

CASE REPORT

Condylomata acuminata in a boy

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Human papillomaviruses, or HPV, nonenveloped, double-stranded, circular DNA viruses of the family Papovaviridae are the etiologic agents of all types of warts. Approximately 80 genotypes are known,¹ and in the adult, viral types are site-specific for cutaneous or mucosal surfaces. In adults, types 1 to 4 are associated with common skin warts, types 6 and 11 with anogenital warts (that is, condylomata acuminata) and types 16 and 18 with cervical carcinoma.

Aside from sexual abuse, a myriad of transmission modes account for pediatric cases of HPV infection

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leading to anogenital warts. Perinatal transmission of HPV, occurring in utero and during passage of the neonate through an HPV-infected birth canal, probably accounts for most cases of condylomata acuminata in children younger than 2 years of age. In prepubertal children, other potential transmission mechanisms include autoinoculation and heteroinoculation from nongenital cutaneous warts and from contaminated fomites. Although

anogenital warts are considered to be sexually transmitted in adults, this may not be the case for children.²⁻⁴

Subtype specificity is less distinct in children than it is in adults. Certain HPV types have been associated with anogenital warts in children.^{3,5-7} The most common types of HPV in condylomata from prepubertal children with or without proven sexual abuse are types 6 and 11, followed by type 2.⁸ The diagnosis of pediatric condylomata acuminata is not always straightforward, as clinical differences are unreliable in differentiating between pediatric condylomata acuminata associated with HPV types 6 and 11 and those resulting from HPV type 2.⁹

Condylomata acuminata in the pediatric population is 1½ to two times more prevalent in girls than in boys and,

Background. Human papillomaviruses, or HPV, are etiologic agents of all types of warts, including those associated with sexual transmission. Although previously rare in children, condylomata acuminata in the mouth have been reported for the past 10 to 15 years, and the possibility of sexual abuse needs to be considered.

Case Description. A 4-year-old boy with poor dental health presented with a wartlike mass on his upper lip, as well as two similar penile lesions. The lesions, cauliflowerlike and pedunculated in appearance, were excised, underwent biopsies and were subtyped via in situ hybridization. All of the lesions tested positive for HPV subtypes 6 and 11, which are the subtypes most often associated with anogenital warts (condylomata acuminata). Although both parents reported having genital warts, the specific mode of transmission to the child was not determined.

Clinical Implications. Cases of oral condylomata acuminata in children need to be treated as possible instances of sexual abuse, and it is incumbent on the dentist to alert the appropriate community agency for follow-up.

in both sexes, is most frequently localized to the perianal region. Vulval warts are common, but penile warts are unusual. The lesions are characterized by flesh-colored to erythematous papillomatous papules; are proliferative, with slightly verrucous surfaces; are 3 to 5 millimeters in diameter; and are located in the mucosa and nearby skin in the anogenital region. In some cases, genital warts coalesce to form confluent and large cauliflowerlike masses.^{4,10} Because most infections with HPV are asymptomatic¹¹ and the incubation period for condylomata acuminata can be up to 20 months,¹² it often is difficult to identify the source of infection in children.¹³ Thus, much controversy exists over whether condylomata acuminata in children older than 2 to 3 years of age is indicative of sexual abuse.¹⁴

Physicians may see children with venereal warts because of pain or bleeding in



Figure 1. A condyloma acuminatum on the mucosa of the upper lip.



Figure 2. The larger of two penile condylomata acuminata.

the anal or vaginal area, or he or she may notice the lesions on routine physical examination.¹² Dentists may observe condylomata acuminata in the mucosa of the lip, tongue, cheek, palate and gingiva of the infected child.^{15,16}

The topical treatment of childhood condylomata acuminata includes the application of caustic or irritating agents, such as liquid nitrogen, trichloroacetic acid or podophyllum resin. These agents often are painful and, hence, poorly tolerated by a child who may require multiple applications. Simple excision and curettage followed by electrodesiccation of the base to

destroy additional virus-infected cells and to produce hemostasis also are useful. Ablation of anogenital warts via laser or electrocautery in children may be used if lesions are too extensive to treat topically. All treatment modalities carry a risk of recurrence.^{1,9,12}

CASE REPORT

A 4-year-old boy came with his mother to the dental department at the Long Island College Hospital, New York, N.Y., for routine evaluation and treatment. The intraoral examination revealed a complete primary dentition, poor oral hygiene and several carious teeth. In addition, we noted a single, papular, asymptomatic soft-tissue mass on the right side of the mucosa of the upper lip (Figure 1).

The lesion measured 4 mm in width, was nonulcerated, was pedunculated with blunt projections (cauliflowerlike) and was predominantly the same color as the normal oral mucosa, but with a small brown area at the inferior border. The patient's mother, who did not note any remarkable medical history, estimated that the lesion had been present for three months before the dental visit.

The patient was highly uncooperative during the examination. He required a significant amount of dental treatment, as well as a biopsy and surgical removal of the oral lesion. Therefore, we scheduled the child for treatment in the operating room using general anesthesia. Approximately two weeks later, a physician from the urology department reported that the child also had two penile condylomata with peripheral satellite lesions (Figure 2) and requested that the treatments be synchronized in the operating room.

The penile lesions appeared as two distinct exophytic growths that were the same color as the skin. The physician observed a single nodule measuring 3 mm on the dorsal surface of the corona of the glans, and noted a second broad-based 5-mm nodule with a cauliflowerlike surface and budding sessile lesions at the base of the penis. The dental department notified the child's pediatrician, and the dental and urology teams simultaneously performed treatment.

