MANAGEMENT OF ORAL PAPILLOMA IN CHILDREN: A LITERATURE REVIEW

Literature Review

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ABSTRACT: Humanpapillomavirus (HPV) has been showing a high incidence worldwide. Transmission routes vary and can affect individuals of all ages, including children. Lesions in the oral cavity of pediatric patients can manifest as papilloma, common wart, and, acuminate condyloma. Often located in the regions of the tongue, hard palate, lips, gums, and jugal mucosa. Surgical removal allows histopathological examination to diagnose and to define a prognosis. Early detection can be provided by dentists through physical examination. The objective of this study is to review the literature, focusing on the diagnosis and management of oral lesions by dentists. Lesion excision can be minimally invasive and effective, viable to be done in dental offices. Additionally, it can be concluded that it is important to implement preventive guidelines, such as vaccination recommendations for boys and girls.

KEYWORDS: Pediatric Dentistry. Papilloma. Papillomaviridae.

INTRODUCTION

Research and studies of tumors that affect the oral cavity are topics considered valuable within dentistry, due to the importance of the dentist in the diagnosis and treatment of most of these lesions.[1] Such importance gains more prominence in pediatric patients, given the high prevalence of oral lesions in soft tissues, of approximately 46.1%, that affect this group of individuals.[2,3] Among the lesions that affect the oral mucosa of the pediatric patient, we can highlight the oral lesions caused by the Human Papilloma Virus (HPV-"Human Papillomavirus"), which is present in a large number of the world's population.[2] More than 200 types of

human papillomavirus are identified, with just over 20 types affecting the oral mucosa.[4] Types 13 and 32 can be identified specifically in oral lesions such as focal epithelial hyperplasia, 6 and 11 to squamous papilloma and condyloma acuminate, and type 2 in the common wart.5,6 Clinically the oral regions most affected by HPV lesions are the tongue, palate, cheek mucosa, floor of the mouth, tonsils, uvula and lips.[7,8,9]

The HPV virus is responsible for oral papillomatous lesions, but it can also be associated with other forms of injury, including acuminate condyloma, squamous papilloma, common wart, focal epithelial hyperplasia and oropharyngeal cancer.[7,8,9] This virus can be transmitted in different ways, these can be sexual (which correspond to the highest infection rate), non-sexual and maternal-fetal, which affects 2.8% of newborn children.4 Specifically in children, the prevalence of papillomatous lesions in their various forms - scaly, verrucous, hyperplastic focal and condyloma have been reported between 1.33% to 7.5% .[2]

Regarding the treatment of papillomatous lesions in the oral region in adults and children, it is suggested that they should be individualized; starting with diagnosis through polymerase chain reaction (PCR) tests or histopathological biopsy tests.[10] Additionally, surgical excision, laser, cryotherapy, topical medication, has been proposed to manage these lesions.[3,11]

Thus, the knowledge and attention of the dentist in the detection, diagnosis and treatment or early referral of lesions observed during the clinical dental examination of pediatric patients is extremely important.[1,4]

The aim of this study is to present a literature review on the dental approach in the diagnosis and treatment of papilloma in children.

METHODS

Data collection took place from February to October 2020, using the following databases: Capes, PUBMED, MEDLINE and Google Scholar. The search terms were adapted according to the indexing of each database and articles in English and Portuguese were included.

LITERATURE REVIEW

Human Papilloma Virus (HPV): prevalence, types, contagion and prevention

Prevalence

Human Papilloma Virus (HPV) is a virus belonging to the Papilomaviridae family that can cause infection in the skin and mucosa. HPV infection in Brazil has a prevalence of 54.6%, with an incidence in adult individuals aged 20.6 to 60 years, which can manifest itself in babies, children and adolescents.[12]

Regarding age, Serra[4] reports that papilloma is the lesion that most affects the oral cavity of children in the first 05 years and other studies report that this lesion can appear before 10 years of age, it mostly affects girls. Regarding the common wart, it occurs between the 1st and 5th years of life and affects the tongue and the lip more, whereas the condyloma occurs more in boys from 01 to 04 years old.[10]

