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Journal

Dermatology Online Journal, 24(9)

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Publication Date

2018

DOI

10.5070/D3249041414

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Scabies presenting as cutaneous nodules or malar erythema: reports of patients with scabies surreptitious masquerading as prurigo nodularis or systemic lupus erythematosus

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Abstract

Scabies surreptitious is a unifying term that represents non-classical presentations of scabies mite infestation. A patient with scabies surreptitious is described: a man with scabies masquerading as prurigo nodularis. The 91-year-old man had metastatic prostate cancer and presented with diffuse pruritic nodules. Prurigo nodularis was suspected; however, the biopsy revealed scabies mites in the stratum corneum. He was successfully treated with topical permethrin 5% cream and oral ivermectin. In addition, the features of a woman with scabies mimicking systemic lupus erythematosus are summarized. The 47-year-old woman had idiopathic thrombocytopenic purpura and presented with malar erythema and a positive antinuclear antibody (titer 1:320). A diagnosis of systemic lupus erythematosus was entertained until skin scraping and mineral oil preparation revealed scabies mites; she was successfully treated with oral ivermectin. In conclusion, *Sarcoptes scabiei* infestation can present with atypical clinical morphology and an absence of classical lesions such as burrows conventionally distributed in the interdigital web spaces, volar wrists, periumbilical area, or genitalia. Scabies surreptitious is a term that has been designated to describe these unusual presentations. Prurigo nodularis and systemic lupus erythematosus can be added to the litany of conditions masquerading as scabies and are included amongst the guises of scabies surreptitious.

Keywords: erythematosus, incognito, lupus, mite, nodularis, nodule, prurigo, scabies, surreptitious, systemic

Introduction

Sarcoptes scabiei var. *hominis* is a mite that causes infestations in humans with over 300 million cases per year [1]. The classical presentation is characterized by generalized pruritus and lesions such as burrows usually found in the finger space webs [2]. However, infestations with scabies can present with unusual morphologies – lacking typical lesions or clinical clues to the underlying parasite. In this setting, the infestation has been referred to as scabies surreptitious (Box 1), [3, 4]. A man whose scabies mimicked prurigo nodularis is described, and the features of a woman with scabies mimicking systemic lupus erythematosus are reported. In addition, the subtypes of scabies surreptitious are summarized.

Case Synopsis

A 91-year-old man presented to his primary care physician with a one-day history of an itchy rash on his chest and arms. Acute folliculitis was suspected and he was empirically placed on cephalexin 500mg twice daily for 10 days. In addition, betamethasone dipropionate 0.05% ointment was prescribed twice daily since the lesions were also pruritic. His lesions persisted; therefore, the topical corticosteroid ointment was switched to mometasone 0.1% cream, he was started on a methylprednisolone dose pack, and he was referred to a dermatologist for evaluation.

Blistering disorders
 Bullous
 Dermatomyositis herpetiformis-like
 Connective tissue disease
 Dermatomyositis-like
 Systemic lupus erythematosus-like
 Infiltrative disorders
 Langerhans cell histiocytosis-like
 Urticaria pigmentosa-like
 Miscellaneous
 Incognito
 Scalp
 Papulosquamous disorders
 Crusted
 Hidden
 Pityriasis rosea-like
 Purpuric disorders
 Ecchymoses
 Reactive erythema
 Urticaria

Box 1. *Subtypes of scabies surrepticius*

The patient's past medical history was significant for metastatic prostate cancer involving bones and lymph nodes after prostatectomy ten years ago. After bony involvement was discovered 18 months prior to presentation, he started androgen deprivation therapy and subsequently completed radiation therapy for a right femoral neck metastatic lesion. Since then, he has not developed any new symptoms or pain, and his prostate specific antigen has remained suppressed.

Cutaneous examination showed pruritic, excoriated, erythematous nodules on the chest, abdomen, upper back, flanks, axilla, and proximal upper extremities (Figure 1). There were no burrows between finger webs or elsewhere on the body. Lesions were absent below the waist, including the scrotum.

His left chest also demonstrated a 12×8 mm dark brown and tan, irregularly bordered, pigmented lesion (Figure 2). There were no palpable neck, axillary, or inguinal lymph nodes. His toenails showed white dyschromia on their surface; there were no burrows on the dorsal feet or toe webs.

