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CASE REPORT

VIRAL WARTS IN PEDIATRIC POPULATION

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ABSTRACT

Viral warts are benign proliferations of the skin and mucosa caused due to the infection with human papilloma virus (HPV). Cutaneous manifestations like flat warts are a common presenting complaint in children and adolescent. The estimated frequency is up to 10 percent of pediatric population. Warts may present as symptomatic or asymptomatic and appear as hyperkeratotic, smooth or dry papules with irregular borders. Warts are clinically diagnosed. Treating warts is a therapeutic challenge for physicians. No single therapy has been proven effective at achieving complete remission. This article presents a 9-year-old Asian male child with are current HPV infection along with different approaches to wart therapy.

INTRODUCTION

Human papillomavirus (HPV) is a virus that infects the skin and mucosa. Out of 100 different types, some causes warts on skin and some cervical cancer. HPV infections are predominantly seen in adults and skin warts at various anatomic sites are usually seen in children. The current classification system for HPV, which is based on similarities in genomic sequences that correlates HPV infection are anogenital or mucosal (further sub classified as latent [asymptomatic], subclinical, or clinical), nongenital cutaneous and epidermodysplasia verruciformis. The most possible route of transmission in children is by auto and hetero inoculation which is important to understand in order to utilize effectively the vaccination programme. (Syrjane and Puranen, 2000) HPV DNA detection in amniotic fluid, foetal membranes and placenta, suggests HPV transmission can occur prenatally. HPV may spread by person to person contact or through direct contact with an object used by a person with the virus. Most of the mucosal HPV infections in infants are incident and persistent infections in oral mucosa found is about 2% of population. Bimodal peak prevalence is seen for skin warts in younger age groups. (Syrjanen, 2010) Subclinical infection may be present with tiny, slightly raised areas felt or visualized along with cutaneous warts.

The diagnosis of most common cutaneous warts can be made by thorough clinical examination. There are different types of warts like plantar, genital and flat warts. Flat wart is more common in children which are smoother, flatter and smaller. They usually appear on the legs. Warts are caused through direct contact with HPV, which is contagious. Skin warts (Rocky bacelieri and Sandra marchese Johnson, 2005) are actually an infection in the top layer of skin. When the virus invades the outer layer of skin through tiny scratches, it causes rapid growth of cells on the outer layer of skin creating the wart. Children get skin warts much more often than adults. This is probably because of their immune system⁴ have not yet developed defense against HPV. It is also common to see warts in siblings of the same family. This article presents a 9-year-old child with a recurrent HPV infection.

Case presentation

A 9-year-old Asian male child was presented to the dental hospital with a chief complaint of pain in the left lower back tooth region. Parental history consisted of missing tooth and no previous hospitalization or allergic to particular drug or food. The child had thumb sucking habit. On general physical examination, multiple symptomatic cutaneous lesions which are presented as circumscribed, rough, hyperkeratotic with irregular surfaces are seen on the right knee joint. (Fig 1) Similarly on the acral surface of right hand a single lesion measuring 5mm in diameter, oval in shape with pigmentation is seen.

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Figure 1.

There was also white crusting keratotic lesion at the nail bed of middle finger along with callus skin on right thumb. (Fig 2) History of lesions was taken from the patient mother. The lesions started around 2ys back. The mother and the other two siblings are presented with similar type of lesions. The lesions were initially small in size (0.5x0.5mm) and gradually reached to present size. Lesions are itchy and on scratching lesion bust out with bloody discharge. Consent was obtained for photography.



Figure 2.

On intra-oral examination, (Fig 3-4) moderate numbers of carious lesions were noticed. No restorations were present and oral hygiene was poor with right second molar extraction. The clinical diagnoses for these lesions were given as common wart

on knee and periungual wart on finger. The lesions in this child were not self-limited as they are spreading from one area to other. Topical applications of cantharidin on the warts was given along with comprehensive treatment for decayed teeth.



Figure 3.



Figure 4.

DISCUSSION

Warts are widespread in the world-wide population. Although the frequency is unknown, estimated 7-12% of populations are affected. In school-aged children, the prevalence is 10-20% and peak at 12-16 years. (Philip D. Shenefelt, ?) An increased frequency is seen in immune suppressed individuals. Although warts may affect any race, common warts appear more common in Asians with equal distribution in both sexes.

