Enhanced Expression of Proliferating Cell Nuclear Antigen in Psoriatic Epidermis

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Background: The proliferating cell nuclear antigen (PCNA), one of the markers for proliferating cells, has been detected in solid human neoplasms. Psoriasis is a benign hyperproliferative disorder of the skin.

Objective: This study has been made to investigate if PCNA can be detected in the psoriatic epidermis.

Method: Specimens from 10 patients with psoriasis were stained for PCNA using the one hour immunoalkaline phosphatase technique.

Results: The psoriatic epidermis showed positive nuclear staining in 20%-61% (mean, 45.7%) of keratinocytes.

Conclusion: PCNA seems to be involved in the mechanism of increased epidermal cell proliferation in psoriatic lesions. (Ann Dermatol 7(2):169-171, 1995)

Key Words: PCNA, Psoriasis

Psoriasis is a common benign hyperproliferative disorder of the skin. Unlike neoplastic proliferative disorder, however, the psoriatic epidermis retains its epidermal structure, in which differentiation is not completely performed.

The proliferating cell nuclear antigen (PCNA), one of the markers for proliferating cells, has been detected not only in noncutaneous solid human neoplasms but also in cutaneous keratinocytic neoplasms. In this study, I have investigated if PCNA can be detected in psoriasis, a benign hyperproliferative disorder.

MATERIALS AND METHODS

Specimens from 10 patients with psoriasis vulgaris, which were typical on H&E stain, were studied. Their ages ranged from 10 to 78 years (average, 38) and the durations of their diseases varied from 1 month to 25 years. Five cases of Bowen's disease as a positive control along with 3 cases of normal skin as a negative control were also studied.

A section from one paraffin block per case was stained for proliferating cell nuclear antigen (PC 10, DAKO monoclonal: DAKO, Santa Barbara, CA, USA) using the one hour immunoalkaline phosphatase technique described previously using fast red TR salt as a chromogen. Areas containing the greatest number of positive cells per 1000 keratinocytes were separately counted by 3 pathologists.

RESULTS

Twenty percent to sixtyone percent (mean, 45.7%) of PCNA positive keratinocytes were randomly distributed in psoriatic epidermis, showing nuclear pattern (Fig. 1). The parakeratotic horny layer did not show any positive staining. In 5 cases of Bowen's disease, 18%-59% (mean, 49%) of epidermal keratinocytes were positive in the area containing the greatest number of PCNA positive cells, involving the whole layers of the epidermis (Fig. 2). On the other hand, 3 cases of the normal epidermis did not show any PCNA positive cells except in the basal layer (Fig. 3).

DISCUSSION

Although the pathogenesis of psoriasis has not been clarified, numerous studies have been made to
elucidate the mechanism of the increased epidermal cell proliferation in psoriatic lesions. Many believe the important role of the defective adenylate cyclase-cAMP system in the formation of this hyperproliferative condition. Others reported the relevance of oncogenes expression to the pathogenesis of psoriasis while they have been detected in many human solid tumors.

Proliferating cell nuclear antigen, also known as "cyclin" is a nuclear antigen that increases in late G1 and S phases. The proliferating activity of many human solid malignancies had been detected with anti-PCNA antibody. In this study, the psoriatic epidermis showed as high a PCNA positive rate as Bowen's disease used as positive control. These results suggest that psoriasis shares the mechanism with neoplastic transformation in some levels of their pathogenesis.

REFERENCES