Commentary

Of palms, soles, and gums

Of not quite venerable status, Papillon-Lefèvre syndrome was first described in 1924. That was a year after I was born and one never likes to think of oneself as venerable. However, as a graduate fellow in pathology at Columbia Presbyterian Hospital, New York, USA in the late 1940s, my initial exposure to the general concept of syndromes had only just occurred (acanthosis nigricans and gastric adenocarcinoma). Although I had high hopes that other oral syndromes existed for me to identify (the idea of discovering a new one did not enter my mind at the time), I remember talking about my new found interest to almost everyone I encountered at Columbia University Dental School, my hope being that they would show me a new one. In late 1949, Dr. Sam Rosenthal, Chair of Pediatric Dentistry, knowing of my interests, asked me to see a child. In 1924, Dr. Haim and Munk7 in 1965 and others subsequently described the syndrome in a dental journal.

Papillon-Lefèvre syndrome is a very rare (1-4/million) autosomal recessive disorder characterised by diffuse, red, scaly palms and soles which appear from 2 to 4 years of age. The hyperkeratosis of the palms is quite well demarcated, scaly palms and soles which appear from 2 to 4 years of age. The hyperkeratosis of the palms is quite well demarcated, the soles and the skin on the volar wrists. The soles are more severely involved, the hyperkeratosis, there were progressive periodontal destruction and lymphoid cells. Loss of function mutations in the gene encoding cathepsin C is an enzyme which processes and activates several granule serine proteases critical to immune and inflammatory responses of myeloid and lymphoid cells. Loss of function mutations in the gene encoding cathepsin C in familial pubertal periodontitis, and other syndromes have suggested that there is a genetic basis for susceptibility to these microbes. The susceptibility gene for Papillon-Lefèvre syndrome, Haim-Munk syndrome, and prepubertal periodontitis is cathepsin C. Cathepsin C is an enzyme which plays an important role in intracellular degradation of proteins, in families with Papillon-Lefèvre syndrome. These results were also found by an independent group.12

In this issue, Hart et al.13 show that Haim-Munk syndrome is allelic to Papillon-Lefèvre syndrome. More tantalising, however, is the identification of a germline missense mutation in a highly conserved residue in the cathepsin C gene in familial pubertal site specific periodontitis.14 Since periodontitis is a common problem among the general population, affecting perhaps 30%, these findings might have public health implications.

Our dentists and dental hygienists have always preached to us that periodontal disease is a result of microbial onslaught and poor oral hygiene. The genetic aetiology of Papillon-Lefèvre syndrome, Haim-Munk syndrome, prepubertal periodontitis, and other syndromes have suggested that there is a genetic basis for susceptibility to these microbes. The susceptibility gene for Papillon-Lefèvre syndrome, Haim-Munk syndrome, and prepubertal peridontitis is cathepsin C. Cathepsin C is an enzyme which processes and activates several granule serine proteases critical to immune and inflammatory responses of myeloid and lymphoid cells. Loss of function mutations in the gene encoding cathepsin C in familial pubertal periodontitis were found.

For me, it has been a long 50 year voyage, but a fascinating one.

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7 Haim S, Munk J. Keratosis palmos-plantaris congenita, with periodontosis, arachnodactyly, and peculiar deformity of the terminal phalanges. Br J Dermatol 1965;77:42-54.


