Development of Verruca Plana from Human Papillomavirus 78 Dependent on Host Immune State

Mayuna SHIMANO1, Toshinari MIYAUCHI1,*, Teruki YANAGI1, Toshifumi NOMURA1,2 and Hideyuki UJIIE1
1Department of Dermatology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, N15W7, Kita-Ku, Sapporo, 060-8638 and 2Department of Dermatology, Faculty of Medicine, University of Tsukuba, Tsukuba, Japan. *E-mail: miyauchi@med.hokudai.ac.jp
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Verruca plana, also known as plane warts or flat warts, is a morphological form of benign wart caused by human papillomavirus (HPV) infection. More than 200 types of HPV have been identified, among which the Alphapapillomavirus 2 (aPV2) and, especially, HPV3 can cause verruca plana (1). Clinically, flat or slightly elevated papules are observed preferentially on the face and dorsal surfaces of the hands, especially in young people, but sometimes in elderly people, and the number of lesions ranges from a few to hundreds (1–3). It is generally known that there are strong relationships between HPV types, clinical and histological morphologies, and anatomical sites or tissues, which can vary depending on the immune status of the host. We report here a case of verruca plana caused by HPV78 infection, which is rarely detected from immunocompetent individuals’ lesions, in a patient with Sézary syndrome.

CASE REPORT
A 78-year-old Japanese man presented to our hospital with multiple flat papules on the extremities with unknown onset. He had been treated for erythroderma for 16 years with topical steroids, ultraviolet B phototherapy, and oral cyclosporine. He had been diagnosed with Sézary syndrome 4 years earlier, and had just undergone 4 months of mogamulizumab treatment. Physical examination revealed multiple light red, slightly itchy, flat papules of up to 3–5-mm in diameter on the forearms and thighs (Fig. 1a). There were no lesions on the face or dorsal surfaces of the hands. In dermoscopic findings, red dots and globular vessels were observed. Histology of a flat papule on the right forearm showed hyperkeratosis and acanthosis, with hypergranulosis and numerous koilocytes in the upper epidermis. To determine the type of HPV in the lesions, HPV genotyping was performed by restriction fragment length polymorphism (RFLP). This is a modified version of a previously reported method (4), in which HPV genotypes can be distinguished, based on the cutting patterns of PCR products digested with some restriction enzymes (Fig. 1b). Total DNA was extracted from a lesion on the left thigh using the QIAamp DNA Mini Kit (Qiagen, Hilden, Germany) and amplified by PCR using AmpliTaq Gold 360 Master Mix (Applied Development of Verruca Plana from Human Papillomavirus 78 Dependent on Host Immune State

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Fig. 1. Multiple flat papules on the right thigh. (a) Inset: high magnification of the area indicated in the box. (b) A flow chart of HPV-genotyping using restriction fragment length polymorphism (RFLP). HPV types including aPV2 (pink) can be distinguished through the cutting patterns by restriction enzymes (blue). Solid lines represent "cut" and dotted lines "not cut". (c) Electrophoretic profile of the PCR samples. DNA extracted from normal human skin was used as a negative control, and that from a HPV7-related wart as a positive control. The estimated size of the amplicon is approximately 220 bp. (d) Results of digestion with 5 restriction enzymes. NE: no enzyme.
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Veruca plana commonly appear on the face and dorsum of the hands, in the current case they were atypically and widely distributed only on the extremities and not on the face. Conversely, the dermoscopic findings of each lesion were quite similar to those reported previously (10); hence the characteristics of each lesion were typical. Regression of the lesions can occur in verruca plana, which is one of its main clinical features. However, the current case had not followed this course, and cryotherapy had had a limited effect thus far. This could be characteristic of HPV78-associated verruca plana, which is presumably the result of infection against a background of host immune status.

These findings suggest that whether HPV78 develops skin lesions depends largely on the host’s immune state. However, the amount of data currently available on HPV78 is limited, and further study is necessary.

The authors have no conflicts of interest to declare.

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