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Case Series

So-Called Butcher's Warts Appeared on the Hands of a Meat Handler

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Keywords
Butcher's warts · Human papillomavirus type 7 · Meat handler · Environment factor

Abstract
We present a case of so-called butcher's warts in a meat handler with atopic dermatitis. PCR with direct sequence analysis confirmed the presence of HPV 7 in the hand warts of the patient. Histopathologically, the lesion contained vacuolated cells with centered nuclei, and there were no abundant keratohyalin granules in the granular layer. Clinically, HPV 7-induced warts tend to appear on the hands of meat/fish handlers or cutters in the world. Therefore, meat/fish had been thought to act as a vector for the transmission of HPV 7. In our case, the Japanese patient's occupation required the handling of meat/fish products, and HPV 7 was found from his hand warts. This evidence indicated that HPV 7 was widely distributed in the world. However, this patient worked in a Japanese restaurant, which required the handling of meat/fish products with tools such as knives and chopping boards. Therefore, we suggested that HPV 7 might be correlated with specific reservoirs.

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Introduction

Human papillomavirus (HPV) 2, 27, and 57 are generally the cause of benign common warts. In contrast, HPV 7 causes a specific subset of digital warts caused by HPV 7 known as "butcher's warts," which are significantly higher in butchers and meat/fish handlers or cutters than in the general population [1]. Meat and/or fish were thought to be the possible vector for the transmission of HPV 7. The clinical appearance of butcher's warts and common warts are similar, and the clinical diagnosis may be difficult. However, their pathological characteristics of butcher's warts include large clear cells, isolated or in clusters, with centered nuclei that are sometimes binucleated, and an absence of abundant keratohyalin granules in the granular layer [2]. We have detected HPV 7 from the hand warts of a Japanese male who was working in a restaurant as a meat/fish handler, and discussed the possible reservoirs that may correlate with HPV 7.

Case Report

A 35-year-old male patient presented with a small number of verrucous lesions on the right hand with a history of 2 years. He is a worker in a Japanese restaurant as a meat/fish handler, and was diagnosed with severe atopic dermatitis (AD). Clinical examination revealed a warty skin-colored lesion on the thumb and a lesion with dark brownish papules on the index finger of his right hand. Occupational microtraumas were also found on his fingers (Fig. 1a). A sample from skin biopsy of the lesion underwent routine histopathology. The surfaces of the lesions were hyperkeratotic with vacuolated parakeratotic and granular cells. The vacuolated cells had centered nuclei and lacked abundant keratohyalin granules (Fig. 1b). Total cellular DNA from the frozen sample was extracted as previously described and underwent PCR amplification by using SK primers (Fig. 2) [3]. The PCR product was sequenced according to the manufacturer's instructions. The results indicated that HPV 7 was present in the sample. The lesions were resistant to cryotherapy, and CO_2 laser treatment was performed. The lesion regressed completely after laser treatment, and no recurrence was observed in 6 months of continuous follow-up.

Discussion

HPV 7 was originally identified in 1981, and it was eventually cloned in 1986 from the hand warts of butchers [4]. Therefore, HPV 7-induced digital warts are so-called butcher's warts. Keefe et al. [4] found that the prevalence of digital warts was 34.1% in butchers, 33.3% in abattoir workers, 19.5% in engineering fitters, and 14.7% in office workers. In contrast, the prevalence of HPV 7 was 15.5% in butchers, 15.6% in abattoir workers, 0% in engineering fitters, and 0.6% in office workers [4]. In addition, Jabłońska et al. [5] also reported that HPV 7 was found in 49 of the 160 butchers from various slaughterhouses. Therefore, meat may act as a vector for the transmission of HPV 7 [4]. In contrast, fishes were also suggested as another possible route of transmission. Rüdlinger et al. [6] investigated 12 samples of hand warts from 11 patients who all were involved in the catching, gutting, filleting, or curing of fishes. HPV 7

was found in 6 of these fish handlers [6]. Epidemiological reports on viral warts caused by HPV 7 are very rare, not only worldwide but also domestically in Japan. According to Hagiwara et al. [7], HPV 7 was found in 1 of 213 common warts in Japan. Reviews on HPV 7-induced common warts are summarized in Table 1 and Table 2 [4–10]. In contrast, a previous report indicated that HPV 2, 27, and 57 are the predominant causative viruses of plantar warts [11]. In comparison, there are no reports proving that HPV 7 plays a pathogenic role in plantar warts. Whether meat and/or fish is the vector of HPV 7 is unknown, whereas tools that involve the handling of these products, such as knives and chopping boards, may play a role as a reservoir of virus transmission. A break in the skin barrier due to trauma or chronic skin maceration may also contribute to the transmission of HPV. The butcher's warts are morphologically similar to common warts, with prominent acanthosis and hyperkeratosis. However, their histopathological characteristics differ from common warts because these warts contain large clear cells, isolated or in clusters, with centered nuclei that are sometimes binucleated, and these warts lack abundant keratohyalin granules in the granular layer.

Our patient had been working in a Japanese restaurant and was handling meat or fish with his macerated water-sodden fingers. Therefore, HPV 7 could have been acquired from his occupational behavior. The association between HPV 7 infection and AD is not well established. However, skin barrier disruption in AD is caused by mutations in the filaggrin gene and lack of ceramides [12]. The patient in the present case suffered severe AD, and the epidermal barrier of his hands was remarkably disrupted. Bare-handed contact with raw meat by his macerated water-sodden fingers may have facilitated the HPV 7 infection.