His workup included not only a culture for bacteria but also skin biopsies of the pruritic abdominal nodules for hematoxylin and eosin staining and direct immunofluorescence studies. The pigmented lesion on the chest was also biopsied.

Microscopic examination of the erythematous nodule on his abdomen revealed a mixed dermal infiltrate composed of numerous eosinophils with lymphocytes and histiocytes; within the stratum corneum, mite exoskeleton was observed (Figure 3). The direct immunofluorescence studies were negative for IgG, IgM, IgA, C3, Cq1, and fibrinogen. The pigmented lesion demonstrated a poorly circumscribed compound melanocytic proliferation

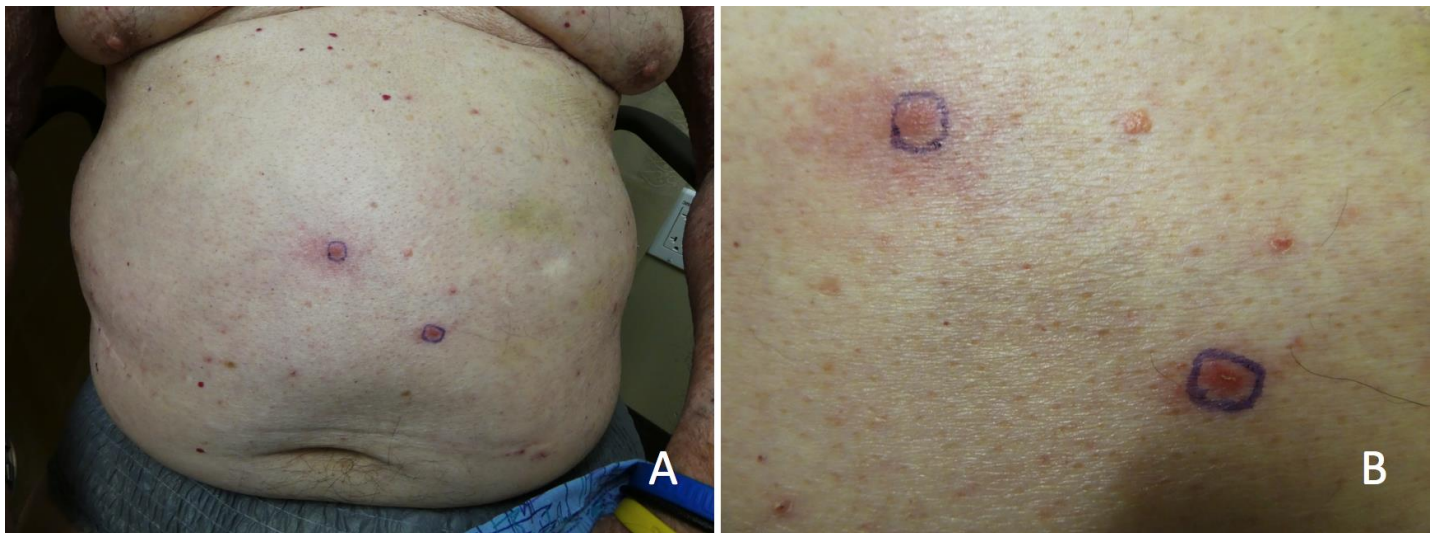


Figure 1. Distant A) and closer B) views of the clinical features of a scabies infestation that presented as multiple pruritic, excoriated, erythematous nodules on the abdomen (some of which are circled in purple ink), chest, upper back, flanks, axilla, and proximal upper extremities of a 91-year-old man.

