Brief Overview about Verruca Plana

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Abstract

Viral Warts are benign epidermal tumors of the skin and mucosal surface caused by human papillomaviruses (HPVs). HPV infects the cornified stratified squamous epithelium of skin and the uncornified mucous membrane.Warts are classified into several types according to the site and the form of the lesion including; verruca vulgaris, verruca plana (VP), verruca plantaris and condyloma acuminatum.Warts are common skin infections with worldwide distribution. It is estimated that 40% of world population is infected with HPV; in 7% -12% of them, clinical lesions develop.Viral warts representing about 10–20 % of visits to dermatologists. The prevalence of which reaches up to 33 % among children and about 3.5 % among adults. Two-thirds of pediatric patients experience Spontaneous remission within two years,, although observational studies reported that about 50 % of cutaneous warts may resolve spontaneously within a year, many patients seek treatment because of social stigma or discomfort.The clinical presentation is largely determined by the location of the warts. In regions without mechanical pressure, such as the fingers, the dorsa of the hands and feet, the arms, the legs or the trunk, lesions present as skin-colored or yellowish-gray, dome-formed nodules with a papillomatous and keratotic ("verruciform") surface. Typical findings also include black dots, which correspond to the HPV-induced papillary necrosis seen on histology. Dermoscopy is non invasive diagnostic method can assist identify to different type of skin lesion ,such as cancer, dermatitis. Plane warts poses a therapeutic challenge since they persist for a long time, they are generally located in cosmetically important areas, and they are resistant to therapy. Plane warts treatment strategy should balance between the efficacy of treatment and the side effects associated with it since aggressive approaches may result in scarring.

Keywords: Verruca Plana

INTRODUCTION

Viral Warts are benign epidermal tumors of the skin and mucosal surface caused by human papillomaviruses (HPVs). HPV infects the cornified stratified squamous epithelium of skin and the uncornified mucous membrane[1]. Warts are classified into several types according to the site and the form of the lesion including; verruca vulgaris, verruca plana (VP), verruca plantaris and condyloma acuminatum[2].

Human papillomaviruses comprise a group of nonenveloped, double-stranded DNA (dsDNA) viruses that belong to the Papillomaviridae family. They infect keratinocytes and induce hyperplasia and hyperkeratosis. This increased growth forms a wart.To date, 226 HPV genotypes that cause both genital and cutaneous warts have been completely classified [3]. HPV virus is transmissible through contact with infected surfaces[4].

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representing about 10–20 % of visits to dermatologists. The prevalence of which reaches up to 33 % among children and about 3.5 % among adults. Two-thirds of pediatric patients experience Spontaneous remission within two years,, although observational studies reported that about 50 % of cutaneous warts may resolve spontaneously within a year, many patients seek treatment because of social stigma or discomfort[6].

Certain HPV types are linked to clinical types of warts with predilection to certain anatomical sites. Extragenital warts present as common warts (verrucae vulgaris), plane warts (verruca plana) or plantar warts. Common and plantar warts are predominantly caused by HPV types 1, 2, 4 and 7, whereas types 3, 10, 27 and 41 usually give rise to plane warts[7].

HPV virus is transmissible through contact with infected surfaces [8]. So the virus can transmitted directly from human to human. While contracting the virus from the environment is also possible, it is still unknown for how long HPVs can persist outside the body. Infection involves the penetration of the virus through a damaged epithelial barrier, especially in poorly perfused areas such as the dorsa of the hands, the fingers or feet[7], [9]

Clinical presentation and histology

The clinical presentation is largely determined by the location of the warts. In regions without mechanical pressure, such as the fingers, the dorsa of the hands and feet, the arms, the legs or the trunk, lesions present as skin-colored or yellowish-gray, dome-formed nodules with a papillomatous and keratotic ("verruciform") surface. Typical findings also include black dots, which correspond to the HPV-induced papillary necrosis seen on histology. Plane warts present as flat, skin-colored or yellowish-reddish papules with a smooth surface and a tendency to coalesce. This type of wart is predominantly seen in adolescents and young adults so the term "verrucae planae juveniles" or juvenile (plane) warts was coined for this type[6].

