

## Case Report



# Recurrence of Classic Scabies in a Patient Who had Unchanged Tie String of the T-Cannula

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## ABSTRACT

A 64-year old woman who underwent lung transplantation and had T-cannula contracted classic scabies from her daughter. The patient was treated with 5% permethrin 10 times and had two consecutive negative follow-up microscopic examinations. However, the patient had recurrent symptoms and diagnosed with recurrent classic scabies 22 days after the last treatment. Unchanged tie string and unapplied topical agent around the T-cannula skin lesion may be reasons for recurrence. Thus, accurate application of topical treatment and changing the tie string of the t-cannula is needed to prevent a recurrence.

**Keywords:** Scabies; recurrence; T-cannula; classic scabies

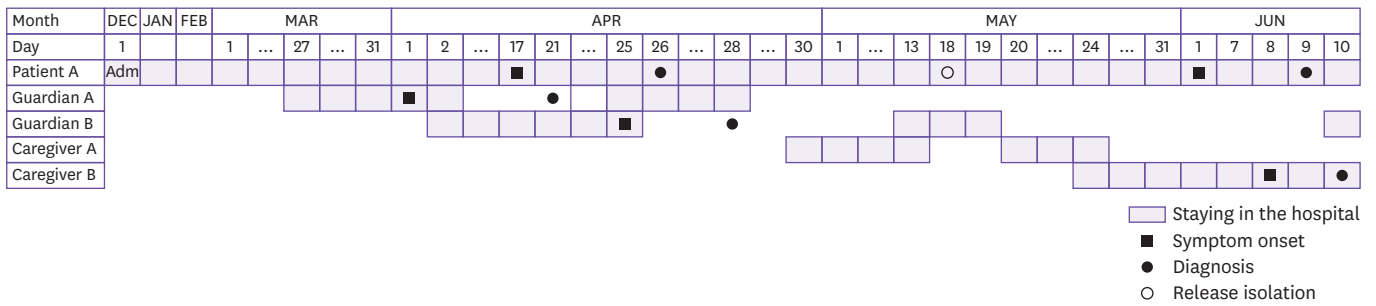
## INTRODUCTION

Scabies is a common contagious disease caused by the scabies mite *Sarcoptes scabiei* variety *hominis* [1]. It is challenging to infection practitioners because is often neglected, difficult to diagnose, and has the potential for causing a nosocomial outbreak. Furthermore, relapse is not infrequent and the rate of scabies recurrence was 44.3 - 46.8% in Japanese and Saudi Arabian studies [2, 3]. However, distinguishing from relapse and post-treatment itch is difficult because the sensitivity of microscopic examination is low [2]. Relapse or recurrence may be associated with patients' underlying disease [2], inaccurate application of topical agents, and unmanaged bed linens [1]. Herein, a recurrent scabies case probably due to unchanged T-cannula tie string is reported.

## CASE REPORT

A 64-year old female (patient A) was diagnosed with non-specific interstitial pneumonia and admitted to a tertiary care hospital due to aggravating dyspnea on December 1, 2020. The patient underwent tracheostomy and lung transplantation on December 7, 2020. Moreover, the patient has been hospitalized for recurrent respiratory failure and supportive care. Consequently, the patient's daughter (guardian A) stayed in the ward with the patient as a

Scabies relapse due to unchanged tie of T-cannula



**Figure 1.** Timeline of clinical course of patient and guardians. Adm, admission.

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**Ethics Statement**  
Informed consent was obtained from the patient for publication of this case.

**Conflict of Interest**  
No conflict of interest.

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caregiver (Fig. 1) since March 27, 2021. The daughter developed an interdigital itching papule on April 1, and left the hospital on April 2. The daughter visited a primary dermatologic clinic and diagnosed with microscopically confirmed scabies on April 21 and applied 5% permethrin. The daughter returned to the ward on April 25 and reported to a nurse her scabies diagnosed on April 26. Guardian A had a positive follow-up microscopic examination on April 28 and left the hospital.