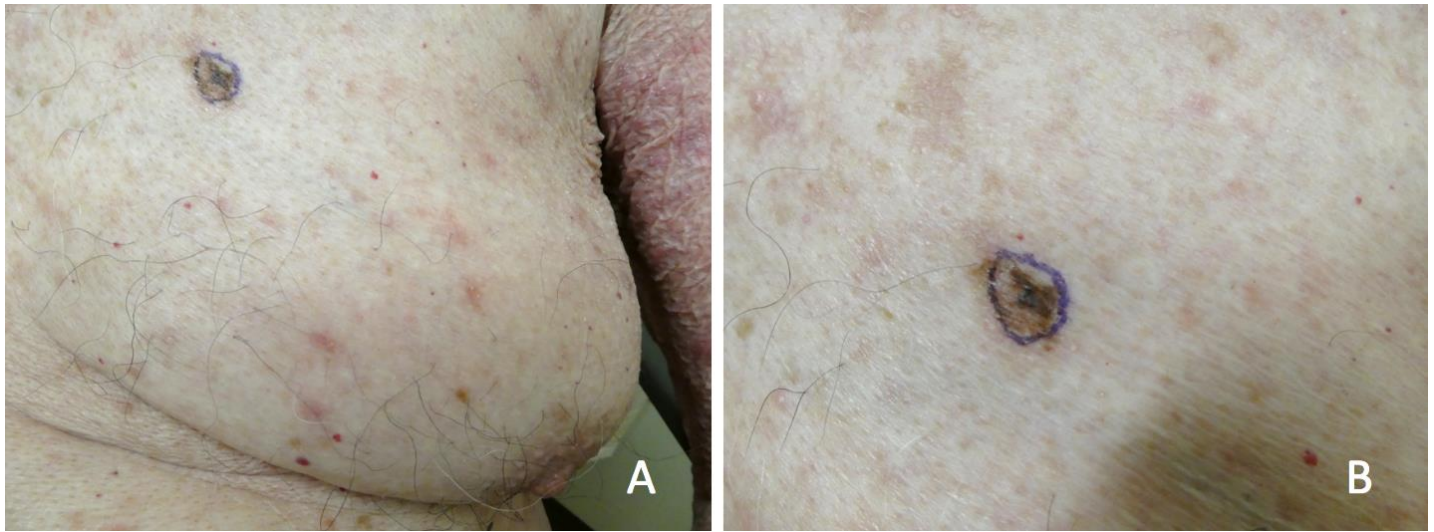


Figure 2. Distant A) and closer B) views of the clinical features of a melanoma that presented incidentally as a 12×8 mm hyperpigmented lesion (which is circled in purple ink) on the left chest of a 91-year-old man.

with invasion of malignant melanocytes into the superficial dermis; there was also pagetoid spread of melanocytes into the overlying epidermis (Figure 4).

Correlation of the clinical history and pathologic findings of the prurigo nodularis-like lesions established the diagnosis of not only nodular scabies, but also scabies incognito, both subtypes of scabies *surrepticius*. The pigmented lesion on the chest was a pT1a melanoma with a Breslow thickness of 0.2mm.

The bacterial culture grew methicillin-resistant *Staphylococcus aureus* and *Klebsiella pneumoniae*. He was treated with doxycycline 100mg twice daily and ciprofloxacin 500mg twice daily for ten days.

The scabies infestation was initially treated with permethrin 5% cream from neck to toe; triamcinolone 0.1% cream, applied twice daily to affected areas, was used for symptomatic treatment of the associated pruritus. However, the rash persisted; therefore, he was prescribed 12mg oral ivermectin to be taken on day one and on day eight. Both his scabies-associated symptoms and skin lesions subsequently resolved completely.

The melanoma was excised. After confirmation of clear margins, the wound was repaired with a side to side closure. There has been no recurrence of his scabies infestation, and he is being followed with

total body skin checks every 3 months for the next year and every 6 months for the subsequent 4 years.

Case Discussion

Scabies is a common parasitic infection caused by the mite *Sarcoptes scabiei* [5]. The estimated worldwide prevalence is approximately 300 million cases annually [2]. Individuals with scabies infestation usually present with generalized pruritus that typically spares the head and face and is worse at night. Cutaneous examination usually reveals

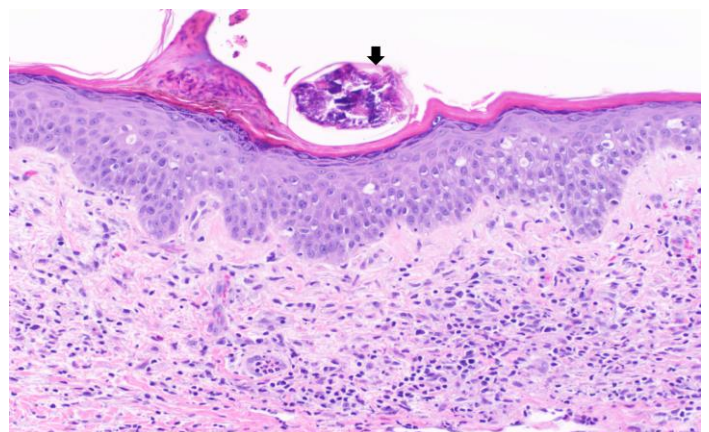


Figure 3. Pathology features of a scabetic nodular lesion from the abdomen of a 91-year-old man. An intact intraepidermal mite (*Sarcoptes scabiei*) in cross section, characterized by a thin eosinophilic exoskeleton (arrow) is present in the stratum corneum. There is a lymphohistiocytic infiltrate in the dermis. H&E, 200×.