After general anesthetic was administered, we treated the patient's carious lesions and performed a prophylaxis. Attention then was directed to the upper lip mass that suggested a condyloma. The upper lip was supported and inverted for the biopsy procedure. We grasped the

pedunculated lesion with tissue forceps and removed it with sharp dissection down to the muscle, allowing for a margin of clinically healthy tissue to be removed along with the specimen. The elliptical defect was closed primarily with polyglactin 910 sutures (3-0 Vicryl, Ethicon, Somerville, N.J.).

We sent the specimen for pathological investigation. The patient experienced no deleterious postoperative sequelae. The urologic team proceeded with its biopsy procedures. The three specimens were submitted for histologic examination and were identified as papillomas. The results of *in situ* hybridization were positive for HPV subtypes 6 and 11.

Based on the above findings and the clinical presentation and medical history, we made a final diagnosis of condylomata acuminata.

We reported the case to the hospital's pediatric social worker, who interviewed and counseled the patient's mother. The mother noted that she and the child's father had genital warts. The pathology report was submitted to the New York State Office of Children and Family Services for further investigation.

DISCUSSION

Sexual abuse is only one possible mode of transmission of HPV to the anogenital region of a child. In infants with condylomata acuminata, the suspected mode of transmission is passage through an infected birth canal. In older, prepubertal children, anogenital warts may arise through autoinoculation, such as transmission of HPV from coexistent cutaneous (for example, hand) warts during genital scratching or self-handling. Another nonsexual mode of HPV transmission is through heteroinoculation, such as intimate, manual contact between an infected parent or caregiver and the child during toilet training or bathing.

Contact through fomites is a third nonsexual mode of HPV infection in children. For example, HPV may be transmitted to children by sharing beds, towels or bath water with contaminated adults.² In one study of 75 cases of pediatric anogenital warts, Obalek and colleagues⁴ found that 34 percent of the patients' parents (25 cases) exhibited external condylomata, and it appeared that the most likely mode of transmission of genital papillomaviruses to the children was by nursing or direct contact with contaminated objects.

Because "skin" HPV types (usually HPV type 2) commonly are reported in cases of anogenital warts in children older than 4 years of age, typing a specific HPV associated with a particular anogenital wart is not definitive of sexual abuse. Conversely, the "genital" HPV types (that is, types 6 and 11) are common in children younger than 3 years of age, even in children for whom sexual abuse is not suspected. Exposure in these younger children probably occurred during passage through their mother's HPV-infected birth canal. The presence of anogenital warts in a child is not a reliable indicator of sexual abuse, and typing the specific HPV associated with a particular anogenital wart also is not indicative of sexual abuse.¹³

To our knowledge, there are no published large-scale studies of HPV infection in general populations of children,⁸ and anogenital warts in children are not a common occurrence (Centers for Disease Control and Prevention, oral communication, September 2002). Thus, health care professionals should suspect sexual abuse in cases of anogenital warts in prepubertal children. In all 50 states, the dentist is legally obligated to report suspected cases of child maltreatment.¹⁷ Failure to report such cases can result in criminal or civil litigation against the dentist for negligence, and substantial fines may be incurred.^{17,18}

The dentist, as a primary health care provider, needs to be cognizant of the clinical manifestations of child abuse in general. Because 50 to 65 percent of all cases of child abuse involve injuries to the mouth and face,¹⁹ the dentist often is sought for treatment of oral and facial trauma. Clinical manifestations of child abuse include tears to the intraoral labial frenum; laceration in the floor of the mouth; loosened, fractured and avulsed teeth; bruises; and bite marks.²⁰

Reports of anogenital warts in prepubertal children have increased dramatically in recent years, with only occasional reports occurring before 1980.² This increase in the number of reported cases of pediatric anogenital warts may reflect better detection and increased awareness by health care providers or it may reflect the epidemic of adult HPV disease that began in the 1960s.¹ Finkelhor and colleagues²¹ reported that approximately one in four girls and one in eight to 10 boys are sexually abused before age 18 years. HPV probably is the most common viral sexually transmitted disease in the United States today, and, therefore, transmission via sexual

abuse may be a significant mode of exposure in children.

Condylomata have been reported in 1 to 2 percent of abused children, and 50 to 75 percent of cases of pediatric genital warts reported in the medical literature appear to be the result of abuse.²² All children with venereal warts should receive a complete medical evaluation, including examination for sexual abuse. Because condylomata acuminata occurs as a sexually transmitted disease in adults, it is not surprising that pediatric patients with venereal warts frequently have other genital infections.^{13,23} Thus, pediatric patients also should be screened for microbial sexually transmitted diseases, or STDs, including those caused by *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, *Treponema pallidum* and other viral STDs, such as those caused by the hepatitis B virus and HIV.^{11,12,24}

Because sexual abuse is known to be responsible for a significant number of cases of childhood anogenital warts, health care professionals should consider the possibility in each case. At the same time, an equal effort should be made to exclude abuse as a possible cause. Proper evaluation requires a multidisciplinary approach and careful handling of family members. The association between HPV types and malignant transformation is of concern, especially since the long-term effects of pediatric condylomata acuminata are not known.¹¹ Some follow-up is recommended in view of the unknown risk of subsequent anogenital neoplasia.^{9,13}

CONCLUSION

Sexual abuse is but one mode of transmission of HPV to the anogenital region in children. Ethically, legally and morally, we must be vigilant in investigating these cases. In the case described above, condylomata acuminata were noted on the lip and penis of a 4-year-old boy. Both parents reported that they exhibited genital warts, but the mode of transmission to the child has not been determined to date. Because this case suggested possible sexual abuse of a child, we reported it to the appropriate community agency. When treating a child with oral condylomata acuminata, dentists must be suspicious and report the case to the appropriate agency, where

it can be evaluated by personnel who are trained to assess potential sexual abuse in children. ■

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