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Authors
Shen, Amy
Cheng, Carol E
Malik, Rhea
et al.

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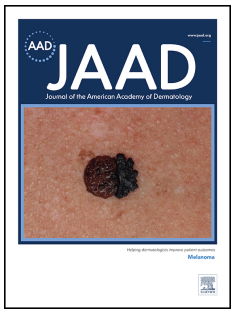

Prurigo Pigmentosa -A Multi-institutional Retrospective Study

Amy Shen, BS, Carol E. Cheng, MD, Rhea Malik, MS, Erica Mark, BS, Natalia Vecerek, MD, Nolan Maloney, MD, Joan Leavens, MD, Vinod E. Nambudiri, MD MBA EdM, Art P. Saavedra, MD PhD, Marcia Hogeling, MD, Scott Worswick, MD

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Authors: Amy Shen BS[1], Carol E. Cheng MD[1], Rhea Malik MS[2], Erica Mark BS[3], Natalia Vecerek MD[4], Nolan Maloney MD[5], Joan Leavens MD[6], Vinod E. Nambudiri MD MBA EdM[2], Art P. Saavedra MD PhD[3], Marcia Hogeling MD[1*], Scott Worswick MD[4*]

Affiliations
[1]Division of Dermatology, Department of Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA
[2]Harvard Medical School, Department of Dermatology, Brigham and Women's Hospital, Boston, MA
[3]Department of Dermatology, University of Virginia Medical Center, Charlottesville, VA
[4]Department of Dermatology, University of Southern California, Los Angeles, CA
[5]Department of Dermatology, Stanford University, Palo Alto, CA
[6]Lake Washington Dermatology and Dermatopathology, Kirkland, WA

*Joint senior author

Corresponding author:
Amy Shen, BS
10833 Le Conte Ave, Los Angeles, CA 90095
Phone: 209-556-8123
Email: shuishen@mednet.ucla.edu

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Prurigo pigmentosa (PP) is an inflammatory skin disease characterized by a sudden eruption of pruritic, erythematous papules in a reticular pattern followed by hyperpigmentation [1]. In recent years, PP has been anecdotally associated with the ketogenic diet [2]. However, studies on PP have been limited to small case series. Our retrospective study examined the largest pool of PP patients to date from three academic centers in the United States over a ten-year period to identify potential triggers, comorbidities, and treatment.

We searched dermatology records from the University of California, Los Angeles, the University of Virginia, and the Mass General Brigham Hospital System from 2011-2021 using the search term "prurigo pigmentosa." We identified 30 patients with a confirmed diagnosis of PP; demographic and clinical factors were abstracted.

Of the 30 patients, 21 were female (Table 1). The average age was 41 years old, and the median age was 37 (range: 18-74 years). The majority of patients were white (56%), followed by Asian (30%). 29 patients had a BMI > 25. All patients presented with erythematous papules coalescing into plaques with a background of reticulated hyperpigmentation with or without scale, and all patients endorsed pruritus. The most commonly affected sites were back (46%) and chest (43%). 40% (12/30) of the patients were on a ketogenic diet prior to the onset of symptoms. Three patients were prediabetic, and none were diabetic. Eleven patients had hyperlipidemia. None of the patients had autoimmune conditions. Histopathological findings for PP were subtle and non-specific --- common features of the 13 available records were very mild spongiosis and a predominantly lymphoplasmacytic perivascular and interstitial infiltrate. Neutrophils and eosinophils were rare. All patients received treatment. Topical corticosteroids (12/30) only provided temporary relief, while oral antibiotics (11/30) led to complete resolution in all treated patients.

Our study supports the classic presentation of PP as documented in the literature and finds pruritus to be a constant feature. Most individuals with PP across the institutions were either white or Asian females, consistent with demographics reported in the literature [3]. PP did not seem to be associated with autoimmune conditions, despite previous reports detailing a likely association [4]. Atopic diathesis has been postulated to be associated with PP [5]. Our data did not see a strong association of PP with the three most common atopic conditions. Our finding of higher BMI in nearly all PP patients hasn't been reported elsewhere and may be worth exploring in future studies.

Based on our results, we did not clearly identify a unifying, common trigger of PP, suggesting different etiologies not limited to the ketogenic diet. Biopsy may assist in ruling out other diagnoses but is not diagnostic of PP on its own. PP affects a wide range of ages and both genders, with a female predilection. Furthermore, a course of oral antibiotics (doxycycline or minocycline 100mg twice daily for 1-2 months) may be considered in PP cases where transition to normal diet or topical treatment did not lead to complete resolution.

Table 1. Clinical and demographic characteristics of individuals with prurigo pigmentosa (n=30)

	Number of patients, n (%)
Demographics	
Gender	
Female	21 (70)
Male	9 (30)
Race	
White	17 (56)
Asian	9 (30)
Black	2 (6)
Other	2 (6)
Morphologies	
Hyperpigmentation	30 (100)
Papules	30 (100)
Scaling	15 (50)
Symptoms	
Pruritus	30 (100)
Pain	0 (0)
Distribution	
Chest	13 (43)
Back	14 (46)
Upper extremities	3 (10)
Lower extremities	2 (6)
Diet	
Ketogenic diet	12 (40)
Low carbohydrate diet	3 (10)
Normal diet	15 (50)
BMI	
≤18.5	0 (0)
18.5-24.9	1 (3)
25.0-29.9	21 (70)
≥ 30.0	8 (26)

	Number of patients, n (%)
Comorbidities	
Hyperlipidemia	11 (36)
Hypothyroidism	3 (10)
H. Pylori	1 (3)
Allergic Rhinitis	1 (3)
Asthma	0 (0)
Diabetes Mellitus	0 (0)
Hyperthyroidism	0 (0)
Pregnancy	0 (0)
Sjogren's	0 (0)
Lupus	0 (0)
Dermatomyositis	0 (0)
Scleroderma	0 (0)
Rheumatoid Arthritis	0 (0)
Mixed Connective--Tissue Disease	0 (0)
Skin specific comorbidities	
Atopic dermatitis	3 (10)
Acne vulgaris	3 (10)
Allergic contact dermatitis	3 (10)
Psoriasis	2 (6)
Pityriasis rosea	1 (3)
Prurigo nodularis	1 (3)
Telogen effluvium	1 (3)
Treatment	
Topical corticosteroids	12 (40)
Triamcinolone 0.1%	6 (20)
Betamethasone 0.05%	3 (10)
Hydrocortisone 2.5%	1 (3)
Fluocinolone 0.025%	1 (3)
Clobetasol 0.05%	1 (3)
Oral doxycycline	6 (20)
Oral minocycline	5 (16)
Topical ketoconazole	2 (6)
Topical tacrolimus	1 (3)
Oral prednisone	1 (3)
Transition to normal diet	3 (10)

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