When the patient is infected, the virus can remain latent for many years without causing manifestations. In other cases, when the body does not control the course of the infection, it can progress to a malignant lesion. This progression, usually associated with risk factors such as: age, sex, socioeconomic factors, race, sexual performance, ingestion of alcoholic beverages, use of tobacco and mainly the alteration of immune defense.[2,4,13]

Even though there are countless technologies nowadays, studies find it difficult to get the data on prevalence of oral lesions right, especially when it comes to a study in children and what are the relationships between these lesions and HPV. This happens mainly because there are lesions diagnosed only under clinical aspects and use of anamnesis, and therefore do not involve histopathological evaluations.[2]

Types (Strains)

According to Serra (2015), of the 200 types of HPV, 24 genotypes of them have already been identified in the oral cavity and are considered to be of low risk and associated with benign lesions, namely: 1, 2, 3, 4, 6, 7, 10, 11 , 13, 16, 18, 31, 32, 33, 35, 45, 52, 55, 57, 58, 59, 69, 72, 734, with

types 2, 4, 6, 11, 13, 32 most found in oral mucosa. HPV 6 and 11 are considered to be of low risk and cause the main benign lesions in the oral cavity, such as squamous papilloma and condyloma acuminate, whereas common wart is associated with viral types 2 and 57 and focal epithelial hyperplasia with types 13 and 32.[6, 7]

In malignant lesions, 12 types can be found and they are: 2, 3, 6, 11, 13, 16, 18, 31, 33, 35, 52 and 57. However, HPVs-16 and 18 are the most strongly associated malignancy, reasons that call them oncogenic, malignant or high risk.[14,15,16]

Transmission and contagion

The infectious process begins when the HPV virus enters the basal epithelial cells, which are the target cells of this virus, through a slow process of endocytosis, by binding specific receptors on the basal cells.[7]

Among other forms of virus contact, sexual contacts have been considered the main route of contamination when it comes to HPV in the genital region, and affects approximately 5.5 million people worldwide.[3] However, it is admitted that transmission to oral mucosa, in addition to oro-genital sexual practice, can also occur during natural birth through the mother's self-inoculation for the newborn.[17]

Although HPV infection is commonly referred to as a sexually transmitted disease, in fact, it has other forms of contagion, such as:

Horizontal transmission, those that can occur through fomites, in addition to parents, caregivers such as grandparents, uncles or siblings who are positive for HPV can transmit the virus (towels, bathrooms, breast milk, family members through kisses, hands).[18]

Transmission by autoinoculation, when contact occurs at an infected site, this material is collected, and this collected material ends up infecting another site in the same individual.[18]

Vertical transmission is divided into 03 according to the transmission time, perceptual (at the time of fertilization involving the infected oocyte or sperm), prenatal (during pregnancy through the umbilical cord, amniotic fluid or through the placenta), perinatal (at the time of birth or in the first moments of the baby's life).[18]

Mothers with the virus on the genital at the time of delivery can infect babies, and even if the pregnant woman receives treatment prior to birth or performs a cesarean delivery, it can infect the baby. This is because transmission can occur during pregnancy.[19] Approximately 26% to 32% of infected children share the same HPV typing that the mother or father.[3]

There are data that babies born with the HPV virus due to maternal contamination can eliminate it from the body in the first month of life according to immunity.[3] The different tests used, the number of individuals evaluated, the age group and the development of immunity in babies cause the results to appear in different ways in the few studies carried out with children. This variation ranges from 0 to 62%, in children assessed from the first day of birth to 11 years of age.[18]

Prevention

The best form of treatment against HPV is still prevention, which can be done through the use of condoms and mainly with the vaccination of girls from 9 years old and boys from 11 years old, which is carried out in 03 stages, the first dose is received upon reaching the established age, the second dose 06 months after receiving the first dose, and the third dose 05 years after the first dose of the vaccine, this method has not yet proven efficacy.[4]

Another important issue regarding the recognition and treatment methods of this virus is the right time to give the vaccine guidance to prevent HPV.[18]