Histologically, common warts are characterized by parakeratosis, acanthosis and papillomatosis with large ballooned cells in the stratum spinosum. Plane warts, on the other hand, show no papillomatosis[6].

Diagnosis

Mostly warts are diagnosed clinically. Dermoscopy is useful in identifying challenging cases and in the follow-up. Dermoscopic examination typically show capillary hemorrhage (black dots). Treatment-refractory lesions should be evaluated histologically, given that tissue obtained by curettage, especially from plantar "warts", every now and then turn out to be melanomas (usually amelanotic) [10].

Plane Warts (verruca plana)

Introduction

Plane warts are flat or slightly elevated flesh colored smooth or slightly hyperkeratotic papules. They range in size from 1 to > 5 mm, and numbers range from a few to hundreds of lesions, which may become grouped or confluent. They occur most commonly on the face, hands, and shins. They may appear in a linear distribution as a result of scratching, shaving, or trauma (Pseudokoebner phenomenon) [11].

Fig 1. Verruca plana on face [11].

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Epidemiology

Plane warts commonly affect children and young adults. The prevalence of warts among primary school children is about 4.7% with slightly higher prevalence among those attend schools in rural area than those in urban areas [12], [13]. Although plane warts are the least common variety of wart, they affect more than 10 % of the general population [14] and are generally numerous on an individual. Plane warts are usually caused by human papillomavirus (HPV) types 3, 10, 28, and 29[6]

Verruca plana is estimated to represent 18% of the non-genital cases seeking treatment[15]. Verruca plana is not only an infectious disease but also affects the quality of patients' life Lesions; their resistance to treatment and recurrence cause frustration and discomfort in 51.7% of patients. Verruca plana also affects the social activities in about 38.8% of patients[16]. Facial verruca plana cause major cosmetic and social concerns, which motivate patients to seek treatment [17].

Diagnosis

Clinical Features

Plane warts clinically appear slightly elevated papulespink, light brown, or light-yellow colored. polygonal shape. show upon the forehead, around the mouth, the backs of the hands, and shaved areas. HPV testing is not useful for this condition. Although usually not necessary, a shave biopsy can confirm the diagnosis [5]

Dermoscopy is non invasive diagnostic method can assist identify to different type of skin lesion ,such as cancer, dermatitis. Dermoscopic feature of plane warts including red background, red grey background, whitish (pale) backgroung ,with dotted vessels and bleeding.Dermoscope provid more accurate and detailed criteria for the diagnoses of plane warts[18].

Differential Diagnosis

Lichen planus produces flat-topped papules that may be confused with flat warts. Look for feature signs of lichen planus such as the symmetric distribution, purplish coloration, and oral lacy lesions. (Wickham striae are white, fine, reticular scale visible at the lesions.) The distribution of lichen planus is different, with the maximum not unusualplace sites being the ankles, wrists, and back. Seborrheic keratoses are often more darkly pigmented and have a stuck on appearance; "horn cysts" may be visible on dermoscopic examination. Squamous cell carcinoma should be considered when lesions have irregular growth or pigmentation, ulceration, or resist therapy, particularly in sun-exposed areas and in immunosuppressed patients [5].

Management

Plane warts poses a therapeutic challenge since they persist for a long time, they are generally located in cosmetically important areas, and they are resistant to therapy [19]. Plane warts treatment strategy should balance between the efficacy of treatment and the side effects associated with it since aggressive approaches may result in scarring[20].

In this setting, topical tretinoin is the treatment of choice, even though there are still no controlled studies on the efficacy of this approach. The same is true for laser- or light-based procedures

Nonpharmacologic

Regression of these lesions may occur, which usually is heralded by inflammation. There are no current therapies for HPV that are virus specific.

