SKIN

BRIEF ARTICLE

A Rare Case of Vasculitis Induced by Crusted Scabies Infestation

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ABSTRACT

Here we present a 70-year-old man who presented with a rare case of cutaneous leukocytoclastic vasculitis (LCV) secondary to a crusted scabies (*Sarcoptes scabiei* var *hominis)* mite infestation. Few cases have been reported in the literature of LCV in association with scabies as LCV is typically caused by a bacterial or viral infection or other malignancy. Since this combination of cutaneous manifestations is rare, diagnosis and treatment may be delayed, allowing for the development of advanced disease.

INTRODUCTION

The inflammatory neutrophilic infiltrate of leukocytoclastic vasculitis (LCV) is associated with immune complex deposition in a variety of conditions, including autoimmune disease, bacterial or viral infection, and malignancy.[1] Few cases of an infestation by the mite *Sarcoptes scabiei* var *hominis* have been reported as a cause of LCV in the literature.[1,3,4] We present here a case of cutaneous LCV induced by crusted scabies infestation.

CASE REPORT

Our patient was a 70-year-old white male with a history of hypertension, prediabetes, chronic atrial fibrillation, and skin cancer (melanoma in-situ and nonmelanoma skin cancer). He underwent a renal transplant 21 years prior for end-stage renal disease secondary to post-Streptococcal glomerulonephritis for which he now takes prednisone (5mg daily) and tacrolimus (1mg daily).

He presented to our dermatology clinic with a three-month history of a worsening pruritic rash on his trunk. Physical examination revealed excoriated greasy scaly erythematous papules on his trunk. He was diagnosed with Grover's disease and treated with triamcinolone 0.1% cream as well as Sarna lotion for pruritus.

Unfortunately, our patient's symptoms worsened over the next month, and the rash spread from his trunk to his shoulders, buttocks, and posterior thighs. Punch biopsy of the rash on his lower left abdomen revealed superficial perivascular dermatitis with eosinophils, consistent with a dermal hypersensitivity reaction (**Figure 1A**). With this modified diagnosis, the patient began treatment with dupilumab (600 mg SQ injection once, followed by 300 mg every other week afterwards).

Over the next several weeks, he began developing large purpuric plaques and papules on his lower legs, dorsal feet, and left thigh at the site of a recent dupilumab injection coupled with brief fevers, dysuria, and bilateral pitting edema in the lower extremities (**Figure 1B**). His creatinine was elevated to 1.8 from a baseline of 1.1, and urinalysis revealed proteinuria. Punch biopsy on the right calf and left thigh confirmed a diagnosis of LCV with C3, fibrinogen, and IgM deposition in blood vessel walls.

Dupixent was discontinued, and he was started on a prednisone taper with improvement of his kidney function and vasculitis. However, he continued to have persistent pruritus and developed thick, adherent scaling on the bilateral feet and toes (**Figure 1C**). KOH of the scale was positive for tinea and yeast, and bacterial culture was positive for methicillin-sensitive *Staphylococcus aureus*, so patient began treatment with terbinafine 1% cream, nystatin cream, urea 40% cream twice daily, and a 10-day course of cephalexin for presumed MSSA-superinfected tinea pedis.

However, after 2 weeks of no improvement, he returned to clinic where mineral oil preparation from skin scrapings of the scale on patient's feet was positive for scabies mites. He then began a 2-month course of ivermectin (84 x 3 mg oral tablets total), prednisone 5 mg daily, and permethrin 1% cream on the entire body. He was also given oral hydroxyzine and topical pramoxine as needed for pruritus. At his 2-month follow-up visit, there was significant improvement of the rash. Mineral oil preparation from skin scrapings showed scybala but no scabies mites. Treatment with 10% compounded topical sulfur ointment was started. 3 weeks later, mineral oil preparation from skin scrapings showed no clear signs of mites. Though the patient had some residual pruritis for which he was treated with triamcinolone ointment, the rash had receded.