burrows which most often localize to the interdigital web spaces, but may also be present in the axillae, on the breasts, on the buttocks, on the elbows, on the flexor surfaces of the wrists, and on the genitalia. There are often secondary inflammatory papules, pustules, excoriations, and/or vesicles in affected areas [1].

The diagnosis of a scabies infestation is typically established by demonstrating the mite, its excrement (scybala), or its eggs on microscopic examination of a specimen obtained by skin scraping [6]. Alternative diagnostic techniques include skin biopsy, burrow ink test, and polymerase chain reaction [1, 7, 8]. Several noninvasive techniques such as dermatoscopy, in vivo reflectance confocal microscopy, optical coherence tomography, and videodermoscopy have also been described [9].

There are a variety of treatments available for scabies infestations. Topical 5% permethrin cream is very commonly used and is often effective. Although not approved by the United States Food and Drug Administration for the treatment of scabies, oral ivermectin 200mcg/kg in two separate doses (each

separated by one week) has also been shown to be as effective as permethrin [6]. Other less commonly used topical agents include benzyl benzoate, crotamiton, ivermectin, lindane, malathion, and sulfur [2].

In contrast to the classical manifestations of scabies, unusual presentations can occur, mimicking other conditions. These various subtypes of scabies have more recently been referred to as scabies surrepticius (Box 1), [3, 4].

A rare presentation of scabies surrepticius, that – to the best of our knowledge – has only previously been described once, is scabies imitating systemic lupus erythematosus. The patient with scabies mimicking systemic lupus erythematosus was a 15-year-old girl who presented with mouth ulcers, pruritic malar erythema, photosensitivity, and pleuritic chest pain (Table 1), [10]. She was subsequently found to have a positive antinuclear antibody (ANA) and normochromic, normocytic anemia [10]. We have also evaluated and treated a 47-year-old woman whose scabies infestation presented as malar erythema mimicking systemic lupus erythematosus

