15 March 2005

Use of Articles in the Pachyonychia Congenita Bibliography

The articles in the PC Bibliography may be restricted by copyright laws. These have been made available to you by PC Project for the exclusive use in teaching, scholarship or research regarding Pachyonychia Congenita.

To the best of our understanding, in supplying this material to you we have followed the guidelines of Sec 107 regarding fair use of copyright materials. That section reads as follows:

Sec. 107. - Limitations on exclusive rights: Fair use
Notwithstanding the provisions of sections 106 and 106A, the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include - (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work. The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors.

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.
What Is Your Diagnosis?

A 9-year-old boy presented with dystrophic nails and follicular hyperkeratosis.
The Diagnosis: Pachyonychia Congenita

Pachyonychia congenita (PC) is an autosomal-dominant form of ectodermal dysplasia characterized by nail dystrophy, follicular keratotic spines, and focal palmoplantar keratoderma. Type I PC (PC1), also known as the Jadassohn-Lewandowski syndrome, is associated with mutations in the keratin 16 or keratin 6a genes.\textsuperscript{1,2} Similar mutations also can cause focal palmoplantar keratoderma alone, without other manifestations of PC. PC1 is associated with oral lesions similar to white sponge nevus and, rarely, laryngeal leukokeratosis, which can lead to severe respiratory distress.\textsuperscript{3} The oral lesions associated with PC do not undergo malignant degeneration, but squamous cell carcinoma has been reported in chronic plantar ulcerations of PC.\textsuperscript{4} Patients with PC1 lack the epidermal cysts seen in type II PC (PC2).

PC2, also known as Jackson-Lawler syndrome, is associated with epidermal or pilosebaceous cysts, palmoplantar bullae, hyperhidrosis, natal teeth, twisted hair, and mutations in the keratin 17 gene. The cysts associated with PC2 predominantly affect the upper trunk and resemble steatocystoma multiplex or eruptive vellus hair cysts. Keratin 17 mutations also can manifest solely as steatocystoma multiplex with little or no nail dystrophy.\textsuperscript{5}
PC2 also has been described with mutations in the keratin 6b gene. All 3 PC keratins (6, 16, and 17) are abundantly expressed in the nail bed. Keratin 17 also is expressed in the nail matrix and in the hair follicle matrix of the eyebrows and other facial hair.

Other forms of PC exist but are not as well characterized. Type III PC has been described as combining clinical findings of types I and II with angular cheilitis, corneal dyskeratosis, and cataracts. Type IV PC includes findings of types I through III plus laryngeal lesions, hoarseness, mental retardation, hair anomalies, and alopecia. Some cases of PC involve the nails only. Rarely, signs of PC are delayed until adulthood—a phenomenon described as PC tarda.

PC is difficult to treat. Keratolytics are of limited benefit, and nail matrix ablation is often of limited benefit because the disease principally affects the nail bed, not the matrix. However, Thomsen et al. have reported favorable results after nail matrix destruction. My own experience with nail ablation has been mixed; I have observed only partial responses, but patient satisfaction has been good. Acitretin has proved useful in the treatment of PC, including PC tarda. Tendon calcification, demineralization, premature closure of the epiphyses, scoliosis, and limb length discrepancy are potentially devastating risks when children are treated with oral retinoids.

REFERENCES