After notification of the daughter’s scabies diagnosis, patient A was seen by a dermatologist on April 26. Consequently, multiple erythematous papules were observed on both axilla, right-hand finger webs, abdomen, and back. Multiple scabies and eggs were seen in microscopy from scraping skin (axilla and hands) specimens, diagnosed as classic scabies. Patient A had developed an itch on April 17, and an antihistamine was prescribed with suspicion for drug eruption. After scabies diagnosis, the patient applied 5% permethrin for 2 consecutive days and 2 consecutive days after 1 week (days 0, 1, 8, and 9) and contact precaution with donning gown and gloves was implemented. Bed linen, mattress, and clothing were discarded. Follow-up microscopic examination was positive on May 6. Therefore, permethrin was applied on 0, 1, 4, and 5 days as previously described [4]. Follow-up microscopic examination was negative on May 14. However, the patient had an itching sensation, and permethrin was reapplied for two consecutive days. The patient was released from contact precaution on May 18 (22 days after diagnosis) due to two consecutive negative follow-up microscopic examinations on May 17. We considered cure as she had two consecutive negative follow-up microscopic examination and clinical improvement in skin lesions without new lesion [5, 6]. The patient’s symptom was considered a post-treatment itch. However, the patient developed aggravating itching sense on June 9 (22 days after last treatment) with pruritic nodules around the t-cannula tie string, and scabies was noted on microscopic examination. The patient’s t-cannula tie string was found to not change after scabies diagnosis, and permethrin was not applied around the t-cannula tie string. We changed the tie string and educated to apply permethrin cream around the t-cannula adequately. The patient was treated with 5% permethrin four times (0, 1, 8, and 9 days) and retreated with 5% permethrin five times every 3 days because the follow-up microscopic examination was positive. Then she had two consecutive negative follow-up microscopic examination with healing lesions and no itching sense.

Patient A’s husband (guardian B) who stayed with patient A from April 2 to 25 also developed an itching sensation on April 25 and was diagnosed with scabies at a primary dermatology clinic. Caregiver B who cared for patient A since May 24 developed a papule on the trunk and wrist and an itching sense and diagnosed with scabies by microscopic examination.

Moreover, caregiver B had been worked as a caregiver at another hospital within 2 months before working in the hospital of this study. In addition, caregiver B stated in an interview that he does not have a history of scabies.

Contacts including patients and caregivers of same room and healthcare workers were seen by dermatologist and applied permethrin cream once, and observed for newly developed itching sense or skin lesions for incubation period (6 weeks). There was no further cases.

## DISCUSSION

Recurrent scabies was reported although the patient was treated with 5% permethrin 10 times and had two consecutive negative follow-up microscopic examinations. Inaccurate application of topical agent and unchanged tie string of the t-cannula may be responsible for this case. Topical treatment should be applied to all skin regions including the scalp, groin, navel, external genitalia, finger, toe web spaces, and the skin beneath the ends of the nails at night and left in place for 8 - 12 h [7]. However, patients, guardians, caregivers, and healthcare workers did not recognize the importance of applying topical agent skin around the t-cannula in this case. In addition, not only bed linen, mattresses, and clothing but also the tie string of the t-cannula which is a fabric material should be washed in hot water. It is believed that no report exists on recurrent scabies cases associated with unchanged tie string of the T-cannula. Thus, this case has implications for scabies management in patients with T-cannula.

Secondary transmission of scabies from patient A to caregiver B is possible, although the contact time was short as 15 days before symptoms developed in caregiver B. Considering the incubation period of the first infestation is 3 - 6 weeks [1], a short incubation period in caregiver B may be a reinfestation although he stated in an interview that he did not have a history of scabies. It is also possible that caregiver B was infected in another hospital because caregiver B had been working as a caregiver in another hospital. Thus, the importance of treating household contact cannot be overemphasized.

It is unclear in this case if incorrect application of therapy, the unchanged tie string, or reinfection from contacts contributed to the recurrence. Although this limitation, this case has implication for importance of accurate application of topical treatment and changing the tie string of the t-cannula for preventing a recurrence of scabies.

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