Histopathological and clinical features

Warts on the skin and laryngeal papilloma are the HPV lesions that most affect child population, it is important that dentist is attentive to the signs of oral HPV in children so that the possibility of sexual abuse is better clarified.[18]

The common wart can be found clinically in the region of the vermilion of the lips and in the mucosa, as well as in the anterior region of the children's tongue. It appears as a nodule or wheal without symptoms, with an irregular and rough surface or papillary projections, being sessile or pedicled, pink, yellow or white in color, with a rapid increase in size up to its maximum size of <5 mm that lasts for months or years and can more often find single or multiple and grouped lesions, with

a keratinous characteristic called cutaneous horn.[20]

Histologically, the common wart is characterized as a proliferation of hyperplastic keratinized stratified squamous epithelium where there are pointed projections with interspersed connective tissue. Koilocytes, which are epithelial cells altered by HPV, can be found in the superficial layer.[20,21]

Condyloma are usually diagnosed in adolescents and young adults and can affect individuals of all ages, including children. They are lesions found in the region of lingual frenulum, labial mucosa and soft palate. It typically presents as an exophytic lesion, pink, sessile, painless, well delimited, with multiple, superficial projections and usually has a size larger than the papilloma ranging from 1 to 3 cm. The histological characteristics of the condyloma appear as a benign proliferation of the stratified acanthotic squamous epithelium with discrete projections on the papillary surface and keratosis, which can extend from the superficial mucosa to the duct epithelium of the salivary glands.[20,22]

Papilloma is characterized as an exophytic nodule of softened consistency, with numerous projections on the surface similar to a "cauliflower" or "wart", which has no symptoms, usually pedicled. Its color may be whitish, slightly red or normal, since it varies according to the level of keratin on the epithelial surface. They are unique lesions that have their normal size between 0.5 to 3 cm in diameter. Histologically, the papilloma presents characteristics of proliferation of the stratified keratinized squamous epithelium, with fibrovascular connective tissue interspersed in the finger-like projections. The epithelium has a normal maturation and may have a keratinous layer on the surfaces of white lesions and the presence of koilocytes that have a small, dark nucleus surrounded by a clear halo being seen in the high spinous layer.[20,23]

Treatments of oral lesions caused by HPV in children

For oral lesions caused by HPV in the mouth, there is no effective treatment to permanently eradicate the virus, so the treatment of benign lesions such as papilloma, condyloma acuminata and common wart can be clinical and surgical. Caustic agents can be used, which have the objective of tissue destruction, or surgical treatment aimed at surgical excision of the lesion, in order to preserve tissue for study in the anatomopathological laboratory.[13,24]

One must be aware of the fact that the benign lesions present in the oral cavity of children, can evolve to a malignant and even cancerous contamination, especially if there is a failure in the detection of the lesion, if the organism is unable to slow the evolution, associated with the delay to start treatment and other risk factors. Approximately at 4 years of age if there is an evolution of HPV in the oral cavity, an initially benign lesion may worsen for a picture of recurrent laryngitis in the oropharyngeal and larynx cavity, these correspond to approximately 90% of head and neck neoplasms associated with HPV 16.[3]

The treatments through caustic agents, are based on the use of 50% to 80% trichloroacetic acid applied once a week by the professional for four weeks, 25% podophyllin in alcoholic solution for mouthwash or in a 0.5% gel applied in the mouth injury 2 to 3 times a week. The disadvantage of this treatment is that tissue destruction of the lesion and koilocytes occurs, making the histological study unfeasible.[25]

Surgical excision is one of the most indicated therapeutic treatments. Excisional biopsy is the main treatment for oral lesions caused by HPV since it removes all the injured fragments, with a scalpel blade so that there is an infection-free margin and sent for histopathological examination in order to confirm the diagnostic suspicion.20 The technique surgery is started with infiltrative local anesthesia, followed by removal of the lesion with a tissue margin free of contamination, without the need for suturing, and if necessary, it is recommended to perform a prescription in the postoperative period of an analgesic, especially in children who experience pain. [26]

