GENETICS AND GENODERMATOSES

A CASE OF OLMSTED SYNDROME WITH PAINFUL PALMOPLANTAR KERATODERMA AND BONE RESORPTIONS OF DISTAL PHALANX

Yuko Okubo [(1)] - Daisuke Utsumi [(1)] - Sayaka Yamaguchi [(1)] - Yu-ichi Yamamoto [(1)] - Kenzo Takahashi [(1)]

Department Of Dermatology, University Of The Ryukyus, Okinawa, Japan [(1)]

Background: A 44-year-old Japanese man had had palmoplantar keratoderma since his early childhood. He had been treated with oral etretinate since the age of 12-year-old without the conclusive definitive diagnosis, and gained improvement in his symptom. However, the retinoid had to be stopped because of liver dysfunction, his symptom got worsened. The severe and focal palmoplantar keratoderma were relapsed accompanied with severe pain. Furthermore, the previously masked lesions at the angles of mouth and the gluteal cleft became apparent. His finger and toe-tips became severely swollen and bone resorptions of distal phalanx were observed by X-ray. The patient was suspected to have Olmsted syndrome from clinical symptoms.

Objective: Olmsted syndrome is a rare congenital disorder characterized by palmoplantar and perioral keratoderma, constriction of digits, and alopecia. A recent study identified a gain-of-function mutations in TRPV3. TRPV3 is expressed in the skin, hair follicles, brain, and spinal cord, and regulates the proliferation and differentiation of epidermal keratinocytes and hair follicles through the EGFR pathway. Our aim in this study was to definite diagnosis and to know the mechanism of his palmoplantar keratoderma.

Materials and Methods: DNA was isolated from blood of the patient and all exons of TRPV3 were sequenced. RNA was isolated from his skin lesion and from HaCaT cells treated with TRPV3 agonist, and quantitative RT-PCR was performed to examine the expression of the EGFR-ligands.

Results: Direct sequencing revealed that the patient has 1964 T to C transversion in TRPV3, causing a Leu 655 Pro missense mutation. Quantitative RT-PCR showed up-regulation of EGFR ligands those are thought to be shed by ADAM17.

Conclusions: The patient was diagnosed with Olmsted syndrome from mutation in TRPV3 gene. One of the mechanisms of his palmoplantar keratoderma was thought that the activation of TRPV3 induces the proliferation of keratinocytes through the EGFR pathway.