Case Report
Olgu Sunumu

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Water-induced white papules: A case series of 12 patients with aquagenic syringeal acrokeratoderma

Su temasıyla ortaya çıkan beyaz papüller: 12 olguluk akuajenik siringeal akrokeratoderma serisi

Mustafa Esen*, Abdullah Demirbaş, Esin Diremsizoğlu****

*Dicle University Faculty of Medicine, Department of Dermatology, Diyarbakır, Türkiye
**Kocaeli University Faculty of Medicine, Department of Dermatology, Kocaeli, Türkiye

Abstract

Aquagenic syringeal acrokeratoderma (ASA) is a rare, transient skin disorder characterized by the appearance of white papules and plaques on the palms after short-term exposure to water. We report a two-year case series involving 12 patients (8 males, 4 females) aged 7 to 32 years (mean age 19.25), all diagnosed with ASA. Symptoms developed within 1-6 min of water contact and resolved spontaneously within 20-52 min. Palmar involvement was present in all cases, without lesions on the fingertips, dorsal hands, or plantar surfaces. Diagnosis was made clinically in 10 patients and histopathologically confirmed in two. Seven patients reported symptoms, including itching, burning, or hyperhidrosis, whereas five remained asymptomatic. None had relevant medication use, recent viral illness, or known genetic predisposition, such as cystic fibrosis. Topical therapies provided partial relief; however, recurrence was common during the follow-up period. This study highlights the characteristic clinical presentation of ASA, the importance of clinical recognition, and the challenges in achieving sustained treatment success.

Keywords: Aquagenic syringeal acrokeratoderma, aquagenic acrokeratoderma, water-induced skin changes, palmar keratoderma, case series

Öz

Akuajenik siringeal akrokeratoderma (ASA), avuç içlerinde kısa süreli su teması sonrasında ortaya çıkan beyaz papül ve plaklarla karakterize, nadir ve geçici bir deri hastalığıdır. Bu çalışmada, iki yıllık süreçte ASA tanısı alan ve yaşları 7 ile 32 arasında değişen (ortalama yaş: 19,25) 12 hasta (8 erkek, 4 kadın) sunulmaktadır. Belirtiler suyla temas sonrası 1 ila 6 dakika içinde gelişmiş ve 20 ila 52 dakika içinde kendiliğinden gerilemiştir. Tüm hastalarda yalnızca avuç içlerinde lezyon gözlenmiş; parmak uçları, el sırtı ve ayak tabanlarında tutulum saptanmamıştır. On hastada tanı klinik olarak konmuş, iki hastada ise histopatolojik olarak doğrulanmıştır. Yedi hasta kaşıntı, yanma veya hiperhidrozis gibi semptomlar bildirirken beş hasta asemptomatikti. Hiçbir hastada ilgili ilaç kullanımı, yakın zamanda geçirilmiş viral enfeksiyon veya kistik fibroz gibi bilinen genetik yatkınlık öyküsü yoktu. Topikal tedavilerle kısmi iyileşme sağlanmış, ancak takip sürecinde nüksler yaygındı. Bu çalışma, ASA'nın karakteristik klinik tablosunu, tanıdaki klinik farkındalığın önemini ve kalıcı tedavi başarısının sağlanmasındaki zorlukları vurgulamaktadır.

Anahtar Kelimeler: Akuajenik siringeal akrokeratoderma, akuajenik akrokeratoderma, suya bağlı deri değişiklikleri, palmar keratoderma, olgu serisi

Introduction

Aquagenic syringeal acrokeratoderma (ASA) is a rare, acquired palmoplantar keratoderma characterized by the rapid onset of translucent white papules and plaques on the palms after brief exposure to water, typically within 2 to 5 min[1]. The condition is often transient, resolving spontaneously within minutes after drying, and may be associated with discomfort such as burning or itching. Although ASA is more frequently reported in young females, it can affect individuals across a wide age range and both sexes[2]. Herein, we present a case series of 12 patients diagnosed with ASA over a two-

Address for Correspondence/Yazışma Adresi: Esin Diremsizoğlu MD, Kocaeli University Faculty of Medicine, Department of Dermatology, Kocaeli, Türkiye
E-mail: mdesinarslan@gmail.com **ORCID:** orcid.org/0000-0001-9824-481X
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year period. We aimed to characterize the clinical features, explore potential etiologic factors, and share insights into treatment outcomes, contributing to a deeper understanding of this uncommon and underreported condition.

Case Report

This series included twelve patients (eight males and four females) diagnosed with ASA over the past two years. The ages ranged from 7 to 32 years (mean: 19.3 years). The duration of symptoms prior to diagnosis varied from 2 months to 10 years (mean: 58.5 months). The detailed clinical characteristics and treatments are summarized in Table 1.

All patients presented with transient, symmetric, white papules on the palms following water exposure. Lesions typically appeared within 1-6 min of contact with tap water and resolved spontaneously within 20-52 min after drying. Clinically, the lesions were translucent and accentuated the eccrine duct openings, giving them a macerated appearance (Figure 1). In all patients, the involvement was limited to the palmar surface. The central palm was affected in every case, with additional involvement of the hypothenar region in seven patients, the thenar region in two, and partial finger involvement in three. Notably, none of the patients showed involvement in the fingertips, dorsal hand, or plantar surfaces.