Surgical removal assisted by diode laser, when easily accessible, is one of the treatments of choice in pediatric dentistry because it provides a tolerable procedure and presents advantages such as high precision to destroy tissues, excellent hemostasis, does not require sutures, sterilization of the wound and presents minimal post-surgical pain and edema, decreasing the prescription of anti-inflammatories and increasing the level of healing.[27]

Cryotherapy is a therapeutic modality with a huge range of indications, especially in the treatment of oral lesions that have a success rate, based on the removal of benign oral lesions with the use of liquid nitrogen at -196°C through cellular crionecrosis that occurs due to cell exposure at extreme negative temperatures, forming a subepithelial bubble moving the contaminated tissue away from the connective tissue allowing excision of the lesion.[20,28]

Cryosurgery is a surgical technique for oral lesions from HPV and is relatively simple with the application of liquid nitrogen spray for 20 seconds directly in the injury. This technique allows for the removal of benign and malignant lesions without loss of substance, preserving anatomical structures.[28]

Cryotherapy is a good option to be used in pediatric dentistry, for the patient and professional, it can be effective, it is easy to perform and with low cost and with low index or absence of bleeding in the trans and postoperative period, relatively without pain, no requirement for local anesthesia and can be performed on patients in whom surgical treatment is hampered due to systemic or risky conditions.[29]

However, when it is desired to send the material for histopathological examination, this procedure may, in some cases, compromise the collected material and consequently the execution of such a complementary examination.

Surgical electrocauterization is also a therapeutic method highly recommended for the treatment of HPV injuries and has a low complication rate, completely destroys more than 90% of injuries in a single session, has low cost and can be associated with 5-fluorouracil at 1 % in cream to improve healing after surgery.[30]

Photodynamic therapy is considered a type of destructive therapy effective in the treatment of papillomatous lesions, where specific cells absorb the wavelength of light, with the aid of a prodrug such as 5-aminolevulinic acid (ALA) that damage viral cells through inducing the formation of porphyrins that work as photosensitizing agents inducing a photooxidation cascade.[31]

DISCUSSION

The treatment of papillomatous lesions in the oral region of pediatric patients should always be carried out in order to leave a safety margin in the excision area, so that the lesion does not recur, where excisional biopsy is the main treatment of choice. The authors Sampaio et al.[32] reported the removal of 09 lesions in the oral cavity, pink and whitish, verruciform, of fibrous consistency, located in the labial commissure and lower mucosa of a 9-year-old patient, performing an excisional biopsy for analysis, histopathological examination that confirmed the presence of squamous papilloma, even with the presence of more than one lesion, a characteristic that, if not observed and judged correctly by the dental surgeon, can lead to an incorrect diagnosis and treatment failure. Incisional biopsy is not a viable option when it comes to pediatric patients due to the need for several surgical approaches for total removal of the lesion, however some papillomatous lesions with unusual characteristics should be evaluated by the professional.[33] The authors Andrade et al. [33] reported a clinical case of partial initial removal, in a 13-year-old boy, who presented a reddish lesion, with irregularly fragmented tissue, superficial projections, soft texture, in the inserted gum, with bleeding during hygiene, with suggestion of scaly papilloma despite the location. Initially, an incisional biopsy was performed, and the collected material was sent for histopathological analysis, which confirmed the diagnostic hypothesis and then the lesion was completely removed.

However, as these are pediatric patients, look for alternatives to perform the removal of papilloma lesions of the vermillion lip, with the initial diagnosis of squamous papilloma or common wart, in a not-very-cooperative 8-year-old patient. Two days after the application of liquid nitrogen gas, the lesion exfoliated without causing bleeding or exposure of connective tissue. Cryosurgery is an option for the patient for the comfort and healing process, being indicated only when there is no condition to perform a biopsy, which is always the first choice in cases of intraoral injuries.

Conclusion

Management of oral lesions in pediatric patients is encouraged thought dental settings.

Excisional biopsy for removal of papillomatous lesions is a viable procedure to be performed at the dental office.

There is no effective treatment to eradicate the virus, but the approach of benign lesions through surgical excision is one of the most indicated managements.

Preventive guidelines, especially in relation to the vaccination of girls and boys, should be part of the dentist's conduct.

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