Pharmacologic:

Topical salicylic acid is one of the most effective management strategies for all types of warts with a success rate average of 73% from five pooled placebo controlled trials. Salicylic acid is more acceptable on the legs than the face. Often, 17% salicylic acid topicals are applied overnight daily until the warts resolve [21].

Tretinoin cream, 0.025%, 0.05%, or 0.1%, applied at bedtime over the entire involved area is another accepted treatment. The frequency of application is then adjusted so as to produce a mild, fine scaling and erythema. Sun protection is important. Treatment may be required for weeks or months and may not be effective [22].

Fluorouracil (Efudex 5% cream, Fluoroplex 1%) may be used to treat plane warts. Apply the cream to affected regions twice daily for 3 to 4 weeks. Sun safety is essential because the drug is photosensitizing. Persistent hypo or hyperpigmentation may occur following use, however making use of it with a cotton tipped applicator to person lesions instead of to the area may minimize this damaging reaction [21].

Imiquimod 5% cream is an expensive topical immunomodulator that has shown some efficacy in treating plane warts. It is nonscarring and painless to apply with rare reports of systemic side effects,local adver effect including erythema itching edema erosion[23]. The cream is applied to the lesions 3 times a week (every other day). The cream may be applied to the affected area, not strictly to the lesion itself. It can be used on all external HPV-infected sites, but not on occluded mucous membranes. Therapy can be temporarily halted if symptoms become problematic. Imiquimod has the advantage of having almost no risk of scarring. A lower concentration of

imiquimod (3.75% cream) is also available, but data for its use with plane or common warts is lacking [24].

Intralesional injections with Candida antigen induces a localized, cell-mediated, and HPV specific response that may target the injected wart in addition to extra remote warts. This approach has moderate effectiveness (60% cure rates) for treatment of recalcitrant warts. The Candida antigen need to be diluted before used. Inject 0.1 to 0.3 mL into the largest warts using a 30 gauge needle and up to 1 mL per treatment. Warn the affected person to expect itching in the area, burning, or peeling. Repeat each 4 weeks, up to three treatments or until warts are gone [25].

Photodynamic therapy with aminolevulinic acid plus topical salicylic acid is a moderately effective option for treatment of recalcitrant warts. Although it is likely to be beneficial, it is expensive and often requires dermatologic referral [19]

Cantharidin 0.7% is an extract of the blister beetle this is implemenented to the wart after and then blistering occurs. It can be utilized in resistant cases. It is likewise benefical in young children because application is painless in the office. However, painful blisters often occur within a day after application. Be careful not to over treat with cantharidin because the blistering can be quite severe. Carefully apply to more than one lesions using the wooden end of a cotton-tipped applicator [26].

Surgical

Cryotherapy, most commonly with liquid nitrogen, is useful but is somewhat painful for younger children. Chemical cryogens are now available over the counter but are not as cold or effective as liquid nitrogen. cryotherapy has higher risk of dyspigmentation specially in darkly pigmented individuals. Most trials comparing cryotherapy with salicylic acid found Cryotherapy was more effective than topical salicylic acid in the verruca vulgaris type but showed similar efficacy in the treatment of verruca plantaris type often cause marked pain as well[27]. These adverse effects make both dermatologists and patients hesitate to start the treatment. Currently, there is no standard method of treatment that is both highly effective and safe. It is necessary to explore potentials for other treatment modalities to develop more reliable, easy to use, effective, economical with minimal side effect therapeutic for verruca plana[28].

Plane warts usually requires shorter freeze times compared to thicker warts. It is always better to underfreeze than overfreeze since overfreezing may lead to permanent scarring or hypopigmentation. Best results of cryotherapy can be achieved when the patient is treated every 2 or 3 weeks. There is no therapeutic benefit beyond 3 months [19]

References

[1] J. C. Sterling, S. Handfield-Jones, and P. M. Hudson, "Guidelines for the management of cutaneous warts," Br. J. Dermatol., vol. 144, no. 1, pp. 4–11, Jan. 2001, doi: 10.1046/j.1365-2133.2001.04066.x.

