

Aquagenic palmoplantar keratoderma with dorsal hand involvement in an adolescent female



Divya Angra, BA,^a Kunal Angra, MD,^b and Ife J. Rodney, MD^b
Washington, DC

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INTRODUCTION

Aquagenic palmoplantar keratoderma (APK) is a rare, acquired condition that presents as papules on the palms, and rarely the soles, upon immersion in water.¹ We describe a patient who presented with the unusual finding of dorsal involvement of the hands.

CASE REPORT

A healthy 13-year-old Hispanic girl presented with a 3.5-year history of roughness of her hands on contact with water. She reported that her hands turned “white and raised” with immersion in water, but did not report any associated pruritus, burning sensation, or pain in her hands. She had no history of other skin conditions such as atopic dermatitis or hyperhidrosis. She had never been tested for cystic fibrosis. Family history was negative for similar skin findings, atopic dermatitis, hyperhidrosis, cystic fibrosis, or cystic fibrosis carrier status.

Clinical examination found well-demarcated erythema of the bilateral hands and a cobblestone appearance of palms partially extending onto the dorsal hands (Fig 1). Skin-colored papules, accentuated within minutes of immersion in water, were present on the dorsal hands, predominantly affecting the proximal interphalangeal joints of the fifth digit bilaterally and the distal interphalangeal joints of right second, third, and fourth digits (Fig 2). No lesions were noted on the soles. A 4-mm punch biopsy of an affected area of her right palm was performed. Histologic testing found orthokeratosis with mild acanthosis (Fig 3) in addition to dilation

Abbreviation used:

APK: aquagenic palmoplantar keratoderma

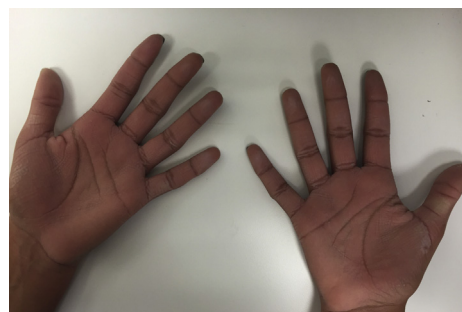


Fig 1. Aquagenic palmoplantar keratoderma. Whitish cobblestonelike papules on bilateral palms.

of the eccrine acrosyringia and a crenulated and vacuolated appearance of the secretory eccrine coils (Fig 4).

The patient was prescribed topical 20% aluminum chloride solution to use once daily at night. After treatment, she noticed marked improvement in the extent, frequency, and duration of episodes.

DISCUSSION

APK is characterized by the accentuation of translucent to whitish papules on the palms, and rarely the soles of the feet, on a few minutes of water exposure, known as the *band-in-the-bucket sign*.¹ Although patients often have symptomatic burning, pain, or pruritus on immersion in water, our patient

From George Washington University School of Medicine and Health Sciences^a and the Department of Dermatology, Howard University College of Medicine.^b

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Correspondence to: Ife J. Rodney, MD, Department of Dermatology, Howard University College of Medicine, 2041 Georgia Ave NW, Suite 2107, Washington, DC 20060. E-mail: ife.rodney@howard.edu.

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Fig 2. Aquagenic palmoplantar keratoderma. Skin-colored papules evident on proximal interphalangeal joint of right fifth digit.

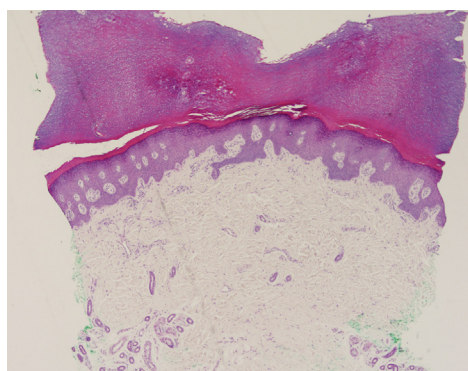


Fig 3. Histologic section of biopsy of the right palm after immersion in water shows orthokeratosis with mild acanthosis. (Hematoxylin-eosin stain; original magnification: $\times 4$.)

was asymptomatic.² In addition, her lesions were erythematous, a finding that has been noted in select patients with APK.³ As seen in our patient, with withdrawal of water, physical findings normally resolve promptly.^{1,2}

APK has a predilection for young adolescent females.¹ The pathogenesis remains unclear; however, increased skin water absorption (owing to decreased skin barrier function in atopic dermatitis) or increased sweat salt concentration (in hyperhidrosis, in cystic fibrosis, or owing to medications) may play a role.² In our patient, we plan to further investigate whether an association with cystic fibrosis is present, as APK may be a cutaneous manifestation of cystic fibrosis.²

Histologically, 2 case reports on APK noted clear cell change and vacuolization.^{4,5} Interestingly,

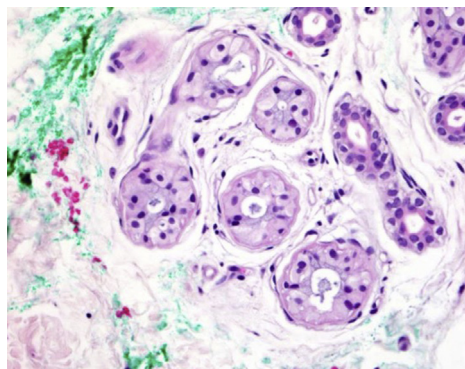


Fig 4. Histologic section of biopsy of the right palm after immersion in water shows dilation of the eccrine acrosyringia and a crenulated and vacuolated appearance of the secretory eccrine coils (Hematoxylin-eosin stain; original magnification: $\times 400$.)

our patient's histology also exhibited this finding. Other histologic findings after water exposure in our patient were compatible with those illustrated in previous case reports and include mild orthokeratotic hyperkeratosis and dilated eccrine ducts.^{1,3,4}

This case shows the involvement of the dorsal fingers in a young adolescent girl with APK. Based on an extensive literature review, dorsal involvement of the hands is an uncommon clinical finding, with only 4 documented cases.⁴⁻⁷ Additionally, our case is notable in that our patient did not experience symptomatic burning, pain, or pruritus on immersion of her hands in water.

REFERENCES

1. Yan AC, Aasi SZ, Alms WJ, et al. Aquagenic palmoplantar keratoderma. *J Am Acad Dermatol*. 2001;44(4):696-699.
2. Seitz CS, Gaigl Z, Bröcker EB, Trautmann A. Painful Wrinkles in the Bathtub: Association with Hyperhidrosis and Cystic Fibrosis. *Dermatology*. 2008;216(3):222-226.
3. Luo D-Q, Zhao Y-K, Zhang W-J, Wu L-C. Aquagenic acrokeratoderma. *Int J Dermatol*. 2010;49(5):526-531.
4. Yoon T, Kim K, Lee J, Kim M. Aquagenic syringeal acrokeratoderma: unusual prominence on the dorsal aspect of fingers? *Br J Dermatol* 2008;159(2):486-488.
5. Rongioletti F, Tomasini C, Crovato F, Marchesi L. Aquagenic (pseudo) keratoderma: a clinical series with new pathological insights. *Br J Dermatol*. 2012;167(3):575-582.
6. Xia Q. Aquagenic acrokeratoderma: case report with no involvement of the palms. *Int J Dermatol*. 2012;51:1391-1393.
7. Luo D-Q. Aquagenic acrokeratoderma: a case with family history and unusual involvements of the palms and soles, and the dorsum of fingers and toes. *J Dermatol*. 2010;38(6):612-615.