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We hope that making available the relevant information on Pachyonychia Congenita will be a means of furthering research to find effective therapies and a cure for PC.
Pachyonychia Congenita Tarda

A Late-Onset Form of Pachyonychia Congenita

Amy S. Paller, MD; Julie A. Moore, MD; Richard Scher, MD

Pachyonychia congenita is a rare, autosomal dominant disorder characterized by discoloration and thickening of the nails, usually beginning within the first months of life. The thickening results from subungal hyperkeratosis with an upward angulation of the distal nail tip. The dorsal surface of the nail is smooth, whereas the lateral borders often curve toward the center in a pinched manner. Reports of the onset of nail changes beyond the first few years of life are rare. We have observed five patients with the onset of the characteristic nail changes of pachyonychia congenita during the second and third decades of life. We believe that these patients have a late onset form of the disorder and suggest that “pachyonychia congenita tarda” be recognized as a subset of pachyonychia congenita.

REPORT OF CASES

CASE 1.—A 19-year-old black woman first noted the sudden onset of marked overgrowth of her fingernails and toenails at 15 years of age. At the same time, she also first complained of palmar hyperhidrosis and pruritus. The nails had remained unchanged during the past 3 years. The patient had no history of paronychial infections, natal teeth, cutaneous blisters, or corneal dystrophy. She had taken no medications. No family members were affected and her parents were not consanguineous.

Examination revealed thickening and mild yellow discoloration of all nails, without onycholysis (Fig 1). Thickening of the fingernails was more dramatic than that of the toenails. Some of the nails had a “pinched” appearance at the proximal aspect, and the nail tip was angulated upward. The palms were markedly hyperhidrotic, and hyperkeratosis was noted on the right palm. The patient had mild leukokeratosis of both buccal mucosae. No cutaneous keratoses, cysts, bullae, or hyperpigmentation was noted. The patient had normal hair, eyes, teeth, and vocal quality. Capillaroscopy of the periungual areas revealed an abnormal capillary pattern that resembled a reticulated network.

Numerous potassium hydroxide examinations and fungal cultures of the nails on Sabouraud’s agar have revealed no fungal organisms, and antifungal medications have not altered the appearance of the nails or periungual tissues. Biopsy of the patient’s hallucal nail yielded fragmented specimens. Histopathologic examination of the nail bed revealed hyperkeratosis with acanthosis, and the nail plate was markedly hyperkeratotic. Ultrastructural examination of the fragments of the nail bed showed epidermal acanthosis with hypergranulosis and hyperkeratosis, but no other distinct abnormalities were noted.

Roentgenograms of the fingers and toes revealed bone erosion with soft-tissue atrophy of the second and third fingers of the left hand. On the right hand, the tuft of the third distal phalanx was mildly flattened, but the soft tissues were normal. All other fingers and all of the toes were normal. Because of the roentgenographic and nail fold capillary abnormalities, an antinuclear antibody test was performed, and the patient had a level of 1:2560 (normal, <1:40), with a speckled pattern. Physical examination continued to reveal no evidence of lupus erythematosus or other collagen vascular disease. A follow-up antinuclear antibody test 6 months later and the results of further evaluation, including complement levels, SSA, SSB, anti-DNA, Scl-70, calcium level, phosphorus level, complete blood cell count, and urinalysis, were normal.

No further therapy has been administered, except filing of the nails, and the nails have remained unchanged during a 2-year period of continued observation.

CASE 2.—A 47-year-old white woman had a history of discoloration and thickening of the nails beginning in her teenage years. She first noted the sudden onset of marked overgrowth of her fingernails and toenails at 15 years of age. At the same time, she also first complained of palmar hyperhidrosis and pruritus. The nails had remained unchanged during the past 3 years. The patient had no history of paronychial infections, natal teeth, cutaneous blisters, or corneal dystrophy. She had taken no medications. No family members were affected and her parents were not consanguineous.

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Accepted for publication January 21, 1991.
From the Departments of Dermatology, The Children’s Memorial Hospital of Northwestern University Medical School (Dr Paller) and Rush Medical College (Dr Moore), Chicago, Ill, and Columbia University, New York, NY (Dr Scher).
Reprint requests to Division of Dermatology, The Children’s Memorial Hospital, Room 107, 2300 Children’s Plaza, Chicago, IL 60614 (Dr Paller).
years. She was otherwise well except for a recent history of a salivary gland infection. The patient had no history of paronychial infections, natal teeth, cutaneous blisters, or corneal dystrophy. She had taken no medications. Her maternal grandfather, mother, brother, and daughter were similarly affected with thickened fingernails and toenails that developed later in life.

Physical examination showed a yellow discoloration and marked thickening of the fingernails and toenails, with subungual hyperkeratosis but a smooth surface (Fig 2). The patient had leukokeratosis of the tongue and buccal mucosa, plantar hyperkeratoses, and mild hyperhidrosis of the palms. She had multiple scalp cysts, but no bullae or hyperpigmentation was noted. The patient had normal hair, eyes, teeth, and vocal quality.

