EVALUATION OF THE TREATMENT OUTCOME OF SCABIES WITH 7% SULFUR CREAM AT CAN THO DERMATO-VENEREOLOGY HOSPITAL IN 2024-2025

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ABSTRACT

Objective: To evaluate the treatment outcome of scabies with 7% sulfur cream. **Research object and Method**: A cross-sectional descriptive study was conducted on 54 patients diagnosed with scabies at Can Tho Dermato-Venereology Hospital from 2024 to 2025. Patients applied 7% sulfur cream for three consecutive days and were evaluated two weeks after treatment. **Results**: Significant improvement in itching and skin lesions was observed after two weeks ($p < 0.001$). The cure rate was 85.2%. Mild and transient side effects including erythema, stinging, burning and dry skin were reported in 11.1% of patients. **Conclusion**: 7% sulfur cream is a safe and effective treatment for scabies.

Keywords: *scabies, treatment, sulfur*

I. INTRODUCTION

Scabies is a skin disease caused by *Sarcoptes scabiei var. hominis*. It spreads through direct skin-to-skin contact with an infected person or through clothing and objects carrying the parasite. Clinical manifestations include severe itching, especially at night, and characteristic lesions such as burrows, vesicles, erythematous papules, and chancres [2]. In Vietnam, scabies is endemic, with a high prevalence in many provinces. According to a large-scale epidemiologic investigation of skin diseases in 10 Vietnamese provinces, scabies was detected in 13% of the overall population tested and in 30% of children under 15 [5].

Currently, in Vietnam, there are many topical drugs for scabies treatment including permethrin cream, benzyl benzoate emulsion, sulfur cream or ointment, crotamiton cream or ivermectin cream. Among them, 5-10% sulfur cream is considered an alternative choice because of its few side effects, safety for pregnant women and children under 2 months old, and especially its low cost [2]. There are few studies in Vietnam assessing the effectiveness of 7% sulfur cream, so this study was conducted to evaluate the treatment outcomes of 7% sulfur cream for scabies at Can Tho Dermato-Venereology Hospital in 2024-2025.

II. RESEARCH OBJECT AND METHOD

2.1. Research object

This study included all patients diagnosed with scabies at Can Tho Dermato-Venereology Hospital from August 2024 to August 2025. Inclusion criteria were as follows: providing informed consent and being diagnosed with clinical scabies according to the International Alliance for the Control of Scabies Consensus Criteria for the Diagnosis of Scabies (2020), fulfilling at least one of the following criteria: 1) presence of burrows, 2) presence of typical lesions (papules, vesicles, chancres) on male genitalia or 3) presence of typical lesions (papules, vesicles, chancres) in typical locations (hands, feet, umbilicus, axilla, genitalia) plus epidemiological features (pruritus and a history of contact): a) any contact with a confirmed scabies patient or b) close contact (household, bed-sharing, school children, occupational or sports contact) with people experiencing itching or with typical scabies lesions in characteristic locations not caused by another medical condition [2]. Exclusion Criteria included history of allergy to sulfur and use of multiple topical or systemic scabies treatments at the same time.

2.2. Material and methods

This is a cross-sectional descriptive study. The sample size calculation: using the formula for estimating a population proportion:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}}.p.(1-p)}{d^2}$$

where α = 0.05 (level of statistical significance), $Z_{1-\frac{\alpha}{2}} = 1.96$ is the corresponding Z-score, p = 0.835 according to Goksen Ertugrul studied on 140 Turkish scabies patients from 1

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Date of receipt: 16.1.2026
Date of scientific judgment: 6.3.2026
Reviewed date: 17.4.2026

to 66 years old, the cure rate after 2 weeks of using 10% sulfur cream [9] and d = 0.1 (margin of error). Substituting into the formula, the sample size calculated was n = 52.9, so a minimum of 53 patients was chosen. Actually, we recorded 54 samples.

Patients diagnosed with scabies were prescribed 7% sulfur cream, applied once daily at night from the neck down to the feet, washed off after 24 hours, repeated for 3 consecutive days and evaluated after 2 weeks as cured rate [15].

2.2.2. Data collection

This study collected general and clinical characteristics of patients. General characteristics consisted of age, gender (female/male), history of exposure (yes/no). Clinical characteristics of patients included skin lesions divided into 4 groups: scabies burrow, erythematous papule, vesicle, and chancre, severity of the disease based on the number of lesions, divided into 4 levels: no lesions, mild (number of lesions from 1-10), moderate (number of lesions from 11-49), severe (number of lesions ≥ 50) and severity of itching based on patient scoring of itching severity using the Numeric Rating Scale (NRS) from 0 to 10 points, divided into 4 levels: 0 points: no itching, 1-3 points: mild itching, 4-7 points: moderate itching, 7-10 points: severe itching. Patients were monitored and evaluated for scabies treatment outcomes at each follow-up visit after 2 weeks. Cure was defined according to the 2017 European guideline for the management of scabies: when the patient has reduced itching, the old skin lesions decrease and no new lesions appear [15]. Local side effects were recorded during the treatment process.