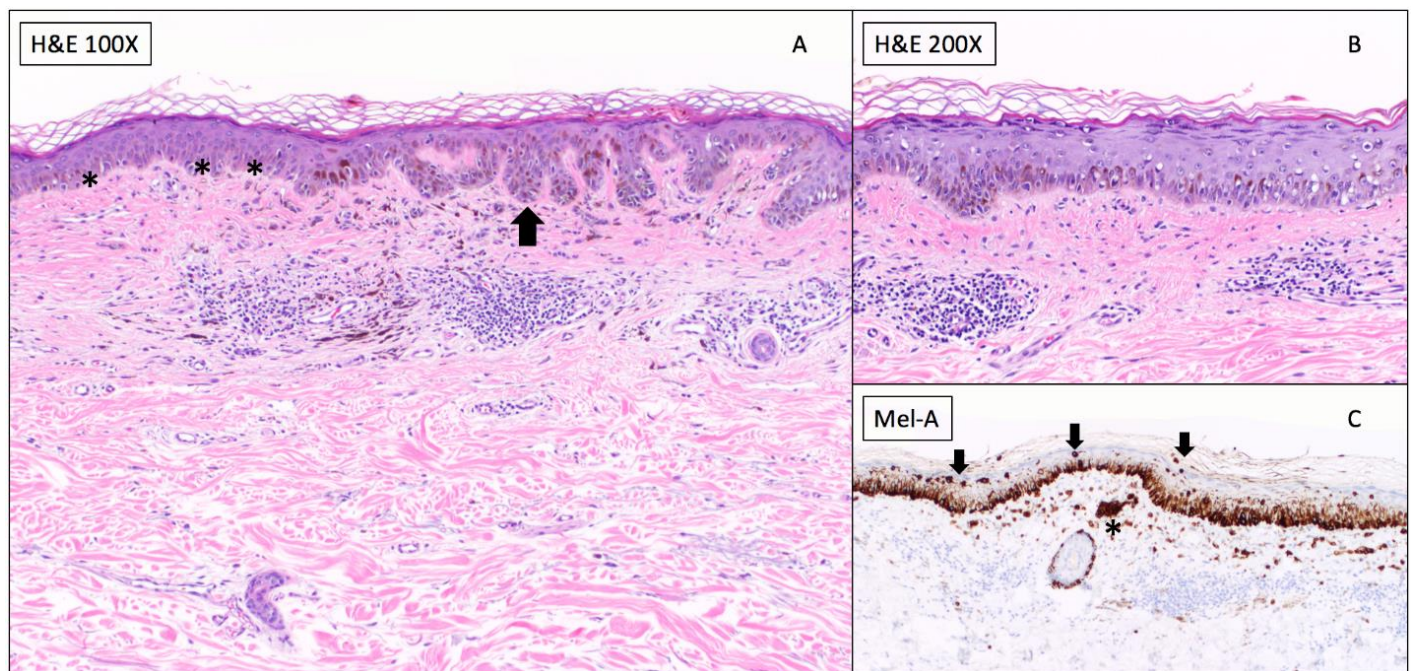


Figure 4. Pathology features of a 12 x 8 mm hyperpigmented lesion from the left chest of a 91-year-old man. Low A and C) and higher B) magnification views show an aberrant intraepidermal distribution of pale pigmented melanocytes both as confluent single cells (asterisks) and incipient nests (arrow) along the basal layer A). There is a confluence of single melanocytes along the dermal epidermal junction in addition to subtle pagetoid or "buckshot" scatter of atypical melanocytes demonstrated both on hematoxylin and eosin stained sections B) and Melan-A immunohistochemistry (arrows, C). C) Invasive melanoma with a dermal nest (asterisk) and single melanocytes is identified to a Breslow depth of 0.2 millimeters. H&E, A) 100×; B) 200×; and C) Melan-A immunohistochemistry, 100×.

(Table 1). However, the correct diagnosis of scabies was made by microscopic examination of a skin scraping, and her symptoms resolved with topical permethrin.

Interestingly, concurrent systemic conditions — such as systemic lupus erythematosus — can alter the presentation of scabies (Table 2), [11-22]. Patients with systemic lupus erythematosus tend to express a more diffuse and severe scabetic infection that does not spare the head and face. They also appear to develop crusted scabies at a higher rate.

Similar to our 91-year-old male patient, scabies can also mimic prurigo nodularis. Nodular scabies was initially described by Ayres and Anderson in 1932 [23]. Subsequently, in 1973, Konstantinov and Stanoeva described 136 individuals with the nodular subtype of scabies, representing 7% of their total cases. They described the lesions as red or reddish-brown, pruritic nodules which predominantly localized to the axilla and groin. Despite treatment, most lesions persisted for longer than a month and some up to a year. Nodular scabies is considered to be a hypersensitivity reaction to retained mite parts and antigens since mites are not typically found in lesions older than one month [24].

In addition, our male patient had scabies incognito. This subtype of scabies is characterized by alteration of the classic presentation and lesion morphology related to systemic or topical corticosteroids [25]. It was first described by A.L. Macmillan in 1972 in a 3-month-old boy who developed diffuse scabies with hundreds of raised, red burrows after being treated with high potency topical corticosteroids [26]. In 1975, M. Orkin termed this phenomenon “scabies incognito,” an adaptation from the condition “tinea incognito,” which was described by Ive and Marks in 1968 [25].

Cultures from our male patient’s lesions grew two pathogenic organisms: *Klebsiella* and methicillin-resistant *Staphylococcus aureus*. Hence, our male patient’s lesions were also either infected or impetiginized. Oral antibiotics were used to eliminate the bacteria from the skin lesions.

Secondary bacterial infections of scabies lesions have been previously recognized. Soft tissue infections such as impetigo, cellulitis, and abscesses are most common, but progression to bacteremia with distant spread of infection is possible [27]. In one study by Steer et al., 30% of school-aged children in Fiji with scabies infestation also had a bacterial superinfection. Group A *Streptococcus* and/or *Staphylococcus aureus* were the most common organisms causing secondary infection and were isolated in 80% and 57% of bacterial cultures respectively [28].

Although our male patient was referred for his prurigo nodularis-like lesions, a complete cutaneous examination revealed an early melanoma and dermatophyte infection of his toenails. Therefore, individuals with mite infestations may unsuspectingly have concurrent neoplastic or infectious conditions that can be discovered during complete cutaneous examination. Once the mite infestation has resolved, appropriate therapy for other concurrent disorders or infections can be undertaken.