DISCUSSION

The scabies mite infestation affects 200 to 300 million people each year, and the incidence of scabies infestation has been rising in recent years.[6] There are three presentations of scabies: acute, nodular, and crusted. Crusted scabies is the most severe form of the infestation and generally presents with more severe complications. Cutaneous manifestations of crusted scabies generally include a scaly, pruritic, erythematous rash with hyperkeratosis and crusting.[6] It is more common in older, immunocompromised populations, as is seen in this case.[3,7] LCV generally manifests as palpable purpura in the lower extremities and is usually caused by malignancy, infection, or drug reaction resulting in immune complex deposition.[1]

We believe crusted scabies, a severe inflammatory infestation, triggered the immune complex deposition seen in LCV in our patient. Crusted scabies is an uncommon etiology for LCV. In the context of this case, our patient's immunosuppressed state predisposed him to a severe infestation of scabies which was not initially recognized. Before mineral oil preparation of skin scrapings confirmed the diagnosis, the patient's clinical presentation appeared to be consistent first with Grovers disease, then dermal hypersensitivity reaction, and finally LCV due to an infectious or medication etiology. These diagnoses followed sequentially as the vasculitis became more visibly apparent. Because of the difficulty of this diagnosis, the scabies infestation likely developed for months and therefore had the opportunity to cause further issues such as LCV. Our patient's scabies and LCV were able to be effectively treated with the

Figure 1. Clinical presentation of patient's evolving rash over the course of 3 months.
A: Erythematous acneiform papules and pustules with minimally scaly erythematous papules over trunk and shoulders. Working diagnosis at the time was Grovers disease or dermal hypersensitivity reaction.
B: Large purpuric plaques and papules throughout the lower legs and dorsal feet as well as surrounding a recent dupilumab injection site on the left thigh. Working diagnosis at the time was LCV due to infection or medication.
C: Diffuse bilateral erythema of the lower extremities extending to the mid-calf with overlying scale, thick adherent scaling bilaterally along the margins of the feet and toes, and bilateral pitting edema of the lower extremities. Working diagnosis at the time was LCV due to infection or medication.

standard agents for severe forms of these diseases: an antiparasitic to target the scabies mite and systemic corticosteroids for the LCV.

Research regarding the link between scabies infection and LCV remains scarce, and to our knowledge, there have only been a few cases reported in the literature (**Table 1**).

In conclusion, we present a case of LCV induced by a crusted scabies infestation. Although rare, it is important for clinicians to have a high index of suspicion for a scabies infestation in association with LCV, especially when treating immunosuppressed patients with multiple comorbidities, to avoid delays in diagnosis and treatment.

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Table 1. Literature cases of LCV resulting from scabies.

Case	Age	Gender	Other History of Disease	Treatment	Outcome
1 (Alabbadi et al)	86	F	Chronic heart failure Type 2 diabetes Dyslipidemia Atrial fib Bronchial asthma Alzheimers	Scabies: Permethrin cream LCV: topical steroid cream	Full recovery
2 (Nishihara et al)	74	M	Heart failure Ischemic heart disease	Scabies: Permethrin cream	Full recovery
3 (Clevy et al)	90	F	Hypertension Dyslipidemia Atrioventricular block	Scabies: Ivermectin (oral), pyrethroid lotion	Full recovery
4 (Clevy et al)	74	M	Hypertension Diabetes	Scabies: Ivermectin (oral), pyrethroid lotion	Full recovery
5 (Stinco et al)	49	M	Diabetes	Scabies: sulfur-based ointment	Full recovery
6 (Stinco et al)	74	M	Diabetes Cardiomyopathy Chronic Renal Failure Atherosclerosis	Scabies: sulfur-based ointment	Full recovery
7 (Jarrett et al)	75	M	Heart failure Ischemic heart disease	Scabies: permethrin cream LCV: systemic steroids	Full recovery
8 (Valkset et al)	28	M	HIV	Scabies: topical gamma hexachloride lotion	Full recovery
9 (Menne et al)	62	M	Parkinson's Disease	Scabies: gamma benzene hexachloride lotion	Full recovery
10 (Menne et al)	51	F	Diabetes	Scabies: gamma benzene hexachloride lotion	Full recovery
11 (Hay et al)	80	M	Myocardial infarct (1 year prior)	Scabies: benzyl benzoate, crotamiton lotion	Full recovery
12 (Estéve et al)	79	F	Lymphoma	Scabies: ivermectin (oral), benzyl benzoate lotion	Full recovery
13 (Fremont et al)	84	M	Hypertension	Scabies: benzyl benzoate lotion	Full recovery

14 (Lyons et al)	70	M	Kidney transplant Acute Kidney Injury Skin cancer Hypertension Prediabetes Atrial Fib (Chronic)	Scabies: ivermectin, permethrin cream LCV: systemic steroids	Full recovery