Inherited Palmar Plantar Keratodermas

Noushin Heidary, BA & Sharon E. Jacob, MD. (Updated July 2015)*

NAME OF PPK SYNDROME	GENE(S) INVOLVED	MODE OF TRANSMISSION	CLINICAL MANIFESTATION
Acrokeratoelastoidosis	Unknown	Autosomal Dominant (AD)	Yellow, hyperkeratotic papules (appearing umbilicated) on border of palms/soles
Bart-Pumphrey syndrome	Connexin 26 (GJB2)	AD	Leukonychia, congenital hearing loss (cochlear)
Striate PPK (Brunauer-Fuhs-Siemens syndrome)	Desmoglein 1	AD	Linear hyperkeratotic streaks on volar surface of finger and palms; no systemic associations
Clouston syndrome (hidrotic ectodermal dysplasia)	Connexin 30 (GJB6)	AD	Diffuse transgrediens PPK, alopecia, nail dystrophy, and other anomalies (cataracts, strabismus, tufted terminal phalanges)
Darier's disease	ATP2A2	AD	Hyperkeratotic papules in seborrheic regions; white and red longitudinal bands, pterigium and V-shaped distal nicking on nails
Epidermolysis bullosa simplex associated with PPK	Keratin 5/14	AD	PPK with traumatic palmoplantar & mucocutaneous blistering
Epidermolytic PPK (EPPK) with polycyclic psoriasiform plaques	Keratin 1	AD	Chronic diffuse PPK with flares of psoriasiform plaques
Erythrokeratoderma variabilis	Connexins 31 and 30.3 (GJB3 and GJB4)	AD	Transient areas of figurate erythema, hyperhidrosis, PPK with transgrediens, hyperkeratotic plaques
Focal acral hyperkeratosis	Unknown	AD	Crateriform papules showing no elastorrhexis
Focal EPPK	Unknown	AD	Focal and painful keratotic lesions, mainly on plantar pressure points
Focal NEPPK (non-epidermolytic PPK)	Unknown	AD	Focal keratosis, often localized to pressure points on palms and soles
Focal palmoplantar keratoderma with oral mucosa hyperkeratosis	Keratin 16	AD	Focal PPK, oral hyperkeratosis, subungual hyperkeratosis
Greither Disease (progressive PPK)	Keratin 1	AD	PPK with transgrediens, up to the Achilles tendon, NO transient erythema
Howel-Evans syndrome	TOC, Envoplakin	AD	PPK at pressure sites associated with esophageal cancer and oral leukoplakia
Huriez syndrome	Unknown	AD	PPK with sclerodactyly, hypohidrosis
Ichthyosis hystrix of Curth-Macklin	Keratin 1	AD	Spiky, verrucous hyperkeratotic plaques often associated with PPK
Keratosis palmoplantaris punctata (Bushke-Fischer-Bauer)	Unknown	AD	Multiple punctate keratosis on palmoplantar surface
Olmsted syndrome	Unknown	AD or XLR	PPK infancy, oral leukoplakia, ainhum
Pachyonychia congenita (PC) I (Jadassohn-Lewandowsky)	Keratin 6a/16	AD	PPK, hyperhidrosis, mucosal leukokeratosis
PC II (Jackson-Sertoli/Lawler)	Keratin 6b/17	AD	PPK, steatocystoma multiplex, natal teeth
PC III (Schafer-Branauer)	Keratin 6a/17	AD	PPK, corneal leukokeratosis
PC IV (Tarda)	Unknown	AD	PPK, hyperpigmented flexures
Progressive symmetric erythrokeratoderma	Loricrin	AD	Fixed, symmetric, erythematous hyperkeratotic plaques, sparing the trunk
Vohwinkel's (Classical) syndrome	Connexin 26 (GJB2)	AD	PPK- honeycomb surface, juxta-articular "star-fish" keratotic papules, pseudo-ainhum, high frequency deafness
Vohwinkel's syndrome, ichthyotic variant	Loricrin	AD	Classic Vohwinkel's syndrome, NOT associated with deafness
Vorner syndrome (diffuse epidermolytic PPK)	Keratin 9	AD	Non-transgrediens, symmetric hyperkeratosis of palms and soles, knuckle pads

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Unna-Thost (diffuse non-epidermolytic PPK)	Keratin 1	AD	Non-transgrediens, hyperhidrosis, knuckle pads
Association noted	Mitochondrial serine transfer RNA	Presumed AD	PPK with sensorineural deafness
Carvajal syndrome	Desmoplakin	Autosomal Recessive (AR)	Generalized PPK with woolly hair and dilated left ventricular cardiomyopathy
Ectodermal dysplasia/skin fragility syndrome	Plakophilin	AR	Painful PPK, trauma-induced skin erosions, dystrophic nails, sparse hair
Haim-Munk syndrome	Cathespin C	AR	PPK with severe periodontitis, arachnodactyly, acro-osteolysis, onychogryphosis, and radiographic deformity of fingers
KID syndrome (Keratitis, Ichthyosis, and Deafness Syndrome)	Connexin 26	AR	Keratitis, Ichthyosis, Deafness, & stippled PPK (moth-eaten)
Lamellar ichthyosis	Transglutaminase 1	AR	Generalized ichthyosis with large scales, hypohidrosis, ectropion, and PPK
Mal de Meleda	SLURP-1	AR	Transgrediens, glove-and-stocking malodorous PPK, palmoplantar hyperhidrosis, hyperkeratotic plaques over joints, nail dystrophy, and perioral erythema
Naxos disease	Plakoglobin	AR	PPK, congenital woolly hair, right ventricular cardiomyopathy
Papillon-Lefevre syndrome	Cathespin C	AR	Symmetric, diffuse transgrediens PPK, periodontitis & loss of deciduous/permanent teeth & calcification of tentorial falx
Richner-Hanhart syndrome	Tyrosine transaminase	AR	Corneal ulcers, mental retardation, painful punctate keratoses on palms/soles, increased serum and urinary tyrosine levels

Recommended reading: Kimyai-Asadi A, Kotcher LB, Jih MH. The molecular basis of hereditary palmoplantar keratodermas. J Am Acad Dermatol. 2002 Sep: 47(3):327-46.

***Reviewed and updated July 2015 by: Alina Goldenberg, MD, Emily deGolian, MD, and Sharon Jacob, MD.**