2.2.3. Statistical analysis

Statistical analysis was performed using SPSS software version 18.0.0. Graphs were created using Excel 2024 software. Qualitative variables were presented as frequencies and percentages, and quantitative variables were assessed for normality using the Kolmogorov-Smirnov test. Differences in paired means were tested using the paired t-test. Statistical parameters were presented with a 95% confidence interval and a p-value < 0.05 was considered statistically significant.

2.2.4. Ethical considerations

The study was approved by the Scientific Council of Can Tho Dermato-Venereology Hospital (No. 24.073.HV/PCT-HĐĐĐ). All participants provided informed consent, and confidentiality was strictly maintained.

III. RESULTS

3.1. Characteristics of participants

Table 1. General characteristics of participants

Characteristics	Frequency (n)	Percentage (%)
Age (Mean ± SD)	59.2 ± 16.5	
Gender		
Female	30	55.6
Male	24	44.4
History of exposure		
Yes	39	72.2
No	15	27.8
Total	54	100

The mean age of the study population was 59.2 ± 16.5, females accounted for a higher proportion than males, and 72.2% of patients had a history of exposure.

Table 2. Clinical characteristics of patients

Clinical features	Frequency (n)	Percentage (%)
Lesions		
Burrow	19	35.2
Vesicles	52	96.3
Erythematous papule	40	70.4
Chancre	1	1.8
Location		
Interdigital spaces of the hands and feet	49	90.7
Arm	29	53.7
Legs	16	29.6
Genitalia	33	60.1
Abdomen, back	27	50
Head, face, neck	0	0

Vesicles accounted for the highest proportion (96.3%) and the Interdigital spaces of the hands and feet were the most common location (90.7%).

3.2. Treatment outcomes

Table 3. Improvement in itching severity

Itching severity	Pre-treatment (n, %)	Post-treatment (n, %)	p-value t - test
Mean ± SD	7.63 ±1.93	0.32 ± 0.09	< 0.001
No itching	0 (0.0)	47 (87.0)	
Mild	4 (7.4)	6 (11.1)	
Moderate	6 (11.1)	1 (1.9)	
Severe	44 (81.5)	0 (0.0)	
Total	54	54	

After treatment, the patients' average NRS score was 0.32 ± 0.09, with the group reporting no itching accounting for the highest proportion (87.0%). p-value < 0.001 so the difference in NRS scores before and after treatment is statistically significant.

Table 4. Improvement in lesion severity

Lesion severity	Pre-treatment (n, %)	Post-treatment (n, %)	p-value t - test
Mean ± SD	38.38 ± 18.13	1.83 ± 0.81	< 0.001
No lesion	0 (0.0)	45 (83.3)	
Mild	6 (11.1)	7 (13.0)	
Moderate	28 (59.1)	2 (3.7)	
Severe	20 (37.0)	0 (0.0)	
Total	54	54	

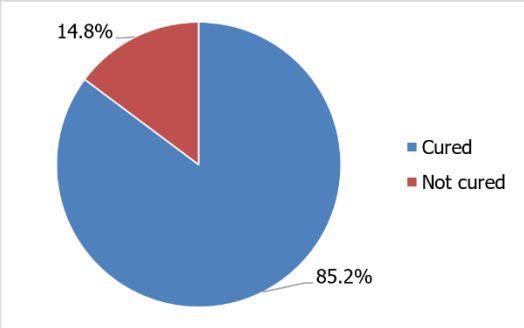

Figure 1. Cure rate of patients (n = 54)

After treatment, the patients' average number of lesions was 1.83 ± 0.81, with the group having no lesions accounting for the highest proportion (83.3%). p-value < 0.001 so the difference in the number of lesions before and after treatment is statistically significant.

After treatment, 85.2% of patients were cured.

3.3. Side effects

Table 5. Side effects of sulfur cream

Side effects	Frequency (n)	Percentage (%)
Erythema	2	3.7
Stinging, burning	3	5.6
Dry skin	5	9.3
Total	6	11.1

11.1% of patients experienced side effects, with dry skin being the most common at 9.3%.