Conclusion

Scabies surreptitious defines the clinical subtypes of scabies in which the morphology of the clinical lesions is atypical in presentation. Our 91-year-old **male patient’s scabies infestation mimicked prurigo nodularis**; in contrast, the clinical presentation of scabies in our 47-year-old female patient imitated systemic lupus erythematosus. In addition, our **male patient’s nodular lesions demonstrated** scabies incognito and a bacterial superinfection. The clinician needs a heightened awareness of the possibility of scabies surreptitious in patients with cutaneous lesions attributable to another condition that do not respond to therapy as expected. The correct diagnosis may be suspected when other family members present with classic lesions of scabies infestation or if mite, scybala, or eggs are demonstrated. Patients with scabies surreptitious typically respond promptly to therapy with topical agents such as permethrin 5% cream, systemic drugs such as ivermectin, or both.

Table 1. Characteristics of scabies surreptitious patients whose mite infestations mimic systemic lupus erythematosus^a.

C	A R G	Med Hx	Symp	Lesion Morphology	Lab Studies	Dx	Tx	Recu r	Ref
1	15 Ca W	None	Mouth ulcers, Photo, PCP	Pruritic, erythematous, scaly plaques in the malar area, nasolabial folds, frontal area and between the fingers	MID anemia, + ANA, - anti-Sm, - anti-dsDNA	SS	5% Per	No	[15]
2	47 AA W	ITP	Gen prur	Malar erythema, desquamative skin rash on chest and arms, burrows in interdigital web spaces	TCP, + ANA (titer 1:320)	SS	Iver & 5% Per	No	CR ^b

^aAbbreviations: A, age (years); AA, African-American; Abs, antibodies; ANA, antinuclear antibody; C, case; Ca, Caucasian; CR, current report; dsDNA, double strand deoxyribonucleic acid antibody; Dx, diagnosis of scabies infestation method; G, gender; Gen prur, generalized pruritus; ITP, idiopathic thrombocytopenic purpura; Iver, ivermectin oral; Med Hx, medical history; MID, mild iron deficiency; Per, permethrin topical cream; PCP, pleuritic chest pain; Photo, photosensitivity; R, race; Recur, recurrence; Ref, reference; Sm, Smith antibody; SS, skin scrape; Symp, symptoms; TCP, thrombocytopenia; Tx, treatment; W, woman; &, and; +, positive (present); -, negative (absent); %, percent.

^bA 47-year-old African-American woman was admitted to the hematology service for a flare of her idiopathic thrombocytopenic purpura. Within a week of admission, and while on intravenous methylprednisolone, she developed widespread pruritus in conjunction with malar erythema and desquamative skin rash on the chest and arms. Serologic positivity for antinuclear antibody (ANA) at a titer of 1:320 was detected. The patient's intravenous methylprednisolone dosing was increased, but the pruritus and rash failed to improve. The dermatology service was consulted. Cutaneous examination was significant for scale in the interdigital web spaces with subtle linear, tunnel-like excavations on the finger webs. Skin scraping with mineral oil preparation showed evidence of scabies: mites, eggs, and scybala. Treatment with oral ivermectin, along with topical permethrin 5% cream, resulted in full resolution of the skin changes. No other signs or symptoms of lupus erythematosus manifested.

Table 2. Characteristics of systemic lupus erythematosus patients who develop scabies infestation^a.

C	A R G	SSS	Bur	Secondary lesion morphology	Les loc	HoF Inv	Dx	Tx	Recur	Ref
1	11 Ca W	Crust	NS	Gray hyperkeratotic plaques and crusted papules	Dif	Yes	SS	20% SL	^b	[11]
2	14 Ch W	NS	NS	Erythematous, pruritic, maculopapular rash	Dif	Yes	SS	BB	No	[12] C3
3	16 AA W	Crust	NS	Pruritic papulosquamous crusts	Dif	Yes	SB SS	^c	NS	[13]
4	17 My W	NS	NS	Papules, pustules, vesicles, and whitish crusts	Dif	Yes	SS	BB	No	[12] C5
5	18 To W	Scalp	Yes	Inflammatory, pruritic scalp dermatosis with scale and erythema	Dif	Yes	SS	5% PC 1% MS	No	[14] C2
C	A R G	SSS	Bur	Secondary lesion morphology	Les loc	HoF Inv	Dx	Tx	Recur	Ref
6	20 In W	Crust	NS	Whitish, pruritic, keratotic crusts with almost total alopecia	Dif	Yes	SB	NS	^d	[12] C4

Table 2 (continued). Characteristics of systemic lupus erythematosus patients who develop scabies infestation^a.

