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CASE REPORT

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# Pityriasis rubra pilaris-like graft-vs-host disease following allogeneic stem cell transplant in two patients

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**Abstract**

Chronic cutaneous graft-vs-host disease (GVHD) has several atypical variants. We describe two cases of GVHD with clinical and histopathologic features of pityriasis rubra pilaris (PRP), which responded to additional immunosuppression. Recognition of this newly described PRP-like clinical presentation of GVHD may prompt early consideration of additional steroid-sparing therapies.

**KEYWORDS**

allogeneic hematopoietic cell transplantation, cutaneous graft-vs-host disease, immunosuppression, pityriasis rubra pilaris

## 1 | INTRODUCTION

Chronic cutaneous graft-vs-host disease (GVHD) is a common cause of morbidity and mortality after allogeneic hematopoietic cell transplantation (HCT). Findings typically arise three months post-transplant, and while sclerodermoid and lichenoid variants of chronic GVHD are most common,[1] several atypical presentations have been reported, including eczematoid, psoriasiform, pityriasis rosea-like, and keratosis pilaris-like forms.[2] We describe two cases of chronic cutaneous GVHD with clinical and histopathologic features of pityriasis rubra pilaris (PRP).

## 2 | CASE 1

A 47-year-old man underwent myeloablative allogeneic HCT for myelodysplastic syndrome (MDS). Acute transplant course was complicated by a morbilliform skin eruption clinically presumed to represent GVHD, which resolved with sirolimus, prednisone, mycophenolate mofetil, and extracorporeal photopheresis. Eight months later, widespread scaly salmon-colored papules and plaques developed on the trunk, extremities, scalp, palms, and soles with islands of sparing (Figure 1). There was no onychodystrophy or palmoplantar keratoderma. Lesions were

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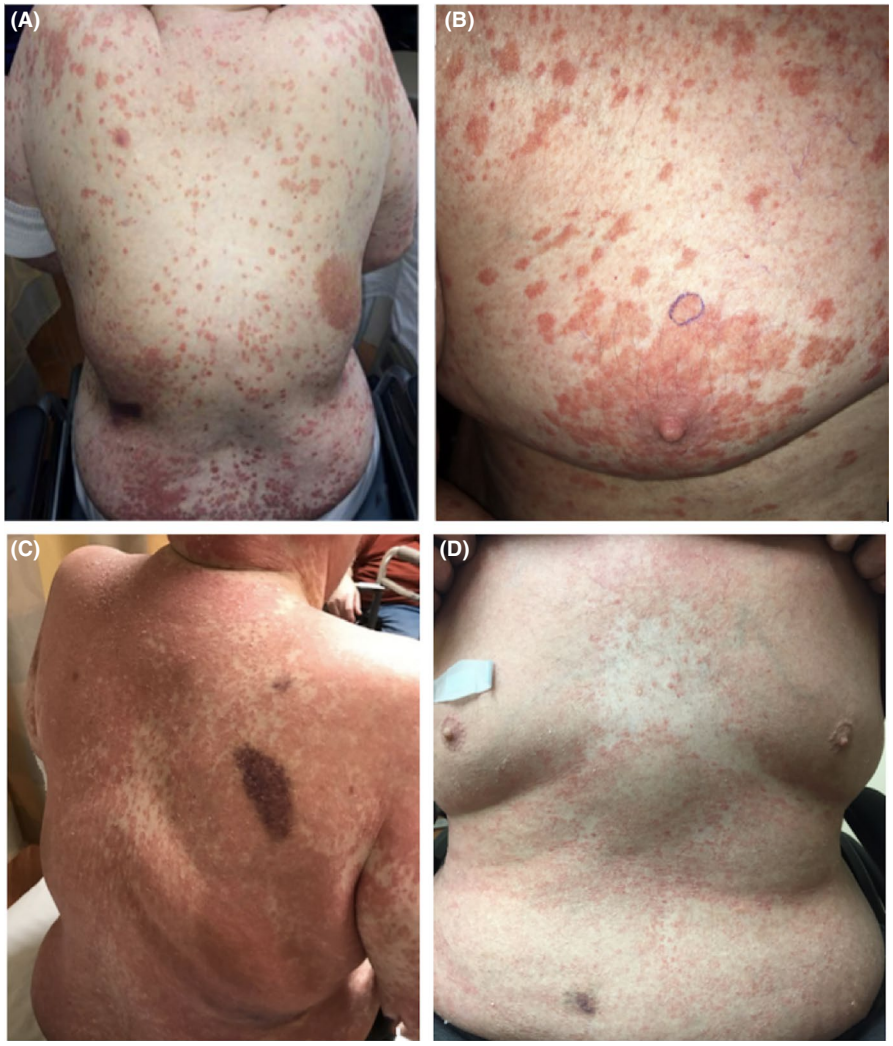


**FIGURE 1** Clinical findings, Case 1. A-B, Scattered scaly salmon-colored papules coalescing into plaques involved the trunk and extremities. Biopsy was taken from the right chest (B). C-D, Three weeks later, the eruption progressed to involve approximately 70% body surface area with confluent scaly plaques with islands of sparing. D, Significant improvement was noted after one month of methotrexate 10 mg weekly, discontinued due to gastrointestinal distress

