then filtrated. The liquid was mixed for concentration to 100 mL per bag. 0.1% sodium benzoate was added to dissolve. Then they were subpackaged.

Placebo was prepared as follows. A total of 180 mL distilled water was added with 0.5 g caramel. They were stirred to dissolve. Above mentioned concentrated liqud 20 mL was added. They were boiled for 10 min. 0.1% sodium benzoate was added to dissolve, then they were subpackaged.

Vacuum package decoction was preserved in refrigerator. It was warmed in boiled water and was administrated 0.5-1 h after breakfast and dinner. All medicine were identified by Medicine Inspection Institute of Hainan Province. And all patients were treated by external application of cod-liver oil ointment. Four weeks was a course, and they were treated for 2 courses.

2.3. Therapeutical effect assessment

Therapeutical effect was assessed by psoriasis area and PASI[4]. They were assessed before treatment, 4 and 8 weeks after treatment. If the condition was aggravated continuously or severe side effect occurred, the trial was discontinued. Biochemical indexes were detected to record side effect.

2.4. Detection method

A total of 5 mL venous blood was extracted before treatment, 4 and 8 weeks after treatment. They were centrifugated and preserved in refrigerator. TNF-α and IL-8 were detected by ELISA. The assays were from Boshi Biological Co Ltd, Wuhan.

2.5. Statistical analysis

All data were analyzed by t test and χ^2 test. The correlation was analyzed by Spearman test. All data were expressed as mean±sd. P<0.05 was considered as significant difference.

3. Results

3.1. PASI score

There was no significant difference in PASI among 4 groups (P>0.05). The score was decreased after treatment in 4 groups. The decrease in group A, B , C were significant (P<0.05 or 0.01), and it was not significant in group D (P>0.05). There was significant difference among group A, B and C during the same period (P<0.05 or 0.01). And the difference was significant in group A between 4 weeks and 8 weeks (P<0.01) (Table 1).

Table 1
PASI score.

Group	Before treatment	4 weeks after treatment	8 weeks after treatment
Group A	26.27±2.19	8.46±1.64※	3.51±2.42※●
Group B	24.12±1.08	12.21±1.01※	6.26±1.39※
Group C	22.23±1.97	15.16±1.15※	9.34±1.52※
Group D	24.83±2.86	22.16±2.43	19.46±1.52

※P<0.05 compared with that before treatment; ●P<0.01, compared with that at 4 weeks after treatment.

3.2. TNF-α and IL-8 levels

There was no significant difference in TNF-α or IL-8 levels (P>0.05). The levels were decreased after treatment in 4 groups. The decrease in group A, B , C were significant (P<0.05 or 0.01), and it was not significant in group D (P>0.05). There was significant difference among group A, B and C during the same period (P<0.05 or 0.01). And the difference was significant in group A between 4 weeks and 8 weeks (P<0.01) (Table 2).

4. Discussion

Psoriasis is a chronic and recurrent inflammatory skin

Table 2
TNF-α and IL-8 levels (pg/mL).

Group	Before treatment		4 weeks after treatment		8 weeks after treatment	
	TNF-α	IL-8	TNF-α	IL-8	TNF-α	IL-α
Group A	26.37±18.41	23.14±5.2*	12.16±3.9※	11.43±3.7※	8.41±2.6※●	7.89±1.6※●
Group B	25.49±17.38	22.79±5.4	16.43±5.2※	14.61±4.8※☆	13.97±3.2※☆	11.34±2.5※
Group C	24.38±14.49	21.09±6.1	17.16±3.5※	16.41±3.3※	14.67±3.2※	13.16±2.9※
Group D	25.31±16.42	22.19±5.8	21.56±4.2	18.48±3.5	17.43±2.1	16.54±1.7

※P<0.05 compared with that before treatment; ●P<0.01, compared with that at 4 weeks after treatment.

disease. At present, treatment with west medicine has severe side effect. But no radical treatment is found[5]. TCM for psoriasis has extensive clinical foundation. Compared with west medicine, it can alleviate symptoms, and is of few side effects. It can be applied for long term. Yinxieling is invented by Professor Guo-Wei Xuan, and has been confirmed by clinical trial and experiments[6,7]. It is effective and has been applied in clinical. During active stage, heat toxin causes abnormal bleeding, the overflow of blood leads to blood stasis. So blood dryness leading to blood heat and flaming heat are the main syndromes during this stage. It is reported that[8] Yinxieling has inhibiting effect on PCNA of vagina epithelium in mice and promoting effect on apoptosis of keratinocyte, which may be mechanism of Yinxieling. Yinxieling comprises of radix rehmanniae recen, angelica sinensis, radix paeoniae rubra, ligusticum wallichii, radices lithospermi, curcuma zedoary, chloranthus spicatus, rhizome smilacis glabrae, smoked plum, liquorice *etc*. It can remove heat to cool blood, promote blood circulation to remove blood stasis, and nourish yin and blood. It is in according with the researches which reported that invigorating blood and removing stasis medicine can regulate immune function, improve microcirculation and skin dystrophia, inhibit excessive proliferation of epidermic cells, and help recovery of hyperplasia[9].

TNF-α can help inflammatory cells to penetrate vessel wall, activate vascular endothelial cell and neutrophil, and regulate immune reaction and inflammation. Shan *et al*[9] treated psoriasis of blood heat type with Yinxie I (radix rehmanniae recen, root bark of peony tree, gypsum, lalang grass rhizome, oldenlandia, radices lithospermi, rhizoma anemarrhenae and honeysuckle flower) , and found significant decrease in TNF-α and IL-8. IL-8 is chemokine of neutrophil and T lymphocyte, and is produced by KC, melanocyte, LC *etc*. It has chemotaxis effect on neutrophil and T lymphocyte, can promote production of new vessels and proliferation of keratinocyte[10]. It is reported that IL-8 is significantly increased in peripheral blood of psoriasis patients, and is positively correlated with PASI score. The expression of IL-8 is significantly increased in mixed nutrient culture of T cell and keratinocyte and fibroblast in non-skin lesion area. Lou *et al*[12] treated psoriasis patients with Blood-cooling and Blood-invigorating Decoction, and found IL-8 was significantly decreased. Th cells refer to responsive $CD4^+$ T cell[13]. Th cells are divided into Th1 and Th2 cell according to different secretory cytokines and biological function. They produce secretion of IL-2, IFN γ, IL-4, IL-5 and IL-8 to participate cell-mediated immune response and humoral immune response.

We found that Yinxieling can significantly decrease PASI, TNF-α and IL-8 of psoriasis vulgaris patients, and the effect is most significant for wind-heat type, which is similar to many researches on TCM for psoriasis[14,15]. It is presumed that Yinxieling may regulate abnormal proliferation and differentiation of keratinocyte, and may have anti-inflammatory action. Yinxieling is effective in treatment of psoriasis, and is worthy clinical application.

Conflict of interest statement

We declare that we have no conflict of interest.

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