C	A R G	SSS	Bur	Secondary lesion morphology	Les loc	HoF Inv	Dx	Tx	Recur	Ref
7	23 Th W	Crust	NS	Piled-up, yellowish-white, scaly pruritic plaques on a slightly erythematous base	Dif	Yes	SS SB	10% S 3% SA	^e	[15]
8	30 Th W	Crust	NS	Pruritic, crusting, erythematous, scaling plaques with diffuse scalp alopecia	S& N	Yes	SB	25% BB	No	[16]
9	34 My W	Crust	Yes	Scaly, pruritic, erythematous, maculopapular rash that progressed to thick, keratotic, crusts	Dif	Yes	SS	^f	Yes ^g	[12] C1
10	37 NS W	Crust	NS	Tender red plaque with adherent yellow scales	Sca lp	Yes	SB	^h	No	[17]
11	37 Mi W	Scalp	No	Inflammatory dermatosis with scale and erythema	Dif	Yes	SS	Iver x 2	No	[14] C1
12	39 NS W	Incog	No	Nonpruritic erythematous, scaly papules and plaques	Dif	Yes	SB	1% LL	No	[18]
13	40 Ch W	NS	Yes	Pruritic papular rash	Dif	NS	SS	BB	No	[12] C2
14	44 NS W	Crust	Yes	Confluent, scaling, crusted, pruritic plaques	Dif	Yes	SS	Iver x 2	No	[19]
15	51 NS W	Crust	NS	Pruritic, scaly, lichenified, crusted plaques	Dif	No	SS	25% BB X 7d	No	[20]
16	11 Ma M	NS	NS	Pruritic, maculopapular erythematous plaques with lichenification	Dif	Yes	SS	1% LL	No	[21]
17	46 NS M	Crust	NS	Pruritic, hyperkeratotic papules and plaques	Dif	Yes	SS SB	20% BB	ⁱ	[22]

^aAbbreviations: A, age (years); AA, African-American; BB, benzyl benzoate; Bur, burrows; C, case; Ca, Caucasian; Ch, Chinese; Crust, crusted; d, days; Dif, diffuse; Dx, diagnosis of scabies infestation method; G, gender; HoF Inv, head or face involvement; Incog, incognito; Iver, ivermectin; Les loc, lesion location; LL, lindane lotion; Ma, Mexican-American; M, man; Mi, Maori; MS, malathion shampoo; My, Malay; NS, not stated; PC, permethrin cream; R, race; Recur, recurrence; Ref, reference; S, sulfur; S&N, scalp and neck; SA, salicylic acid; SB, skin biopsy; SL, sulfur lotion; SS, skin scrape; SSS, scabies surreptitious subtype; Th, Thai; To, Tongan; Tx, treatment; W, woman; x, times; &, and; %, percent.

^bDespite improvement in skin lesions, she died eight days later due to *Pseudomonas aeruginosa* septicemia and renal failure.

^cLesions were unresponsive to lindane and monosulphiran. Resolution required control of her systemic lupus erythematosus with extended treatment with corticosteroids.

^dThe skin biopsy wound became infected with *Pseudomonas aeruginosa*, leading to sepsis, and ultimately her death.

^ePatient died from a multifocal infection one week after starting treatment.

^fSupervised topical benzyl benzoate treatments for 48 hours on two occasions were unsuccessful. On the third trial, prolonged soaking in a bath, scrubbing off each individual crust, and 48 hours of benzyl benzoate provided resolution.

^gThere was recurrence of scabies three years after initial presentation.

^hPatient received ivermectin 0.2 mg/kg PO on days 1, 2, 8, 9, 15, 22, and 29. Permethrin cream was also applied nightly for seven days, then twice weekly for two weeks. She also was prescribed ciprofloxacin for *Enterobacter* superinfection.

ⁱPruritus resolved with treatment, but patient died several days later due to *Staphylococcus aureus* bacteremia.

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