IV. DISCUSSION

Our study shows that the mean age of the patients was 59.2 ± 16.5. This result is higher compared to some international studies by authors such as Saborni Dey in India (47.2 ± 41.5) [7], Goksen Ertugrul in Turkiye (32.4 ± 15.7) [9] and Afshan Saeed in United States (38.2 ± 6.3) [14]. Scabies is a contagious disease not related to age, so the differences between studies may stem from variations in sample size and geographical location. Furthermore, we observed that females accounted for a higher proportion than males, which aligns with the findings of Saborni Dey (females accounted for 56.6%) [7] and Goksen Ertugrul (females accounted for 50.5%) [9]. However, this differs from the studies by Nguyen Van An and Do Thi Thu Hien in Vietnam, where the male proportion was higher, at 59.8% [1] and 73.8% [3] respectively. Unlike some diseases influenced by hormones (e.g., autoimmune diseases, acne), scabies does not have a pathogenesis linked to male or female hormones, so both men and women have a similar risk if equally exposed to the source of infection. We recorded that as many as 72.2% of patients had a history of close contact with the source of scabies infection. This result is consistent with the studies by Nguyen Van An (86.2%) [1], Do Thi Thu Hien (66.7%) [3] and Saborni Dey (76.6%) [7]. Scabies is a communicable disease, an exposure time of less than 20 minutes is sufficient for transmission, especially through activities like holding hands, sharing a bed, and potentially through shared household items such as clothes, towels, blankets, pillows and bed sheets [11].

Among the typical scabies lesions, we found that vesicles accounted for the highest proportion (96.3%), while burrows accounted for the lowest proportion (35.2%). This is consistent with the studies by Do Thi Thu Hien (2019) and Huynh Nhu Huynh (2018), with vesicle rates of 100% and 97.3% and burrow rates of 16.7% and 10.6%, respectively [3], [4]. Although the burrow is a specific symptom, its small size, especially in individuals who bathe frequently, can make it difficult to see with the naked eye and thus may be missed during examination [11]. We observed that the interdigital spaces of the hands and feet had the highest proportion of scabies lesions (90.7%), while no lesions were recorded in the head, face or neck area. This result is consistent with the studies by Do Thi Thu Hien and Millicent H. Osti, both showing that

the hands and interdigital web spaces were the most common locations, at 90.5% and 65.7% respectively [3], [12]. The reason why scabies lesions often appear in certain locations is not yet fully understood. The hypothesis suggests that areas with thin, moist skin, such as the interdigital web of the hands and feets and external genitalia, allow the mite to easily penetrate and cause skin lesions. Furthermore, these areas are frequently involved in daily activities and can easily transmit the disease to others (holding hands, sharing objects) [11].

After 2 weeks of treatment, we noted a significant improvement in itching symptoms, as the mean NRS score decreased from 7.63 ± 1.93 to 0.32 ± 0.09. While the group with severe itching initially accounted for the highest proportion (81.5%), after 2 weeks, the group with no itching accounted for the highest proportion (87.0%). Simultaneously, the improvement in lesions was also evident after 2 weeks of treatment, with 83.3% of patients having no lesions and no severe lesions recorded. Based on the criteria for curing a patient (reduced itching, decreased old lesions and no new lesions), we recorded an 85.2% cure rate after 2 weeks. This rate is consistent with the results of studies by Nguyen Thi Le Quyen (91.3%) [6] and Goksen Ertugrul (83,5%) [9]. When applied to the skin, sulfur is metabolized into pentathionic acid, sulfur dioxide and hydrogen sulfide, which inactivate sulfhydryl groups in the enzyme systems of the scabies, thereby acting as a parasiticide. In addition to this main mechanism, sulfur has mild keratolytic properties, helping to shed the stratum corneum containing the burrow and also possesses local anti-inflammatory properties, partially inhibiting inflammatory responses, contributing to the reduction of itching. This demonstrates that 7% sulfur cream is an effective choice for treating scabies [10].

We also recorded that 11.1% of patients experienced side effects, including dry skin, erythema and a sensation of stinging or burning, with dry skin being the most common (9.3%). In studies using sulfur, Nguyen Thi Le Quyen showed that only 1.3% of patients experienced redness [6] and 6.6% of patients experienced dry skin in Aleena Nasir's study using 5% sulfur [13]. This difference may be due to the higher sulfur concentration in our study compared to previous authors, but overall, the side effect rate is quite low and transient.

V. CONCLUSION

Our study shows that 7% sulfur cream is highly effective in reducing itching, reducing skin lesions and curing scabies. Furthermore, the low and transient rate of side effects suggests it is safe for patients. Although the study size is small and the follow-up period is short, this provides reliable scientific evidence, serving as a premise for subsequent in-depth research.

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