Fungal cultures from the nails and thickened sole yielded no organisms on Sabouraud's agar. No roentgenograms were obtained.

Case 3.—The 22-year-old daughter of patient 2 had discoloration and marked thickening of fingernails and toenails that began when she was a teenager. She had leukokeratosis of the tongue and buccal mucosa and plantar hyperkeratosis, but the findings of her examination were otherwise normal. Fungal cultures from the nails and thickened sole yielded no organisms on Sabouraud's agar. No roentgenograms were obtained.

Case 4.—The 48-year-old brother of patient 2 had thickening of all nails beginning in his teenage years, but not of the severity of his sister. He also had less leukokeratosis and milder plantar hyperkeratosis. Physical examination showed no further abnormalities.

Case 5.—A 70-year-old white woman developed subungual hyperkeratosis of all fingernails and toenails in her late teenage years that persisted unchanged. She had been seen by many physicians and was thought to have psoriasis, although no cutaneous signs of psoriasis were ever present. At 80 years of age, a lesion was removed from her left middle nail bed and was found to be a fibroma. The patient had no history of paronychial infections, natal teeth, keratoses, cutaneous blisters, or corneal dystrophy. She had taken no medications. No family members were affected, and her parents were not consanguineous. The patient refused biopsy.

Physical examination disclosed subungual hyperkeratosis with a markedly hypertrophic distal nail bed and hypoplastic and discoloration of all fingernails and toenails. Two of the fingernails had mild onycholysis as well, but no paronychia was associated. The findings of the physical examination were otherwise unremarkable. The results of potassium hydroxide examinations were negative. Two fungal cultures of the onycholytic nails were performed on Sabouraud's agar; one yielded no organisms and the other yielded candidal organisms, which were thought to be a contaminant. The onycholytic nails were trimmed and treated for 2 weeks with clobetasol propionate ointment. Following therapy, the onycholysis was markedly improved, but the subungual hyperkeratosis persisted. Onycholysis has not recurred, and the patient has never had nail pitting or other signs of psoriasis. Roentgenograms of the fingers showed degenerative changes of the distal interphalangeal joints, consistent with degenerative arthritis.

**COMMENT**

Pachyonychia congenita was originally described by Wilson in 1905, although the association of the disorder with palmoplantar keratoderma and other ectodermal defects was first reported by Jadassohn and Lewandowsky. The disorder is recognized to be inherited in an autosomal dominant fashion, and cases involving patients without a known family history of the disorder may be explained as cases of incomplete penetrance within the family or as sporadic cases. Recently, an autosomal recessive form of inheritance has been proposed in a Malaysian girl with consanguineous parents and in two brothers with many of the features of pachyonychia congenita; in these patients, an autosomal dominant inheritance with incomplete penetrance was also considered.

Pachyonychia congenita has been divided into three subgroups, based on the clinical features associated
with the nail changes.\textsuperscript{9,10} Common to almost all patients who have been described, regardless of the form of inheritance or subclassification of the disorder, is the onset of the pachyonychia in infancy. No established classification mentions a late-onset form of the disorder.

We believe that there is a fourth form with the onset later in life. In our review of the literature, we could find only four previously described patients in whom nail changes were first reported after infancy. In 1981, Franzen et al\textsuperscript{11} described 14 patients in five families with pachyonychia congenita. One patient first noted the typical nail changes of pachyonychia congenita as well as palmoplantar hyperkeratosis and hyperhidrosis at 15 years of age; his grandfather had only palmoplantar keratoderma. This patient had involvement of all nails, but no follicular hyperkeratosis, leukokeratosis, blisters, eye changes, or natal teeth. Diasio\textsuperscript{12} described a 9-year-old boy with nail changes that began with paronychial inflammation at 5 years of age. Hyperhidrosis, xerotic and scaling skin, and epithora were associated. No other family members were affected. Su et al\textsuperscript{10} noted that one of their 12 patients had the onset of nail manifestations of pachyonychia congenita at 17 years of age. The patient had no family history of pachyonychia congenita, but no information was given about other features of pachyonychia congenita in this patient. Finally, one of the brothers described by Haber and Rose\textsuperscript{1} first developed nail changes at 12 years of age and palmoplantar keratoderma at 9 years of age.\textsuperscript{4} However, this patient had blisters and leukokeratosis in infancy, and the nail changes, including proximal white discoloration that resembled Terry's nails and with only mild subungual hyperkeratotic material, were not typical of the nail changes of pachyonychia congenita.

Our patients had normal nails and no other features of pachyonychia congenita until the teenage years. In addition to the typical nail changes of pachyonychia congenita, our patients also developed leukokeratosis, palmar and plantar hyperkeratosis, and/or hyperhidrosis.

References