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Brief Report

Identifying the time to cure for patients with classic scabies after infection control intervention in acute care hospital settings

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Scabies is a re-emerging parasitic disease, particularly in hospitalized patients. This is a retrospective study analyzing adult patients with scabies admitted to a referral university hospital between 2008 and 2018. All patients were treated an average of 3 times using scabicides; the median isolation period and time to cure were 14 and 15 days, respectively.

Scabies has re-emerged globally as a highly prevalent skin disease. Scabies is a contagious disease, and institutional outbreaks are difficult to control.[1,2] When a scabies outbreak occurs, it persists in most hospitals for an average of 15 weeks.[2] Patients with crusted scabies should be isolated until the completion of treatment.[2] Because of the relatively low parasite burden of classic scabies compared with crusted scabies, isolation of the exposed person is recommended for only 1 day after treatment with topical agents.[2-4] However, there is little information regarding the optimal isolation period for preventing secondary transmission of classic scabies, especially in health care settings. The aim of our study was to investigate isolation periods for classic scabies in health care settings.

METHODS

This study was conducted at Soonchunhyang University Hospital, a 730-bed referral hospital in Seoul, Republic of Korea. Retrospective data of patients with confirmed scabies were obtained for January 2008 through May 2018. The study was approved by the institutional review board and ethics committee of the hospital.

Patients with symptoms such as itching, rash, eruption, papules, and crusts were referred to a dermatologist by attending physicians. The dermatologist performed skin scraping of all suspected scabies-infected lesions after applying a drop of mineral oil. Skin samples were examined at ×100 magnification. A diagnosis of scabies was made based on identification of mites, eggs, or feces. Patients with scabies were treated with 1% lindane cream, 5% permethrin cream, or both. Permethrin cream has been available at our hospital since July 2016 and has become the recommended agent for initial treatment. A dermatologist instructed patients and caregivers to apply the cream evenly over the patient's entire body, except the head and face. Contact precautions, including the use of disposable gloves and gowns, were strictly enforced. A cure of scabies was confirmed by repeated microscopic tests made by the dermatologist. We collected baseline characteristics, such as age, sex, underlying diseases, transfer from another institution, and walking status. The time interval between symptom onset and diagnosis of scabies, number of treatments, isolation periods, exposure of health care workers per patient, and types of topical agents were investigated. We also investigated the period between the application of topical agents and the elimination of scabies, as confirmed by a dermatologist.

RESULTS

A total of 24 patients with scabies were analyzed in this study (Table 1). None of the patients had crusted scabies. The time interval between the onset of symptoms and the diagnosis of scabies was an average of 5 days (interquartile range [IQR], 2-14 days). Thirteen patients used lindane, 10 patients used permethrin, and 1 patient used both agents. All patients were treated an average of 3 times (IQR, 2-3 times). The median number of health care workers exposed

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Table 1
Demographic data of patients with scabies

Characteristics	Study cohort (n = 24)
Age, median (range)	73 (45-91)
Male (%)	12 (50)
Previous residence (%)	
Home	8 (33)
Long-term care facilities	16 (67)
Underlying diseases (%)	
Hypertension	12 (50)
Diabetes	5 (21)
Chronic kidney disease	6 (25)
Cardiovascular disease	5 (21)
Cerebrovascular accident	8 (33)
Parkinson disease	2 (8)
Walking status (%)	
Self-ambulation	13 (54)
Bedridden	11 (46)
Treatment (%)	
Lindane 1%	13 (54)
Permethrin 5%	10 (42)
Both	1 (4)
Number of treatments, median (IQR)	3 (2-3)
Time interval between onset of symptoms and diagnosis of scabies-days, median (IQR)	5 (2-14)
Exposure of health care workers to scabies per patient, median (IQR)	19 (13-25)

IQR, interquartile range.

to a scabies patient was 19 (IQR, 13-25). Figure 1 shows the progress of treatment for 17 patients diagnosed with scabies cured by a dermatologist. The consultation with a dermatologist and the application of topical agents are noted in Figure 1. Patient 3 was treated twice using lindane, with isolation being discontinued 1 day after diagnosis. He was reisolated after 1 week, following reevaluation by a dermatologist, because of persistent scabies infestation. Patient 17 discontinued isolation after 3 treatments with permethrin cream and being confirmed scabies-free by a dermatologist. However, the patient was rediagnosed with scabies 2 months later, during hospitalization. The median isolation period and time to cure were 14 days (IQR, 8-15 days) and 15 days (IQR, 8-18 days), respectively.

DISCUSSION

Ideal isolation periods for classic scabies have not been determined. This study reports important information regarding treatment outcomes associated with classic scabies after infection control intervention in an acute care hospital setting. Approximately 60% (10 of 17) of patients with in-hospital scabies included in this study were rediagnosed with scabies after the first treatment, and it took approximately 2 weeks to eliminate the condition, according to dermatologic examination.

In this study, 67% of patients were referred from long-term care facilities. Because of an aging society, long-term care facilities have seen an increasing incidence of scabies.[5] There is no general policy for early screening and detection in new patients in health care settings.[2,5] Therefore, special attention must be paid when a patient has scabies symptoms and risk factors, such as residence in a nursing home, prior admission in other health care institutions, age, performance status, and immune status.[6] Patients with risk factors should be asked about scabies symptoms at admission and undergo scabies examination, if needed.