[2] "Cutaneous warts (common, plantar, and flat warts) - UpToDate ١٥٣٤٠٧.pdf."

[3] G. K. Hogendoorn et al., "Morphological characteristics and human papillomavirus genotype predict the treatment response in cutaneous warts," Br. J. Dermatol., vol. 178, no. 1, pp. 253–260, Jan. 2018, doi: 10.1111/bjd.15758.

[4] E. Grillo, P. Boixeda, A. Ballester, A. Miguel-Morrondo, T. Truchuelo, and P. Jaén, "Pulsed dye laser treatment for facial flat warts: Vascular laser treatment for flat warts," Dermatol. Ther., vol. 27, no. 1, pp. 31–35, Jan. 2014, doi: 10.1111/dth.12038.

[5] J. C. Sterling et al., "British Association of Dermatologists' guidelines for the management of cutaneous warts 2014," Br. J. Dermatol., vol. 171, no. 4, pp. 696–712, Oct. 2014, doi:

10.1111/bjd.13310.

[6] D. Abeck, L. Tetsch, M. Lüftl, and T. Biedermann, "Extragenital cutaneous warts – clinical presentation, diagnosis and treatment," JDDG J. Dtsch. Dermatol. Ges., vol. 17, no. 6, pp. 613–634, Jun. 2019, doi: 10.1111/ddg.13878.

[7] S. Piaserico, E. Sandini, A. Peserico, and M. Alaibac, "Cutaneous viral infections in organ transplant patients," G Ital Dermatol Venereol, vol. 149, no. 4, pp. 409–15, 2014.

[8] E. Grillo, P. Boixeda, A. Ballester, A. Miguel-Morrondo, T. Truchuelo, and P. Jaén, "Pulsed dye laser treatment for facial flat warts: Vascular laser treatment for flat warts," Dermatol. Ther., vol. 27, no. 1, pp. 31–35, Jan. 2014, doi: 10.1111/dth.12038.

[9] T. C. Vlahovic and M. T. Khan, "The Human Papillomavirus and Its Role in Plantar Warts: A Comprehensive Review of Diagnosis and Management," Dermatol. Manif. Low. Extrem., vol. 33, no. 3, pp. 337–353, Jul. 2016, doi: 10.1016/j.cpm.2016.02.003.

[10] W. Sondermann, L. Zimmer, D. Schadendorf, A. Roesch, J. Klode, and J. Dissemond, "Initial misdiagnosis of melanoma located on the foot is associated with poorer prognosis," Medicine (Baltimore), vol. 95, no. 29, pp. e4332–e4332, Jul. 2016, doi: 10.1097/MD.0000000000004332.

[11] H. R. Al-Hamamy, H. A. Salman, and N. A. Abdulsattar, "Treatment of plane warts with a low-dose oral isotretinoin," ISRN Dermatol., vol. 2012, pp. 163929–163929, 2012, doi: 10.5402/2012/163929.

[12] T. Abd-ElRaheem, S. El-Tahlawy, N. El Sherbiny, M. Nassar, and S. Boureikaa, "Prevalence and risk factors associated with cutaneous warts in Fayoum primary school children," Fayoum Univ. Med. J., vol. 3, no. 1, pp. 24–28, Jun. 2019, doi: 10.21608/fumj.2019.60378.

[13] K. Kasim, S. Amer, M. Mosaad, A. Abdel-Wahed, and H. Allam, "Some Epidemiologic Aspects of Common Warts in Rural Primary School Children," ISRN Epidemiol., vol. 2013, pp. 1–6, Dec. 2013, doi: 10.5402/2013/283591.

[14] M. Malan, "Challenges in Managing Verruca Plana in a Resource Constrained Environment Complicated with Retroviral Disease: An Overview," Open Access J. Biog. Sci. Res., vol. 5, no. 3, Nov. 2020, doi: 10.46718/JBGSR.2020.05.000121.