Characteristically they are hyperkeratotic 'verrucous' papules. (Brodell and Johnson, 2003) The keratinocyte proliferation by basal cells is driven by viral replication within the granular layer of the epidermis. Common warts are also known as verruca vulgaris which is a benign skin growth caused by a viral infection in the skin. The human papilloma virus (HPV types 2 & 4), which is a double-stranded, circular, super coiled DNA virus enclosed in an icosahedral capsid and comprising 72 capsomers, causes the warts. Periungual warts arise around nails. Oral warts can affect the lips and even the buccal mucosa, where they may be called as squamous papillomas. Filiform warts are long thin lesions most often seen on face. Palmo plantar warts (myrmecia, HPV type 1) is round horny deep painful nodules most often seen in weight bearing sites.

Butcher's warts (HPV 7) is a cauliflower type of lesion most commonly seen in meat handlers. Mosaic warts are closely grouped and presented as relatively asymptomatic plantar warts. Plane or flat warts (HPV types 3&10) are smooth or dry small papules often numerous most often seen on face, hands and shins. Genital warts are transmitted sexually. Less common manifestations of HPV infection include focal epithelial hyperplasia (Heck's disease), Epidermodysplasia verruciformis and plantar cysts. Clinically diagnosed lesions are called warts. Occasionally a biopsy is necessary to confirm the diagnosis. Viral typing is rarely done by using polymerase chain reaction followed by southern blot hybridization.

Multiple treatment options are available, but no single therapy stands out as uniformly effective. In children, even without treatment, 50% of warts disappear within 6 months and 90% are reduced in 2 years. The different treatment options include daily application of paints or gels containing keratolytics such as 15-60% salicylic acid, occlusion with adhesive plaster, cryotherapy with liquid nitrogen which may cause dark spots in people who have dark skin, electro surgery (burning) is a good treatment for common warts, filiform and foot warts. Systemic retinoids are sometimes used for extensive warts which have systemic side effects. Curettage involves scraping off (curettage) the wart with a sharp knife or small spoon shaped tool. Cantharidin can treat a wart by blister formation under wart and later followed by clip away the dead wart. Excision of wart is also one of the option. Photodynamic therapy (Ohtguki *et al.*, 2009) with topical 5-aminolevulinic acid using the light from a red light-emitting diode has the advantage of non-invasiveness, minimal associated adverse reactions, and production of good results in a significant proportion of cases. Treated area can be irradiated with the light from a red light-emitting diode (633 +/- 6 nm) with a dose of 126 J/cm (2). The adverse effects included mild to moderate pain and erythema. It is an alternative treatment for recalcitrant viral warts.

A complete clinical response to intravenous cidofovir (Kottke *et al.*, 2006) as therapy for treatment-resistant and/or widespread cutaneous human papillomavirus infection is effective. Propolis (Zedan *et al.*, 2009) and Echinacea are relatively safe immune modulators with antiviral properties for common warts. A study where children's warts were treated with garlic (Silverberg, 2002; Dehghani *et al.*, 2005) found that 100% of the warts were cleared with no significant side effects other than complaints of the smell and once instance of mild skin irritation. Another study of 42 patients of various ages used a lipid, or fat, extract of garlic on both warts and corns with 100% recovery with the warts. It is believed that the main anti-viral component of garlic, a substance known as allicin, is the chemical which is working on warts, but little research to substantiate this claim has been done. Tea tree oil (Millar and Moore, 2008) (TTO) (*Melaleuca alternifolia*) has been used recently as an effective topical application for the treatment of skin infections due to a variety of aetiological microbial agents, including mainly bacterial infection. A retrospective study showed carbon dioxide laser (Hruza, 2002) is an effective treatment of resistant *verruca vulgaris*. Chemical peels are used for multiple flat warts by applying peeling medicine at home every day. Peeling medicines include salicylic acid, tretinoin and glycolic acid. An anti-cancer medicine bleomycin

(Vanhooteghem *et al.*, 2001) can be injected into wart but has side effect of nail loss if given in the fingers. Immunotherapy uses the patient's own immune system to fight the warts. This treatment is used when the warts remain despite other treatments. One type of immunotherapy involves applying a chemical, such as diphencyprone (DCP) to the warts. A mild allergic reaction occurs around the treated warts which cause the warts to disappear. Another type of immunotherapy involves getting shots of interferon which can boost the body's immune system and helps the body to fight against virus. There is no cure for the virus wart and it can return at the same site or appear in a new spot. Sometimes new warts appear as fast as old ones disappear. This happens when the old warts shed virus cells into the skin before the warts are treated which allows new warts to grow around the previous warts.

Conclusion

Infections by high-risk HPV genotypes may remain persistent for a considerable period of time. Hence should be considered for vaccinations. HPV was a dermatological problem that can be painful and bothersome to the individual as well as costly to the health care system. Hence effective preventive measures along with patient education should be prime consideration.

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