The higher infectivity potential of crusted scabies suggests a need for meticulous isolation precautions and environmental control as well as a combination of repeated topical and oral agents and testing to assess if a patient is cured before discontinuation of isolation; this is in contrast to its classic counterpart, where clear recommendations have yet to be developed. Contact isolation for 24 hours is usually recommended.[2-4] In our decade of experience with scabies, the persistence of classic scabies, even after proper treatment, was observed for up to 2 weeks when patients were in isolation in acute care hospital settings. This gap in knowledge of proper isolation periods for classic scabies might be significant for understanding scabies control in health care settings.

The doubtful efficacy of a single application of antiscabies agents likely necessitates retreatment after a certain period, as suggested in European guidelines[7]; the cure rate increased after a second treatment with permethrin from 75%-99%.[8] In our study, the median number of treatments needed for cure was 3; only 2 of 17 patients were cured after 1 day of scabies treatment. The low efficacy of a single treatment is probably associated with inappropriate skills in applying

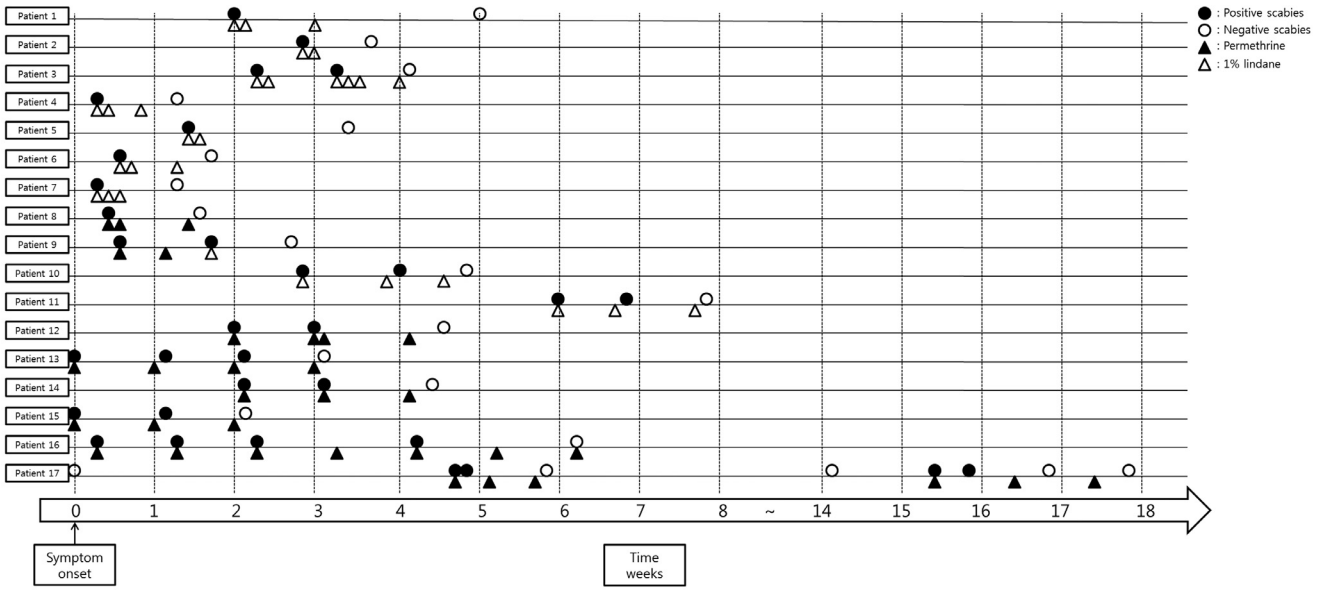

Fig 1. A timeline of cured scabies patients, as confirmed by dermatologists.

topical agents or reinfestation via remnant scabies from an inadequately controlled environment or linens, even after education by trained staff.

Classic scabies also accounts for a significant number of outbreaks in health care settings[5,9]; therefore, health care workers may be easily exposed. An outbreak of scabies places a large financial burden on health care facilities.[4] In the Republic of Korea—and in many countries with a high population density—hospitals often have 4-6 patients occupying a room, creating a challenge for maintaining proper environmental control for the minimization of reinfestation from fomites. Moreover, immunocompromised patients are more likely to transmit scabies.[10] Considering the limited effectiveness of scabicides in such circumstances, we suggest that patients with scabies have their cure confirmed by a dermatologist before discontinuation of isolation in acute care hospital settings.

CONCLUSIONS

Although the number of enrolled patients was small, to our knowledge, this is the first study of scabies treatments to include inpatients, with scabies followed by microscopic dermatology examination. However, this was also a retrospective study, and thus we cannot identify which factors contributed to a delayed cure in individuals. Further studies of this issue are needed.

Our study showed how the isolation principle currently recommended may be inappropriate. For prevention of scabies transmission, it is necessary for a dermatologist to judge the effectiveness of treatment before discontinuing isolation.

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