Table 1. Clinical and demographic characteristics of the patients

Patient no.	Age	Gender	Onset duration (years/ months)	Location	Associated disease	Related symptoms	Persistence	Biopsy	Treatment	Treatment response
1	32	M	10 years	Palmar area, symmetrical	-	Mild itching, burning hyperhidrosis	Transient	Dilation of eccrine sweat gland ducts and hyperkeratosis in the surrounding epidermis	20% aluminum chloride, 10% urea	-
2	28	M	6 years	Palmar area, symmetrical	-	Burning, hyperhidrosis	Transient	-	20% aluminum chloride, 20% urea	-
3	23	M	9 years	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	-
4	7	F	2 months	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	+
5	31	M	9 years	Palmar area, symmetrical	-	Burning, mild itching	Transient	-	20% aluminum chloride, 20% urea	-
6	21	M	5 years	Palmar area, symmetrical	-	Mild itching, hyperhidrosis	Transient	-	20% aluminum chloride, 10% urea	-
7	13	M	2 years	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	-
8	8	F	6 months	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	+
9	9	F	10 months	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	-
10	18	F	5 years	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	-
11	25	M	7 years	Palmar area, symmetrical	-	Burning, hyperhidrosis	Transient	Spongiosis in the stratum corneum, acanthosis, orthohyperkeratosis, and dilatation in the eccrine acrosyringium	20% aluminum chloride, 10% urea	-
12	16		4 years	Palmar area, symmetrical	-	Asymptomatic	Transient	-	20% aluminum chloride	-

M: Male, F: Female, treatment response: + = Partial improvement; – = No improvement

Figure 1. Palms of 12 patients after water contact

ASA was clinically diagnosed in 10 patients based on typical findings after water exposure. In two patients, the diagnosis had been previously confirmed by histopathological examination, which revealed orthokeratotic hyperkeratosis and dilation of eccrine ducts.

Seven patients reported accompanying symptoms, including mild itching (three patients), burning sensation (four patients), and palmar hyperhidrosis (four patients). The remaining five patients were asymptomatic, aside from visible skin changes. None of the patients reported using medications known to induce aquagenic changes, recent COVID-like illnesses, or relevant systemic diseases. Family histories were negative for ASA and cystic fibrosis in all the cases. Genetic testing for cystic fibrosis was offered but declined by the patient and/or guardians. Topical treatments, including aluminum chloride, urea-based creams, and barrier ointments, were prescribed based on the severity of symptoms. Although partial improvement was achieved in most cases, recurrence of lesions was observed in five patients during the 4-month follow-up.

Discussion

ASA is a rare transient dermatosis characterized by water-induced white papules on the palms. While most reports describe a female predominance, the majority of patients in our series were men[2]. In all patients, the lesions were confined to the palmar region, particularly the central palm and hypothenar area, with no involvement of the fingertips, dorsal hand, or plantar surfaces. These findings support the notion that ASA has a distinct and reproducible distribution pattern that can aid in clinical diagnosis. The appearance of symmetric, translucent papules following brief water contact, along with spontaneous resolution after drying, is characteristic and typically sufficient for diagnosis of this condition. Diagnosis of ASA can be clinical, with histopathological examination revealing characteristic findings such as orthokeratotic hyperkeratosis and eccrine gland abnormalities, although it is not essential for diagnosis[3].

Proposed mechanisms include increased water absorption due to compromised barrier function of the stratum corneum, structural or functional abnormalities of eccrine sweat glands, and epidermal salt retention[1]. The frequent co-occurrence of ASA with palmar hyperhidrosis, as observed in one-third of our patients, further supports the hypothesis of sweat gland involvement. Previous reports have also described associations with cystic fibrosis, likely due to the increased salt content in sweat; however, none of our patients had a family history or clinical features suggestive of cystic fibrosis, and genetic testing was declined[4].

The management of ASA remains challenging. In our cohort, topical treatments such as aluminum chloride, urea-based emollients, and

barrier creams resulted in partial symptom control; however, recurrence was observed in five patients over a 4-month follow-up period. This aligns with previous studies indicating that while topical therapies may alleviate symptoms, they rarely achieve a lasting remission. More recent treatment options, including topical anticholinergics such as glycopyrronium, have shown promise in individual cases, although access and tolerability may limit their routine use[5].

This case series indicates that there must be increased awareness of ASA, particularly among clinicians evaluating palmar dermatoses in young patients. Although benign, ASA can cause discomfort and cosmetic concerns, and its transient nature may lead to underdiagnosis. Further studies are needed to clarify its pathophysiology and evaluate the efficacy of newer treatment modalities.

Ethics

Informed Consent: Informed consents were obtained from the patients.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.E., A.D., E.D., Concept: M.E., A.D., E.D., Design: M.E., A.D., E.D., Data Collection or Processing: M.E., A.D., E.D., Analysis or Interpretation: M.E., A.D., E.D., Literature Search: M.E., A.D., E.D., Writing: M.E., A.D., E.D.

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