[15] S. S. Ghadgepatil, S. Gupta, and Y. K. Sharma, "Clinicoepidemiological Study of Different Types of Warts," Dermatol. Res. Pract., vol. 2016, pp. 1–4, 2016, doi: 10.1155/2016/7989817.

[16] C. Rodríguez-Cerdeira and E. Sánchez-Blanco, "Glycolic Acid 15% Plus Salicylic Acid 2%," vol. 4, no. 9, p. 3, 2011.

[17] F. Zhang et al., "A novel cosmetic and clinically practicable laser immunotherapy for facial verruca plana: Intense pulsed light combined with BCG-PSN," Photodiagnosis Photodyn. Ther., vol. 22, pp. 86–90, Jun. 2018, doi: 10.1016/j.pdpdt.2018.02.003.

[18] M. A. Rudaisat and H. Cheng, "Dermoscopy Features of Cutaneous Warts," Int. J. Gen. Med., p. 10.

[19] E. Mulhem and S. Pinelis, "Treatment of Nongenital Cutaneous Warts," vol. 84, no. 3, p. 6, 2011.

[20] E. L. Maranda, V. M. Lim, A. H. Nguyen, and K. Nouri, "Laser and light therapy for facial warts: a systematic review," J. Eur. Acad. Dermatol. Venereol., vol. 30, no. 10, pp. 1700–1707, Oct. 2016, doi: 10.1111/jdv.13789.

[21] F. Dall'Oglio, V. D'Amico, M. R. Nasca, and G. Micali, "Treatment of Cutaneous Warts," Am. J. Clin. Dermatol., vol. 13, no. 2, pp. 73–96, Apr. 2012, doi: 10.2165/11594610-000000000-00000.

[22] C. S. Kwok, S. Gibbs, C. Bennett, R. Holland, and R. Abbott, "Topical treatments for cutaneous warts," Cochrane Database Syst. Rev., vol. 2020, no. 12, Sep. 2012, doi: 10.1002/14651858.CD001781.pub3.

[23] E. Hanna, R. Abadi, and O. Abbas, "Imiquimod in dermatology: an overview," Int. J. Dermatol., vol. 55, no. 8, pp. 831–844, Aug. 2016, doi: 10.1111/ijd.13235.

[24] C. S. Ahn and W. W. Huang, "Imiquimod in the Treatment of Cutaneous Warts: An Evidence-Based Review," Am. J. Clin. Dermatol., vol. 15, no. 5, pp. 387–399, Oct. 2014, doi: 10.1007/s40257-014-0093-5.

[25] A. Nassar, A. Marei, M. Nasr, and M. Imam, "Candida Antigen Immunotherapy for Treatment of Cutaneous Warts: A one-Year Zagazig University-Dermatology Clinic Experience.," Zagazig Univ. Med. J., vol. 0, no. 0, pp. 0–0, Oct. 2019, doi: 10.21608/zumj.2019.14738.1353.

[26] C. Boull and D. Groth, "Update: Treatment of Cutaneous Viral Warts in Children," Pediatr. Dermatol., vol. 28, no. 3, pp. 217–229, May 2011, doi: 10.1111/j.1525-1470.2010.01378.x.

[27] S. C. Bruggink et al., "Cryotherapy with liquid nitrogen versus topical salicylic acid application for cutaneous warts in primary care: randomized controlled trial," Can. Med. Assoc. J., vol. 182, no. 15, p. 1624, Oct. 2010, doi: 10.1503/cmaj.092194.

[28] S. B. Jiang et al., "A Retrospective Study of a Chinese Traditional Medicine YIKEER in the Treatment of Verruca Patients in Liaoning District," Evid. Based Complement. Alternat. Med., vol. 2019, pp. 1–8, Dec. 2019, doi: 10.1155/2019/9896148.