Conclusions

To our knowledge, this is the first case of HPV 7 that was found on the hand warts of a Japanese restaurant worker. Further studies on HPV 7 infection also will likely be reported in future. In addition, the reservoir, route of transmission, and pathogenesis of HPV 7-induced warts would be elucidated with the accumulation of cases.

Statement of Ethics

The authors have no ethical conflicts to disclose. Written informed consent was obtained from the patient for publication (including publication images). The study complied with the Declaration of Helsinki.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Dr. Tsuyoshi Mitsuishi (T.M.) collected and analyzed clinical and pathological data, including patients' follow-up. Dr. T.M. performed laboratory work, and data analysis. Drs. T.M., U.G., and K.M. wrote the manuscript. All the authors revised and approved the final version.

References

1 Keefe M, al-Ghamdi A, Coggon D, Maitland NJ, Egger P, Keefe CJ, et al. Butchers' warts: no evidence for person to person transmission of HPV7. Br J Dermatol. 1994 Jan;130(1):15–7.
2 Orth G, Jablonska S, Favre M, Croissant O, Obalek S, Jarzabek-Chorzelska M, et al. Identification of papillomaviruses in butchers' warts. J Invest Dermatol. 1981 Feb;76(2):97–102.
3 Sasagawa T, Mitsuishi T. Novel polymerase chain reaction method for detecting cutaneous human papillomavirus DNA. J Med Virol. 2012 Jan;84(1):138–44.
4 Keefe M, al-Ghamdi A, Coggon D, Maitland NJ, Egger P, Keefe CJ, et al. Cutaneous warts in butchers. Br J Dermatol. 1994 Jan;130(1):9–14.
5 Jabłońska S, Obalek S, Gołebiowska A, Favre M, Orth G. Epidemiology of butchers' warts. Arch Dermatol Res. 1988;280 Suppl:S24–8.
6 Rüdlinger R, Bunney MH, Grob R, Hunter JA. Warts in fish handlers. Br J Dermatol. 1989 Mar;120(3):375–81.
7 Hagiwara K, Uezato H, Arakaki H, Nonaka S, Nonaka K, Nonaka H, et al. A genotype distribution of human papillomaviruses detected by polymerase chain reaction and direct sequencing analysis in a large sample of common warts in Japan. J Med Virol. 2005 Sep;77(1):107–12.
8 Melchers W, de Mare S, Kuitert E, Galama J, Walboomers J, van den Brule AJ. Human papillomavirus and cutaneous warts in meat handlers. J Clin Microbiol. 1993 Sep;31(9):2547–9.
9 Rübben A, Kalka K, Spelten B, Grussendorf-Conen EI. Clinical features and age distribution of patients with HPV 2/27/57-induced common warts. Arch Dermatol Res. 1997 May;289(6):337–40.
10 Iftner A, Klug SJ, Garbe C, Blum A, Stancu A, Wilczynski SP, et al. The prevalence of human papillomavirus genotypes in nonmelanoma skin cancers of nonimmunosuppressed individuals identifies high-risk genital types as possible risk factors. Cancer Res. 2003 Nov;63(21):7515–9.
11 Mitsuishi T, Sasagawa T, Kato T, Iida K, Ueno T, Ikeda M, et al. Combination of carbon dioxide laser therapy and artificial dermis application in plantar warts: human papillomavirus DNA analysis after treatment. Dermatol Surg. 2010 Sep;36(9):1401–5.
12 Kabashima K. New concept of the pathogenesis of atopic dermatitis: interplay among the barrier, allergy, and pruritus as a trinity. J Dermatol Sci. 2013 Apr;70(1):3–11.

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Fig. 1. Clinical appearance of butcher's warts. **a** Warty lesions with hyperkeratosis were found on the right thumb and index finger. Numerous microtraumas were also found on his fingers. **b** Vacuolated cells with centrally located nuclei, with no keratohyalin granules appeared in the epidermis (arrows) (H&E staining ×200).

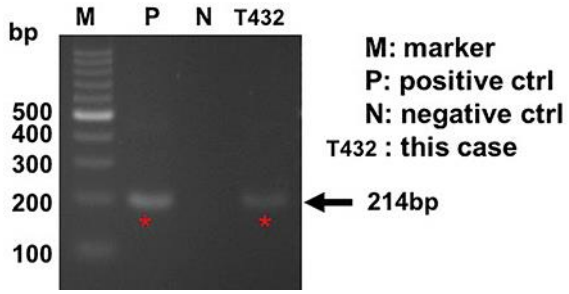

Fig. 2. Detection of HPV 7 DNA by PCR analysis. Lane M: 100-bp ladder marker; lane P: positive control; lane N: negative control; lane T432: this case.

Table 1. Reports on HPV 7-induced common warts of meat/fish handlers

Reference (year)	*n*	HPV 7 positive, %
Jabłońska et al. [5] (1988)	160	30.6
Rüdlinger et al. [6] (1989)	11	54.5
Melchers et al. [8] (1993)	26	26.9
Keefe et al. [4] (1994)	192	38.5

Table 2. Reports on HPV 7-induced common warts of the general population

Reference (year)	*n*	HPV 7 positive, %
Keefe et al. [4] (1994)	103*	1.9
Rübben et al. [9] (1997)	219	2.3
Iftner et al. [10] (2003)	206	1.0
Hagiwara et al. [7] (2005)	213	0.5

* Non-meat/fish handlers.