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QUIZ SECTION

Symmetrical, Hypopigmented Papules and Plaques on the Palms Induced by Contact with Water: A Quiz

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A 21-year-old woman presented to our clinic with wrinkling in the palm fissures after contact with water. She reported onset of the symptoms approximately one year previously. Physical examination initially showed apparently normal skin on the palms, but after contact with running tap-water at room temperature (with no added detergents) for 20–30 s we observed marked wrinkling of the palms: the latter became whitish/pebblish (Fig. 1). The patient reported an uncomfortable burning feeling. The symptoms persisted for approximately 20 min after the palms had been dried with a towel. Plantar and all other skin, as well as skin annexes appeared normal. The patient's personal and family medical history was unremarkable.

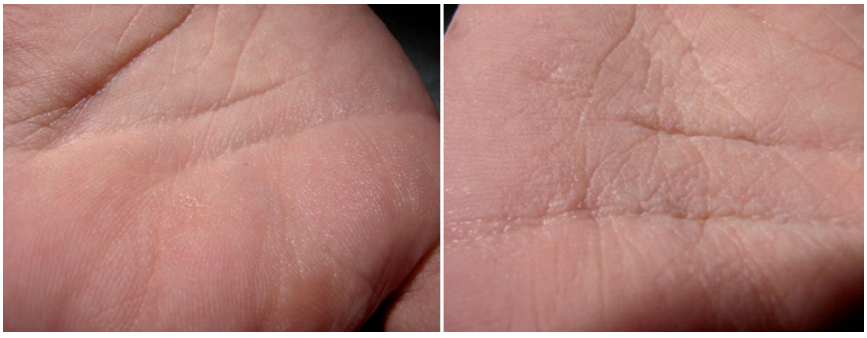

Fig. 1. Patient's palms (detail) after exposure to water.

What is your diagnosis? Which autosomal recessive disease could be associated with this symptom? See next page for answer.

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ANSWERS TO QUIZ

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Diagnosis: Aquagenic Wrinkling of the Palms

Based solely on clinical symptoms, the patient not being willing to undergo a skin biopsy, a diagnosis of aquagenic wrinkling of the palms (AWP) was made. The autosomal recessive condition potentially associated with this symptom is cystic fibrosis (CF).

AWP is an unusual condition presenting with symmetrical, hypopigmented, flat-topped papules and plaques with eccrine duct prominence that become evident on the palms after 3–5 min exposure to water and usually disappear soon after drying. This accentuation of skin lesions after water immersion is known as the "hand-in-the-bucket" sign and is considered diagnostic (1). When not exposed to water, the skin either looks normal or there is hyperlinearity or multiple unremarkable translucent white papules on the palms or soles (2). AWP has also been termed: transient reactive papulotranslucent acrokeratoderma, aquagenic syringeal acrokeratoderma, and aquagenic palmoplantar keratoderma. The first cases were described in 1996 (3). The condition, in which translucent, white, confluent papules with dilated puncta became evident on the palms, developed 3–5 min after exposure to water and resolved within a short time after drying. This finding was associated with a tightening sensation. Pathology revealed dilated eccrine ostia.

To date, probably fewer than 200 cases have been described in the literature; female adolescents or young women seem to be affected more frequently, in an age ranging from 6 to 50 years (4, 5). In most cases, the condition manifests only on the palms, although involvement of the soles has also been reported. The most common histological findings (after water exposure) are orthohyperkeratosis with acanthosis and dilated acrosyringia and eccrine ostia (6).

It is estimated that more than half of the patients with AWP (56.7%) have documented CF (7). Gild et al. (8) reported the first case associated with a single mutation in the *CFTR* gene, suggesting that AWP may be a sign of the CF carrier state. A recent case-control study demonstrated that AWP is a sign of both CF and the carrier state, suggesting that the time from initial immersion to the first sign of visual wrinkling decreases with decreased CFTR protein function (8). It has been hypothesized that AWP in patients with CF may be mediated by abnormal CFTR regulation of cell membrane water channels, such as aquaporin 3, involved in the regulation of transepidermal water loss. Alternative hypotheses for the pathogenesis of AWP have implicated a defective skin barrier function and influx of water across an osmotic gradient into eccrine ducts (7). Given the possible association of AWP with CF, our patient was advised but refused to undergo a gene mutation analysis.

AWP has also been associated with the intake of anti-inflammatory drugs, such as aspirin or COX inhibitors, possibly due to a dysregulation of skin aquaporins (9, 10), and with marasmus, palmar hyperhidrosis, and Raynaud's phenomenon (8). None of this applied to our patient.

In a recent clinical case, investigations suggested the condition to be aetiologically linked to hyperhidrosis and associated with aberrant aquaporin 5 expression; hence possibly stemming from dysregulation of sweating (11). Interestingly, Bothnia type of keratoderma, which is caused by mutation in the aquaporin 5 gene, is associated with severe exacerbation and whitish spongy appearance on exposure to water (12).

Several treatments, including topical aluminium chloride (1, 7), oral antihistamines (4) and botulinum toxin injections (13), have been reported as effective, to varying extents. Spontaneous remission has also been described (1).

The case reported here appears to have undergone spontaneous remission: the patient reported complete disappearance of symptoms and refused further examination; she was subsequently lost to follow-up.

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