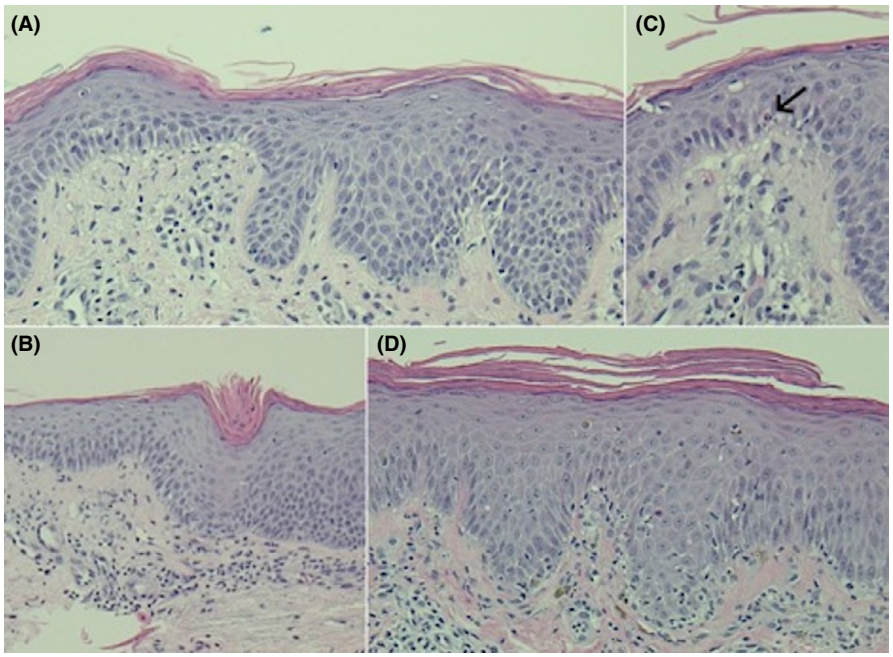


**FIGURE 2** Histopathologic findings, Cases 1 and 2. A-C, Histologic sections from Case 1 demonstrate focal parakeratosis, mild spongiosis, superficial perivascular lymphocytic infiltrate, follicular plugging (B), areas of vacuolar interface change, and rare necrotic keratinocytes at the dermal–epidermal junction (C, arrow). D, Histologic sections from Case 2 demonstrate similar findings of vacuolar interface change and necrotic keratinocytes at the dermal–epidermal junction, with mild spongiosis and parakeratosis

pruritic and refractory to topical and systemic steroids, systemic sirolimus, and mycophenolate mofetil. Skin biopsy showed rare necrotic keratinocytes at the dermal–epidermal junction and focal vacuolar interface dermatitis compatible with GVHD, but also focal parakeratosis, mild spongiosis, follicular plugging, and retention of the granular layer compatible with concurrent PRP (Figure 2A-C). Methotrexate 10 mg PO weekly led to near-complete response but was discontinued due to intractable nausea (Figure 1F). Treatment for steroid-refractory GVHD with rituximab[3] resulted in complete resolution of the eruption eight weeks later.

## 3 | CASE 2

A 52-year-old woman underwent allogeneic HCT for MDS without evidence of acute GVHD. Seven months later, while tapering systemic tacrolimus, she developed an exquisitely pruritic generalized dermatitis refractory to topical steroids. Erythematous scaly greasy papules coalescing into plaques with distinct islands of sparing were noted over the cheeks, neck, scalp, trunk, extremities, palms, and soles. Nails were unaffected. Skin biopsies demonstrated mild vacuolar interface dermatitis with scattered dyskeratotic keratinocytes consistent with GVHD; however, parakeratosis and mild spongiosis suggestive of concurrent PRP were noted (Figure 2D). The patient unfortunately experienced relapsed MDS with transformation to acute myeloid leukemia. Palliative chemotherapy with decitabine and increased immunosuppression with tacrolimus and prednisone were initiated, with rash resolution in two months.

## 4 | DISCUSSION

To our knowledge, chronic GVHD with features of PRP has not been previously described. There is one report of acute GVHD resembling type II PRP following HCT.[4] Twenty-six days after transplant, an eruption clinically and histologically consistent with acute GVHD appeared; features of type II PRP developed by day 40, including red-orange plaques, palmoplantar keratoderma, ichthyosiform scaling, and compatible histopathology. The eruption partially responded to methylprednisolone, tacrolimus, mycophenolate mofetil, anti-thymocyte globulin, and etanercept.[4] In our two cases, the red-orange scaly plaques with islands of sparing most closely resembled type I PRP, although palmoplantar keratoderma was absent.

The etiology of PRP remains unknown, although associations with autoimmunity, infection, and paraneoplastic triggers have been proposed.[5] PRP in the setting of GVHD may represent an aberrant immune response to an autoantigen unmasked by GVHD.[4] In our two cases, onset of the eruption following decreased immunosuppression and resolution after immunosuppression with rituximab and tacrolimus supports this immunologic basis.

Although chronic GVHD may improve with escalating corticosteroids, steroid-refractory disease can occur. Corticosteroids are generally ineffective in PRP outside the allogeneic HCT population.[5] Notably, patient 1 responded to methotrexate, an accepted therapy for PRP[5] with potential use at higher doses in steroid-refractory GVHD.[6] Thus, a PRP-like clinical presentation of GVHD, with histologic features of both, may provide an early clue that the patient's cutaneous manifestations will be steroid-refractory and require additional steroid-sparing agents or dual immunosuppressive therapy. These cutaneous findings should prompt early consideration of additional steroid-sparing therapies, including treatments for PRP, in close collaboration with the transplant team.

## ACKNOWLEDGMENTS

The authors have no conflicts of interest to disclose.

## CONFLICT OF INTEREST

None declared.

## AUTHOR CONTRIBUTIONS

JYW: participated in patient care, manuscript writing, histopathologic reading and image obtainment, and final manuscript revision. MMT: participated in primary manuscript writing and final manuscript revision. SP: participated in patient care, final manuscript revision, and histopathologic imaging. WW: participated in patient care and final manuscript revision. BYK: participated in patient care, final manuscript revision, and primary oversight of project.

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