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Case Report

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Diode Laser Excision of Focal Epithelial Hyperplasia (Heck's Disease): A Case Report

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Abstract

Introduction: Focal epithelial hyperplasia (FEH), also known as Heck's disease, is a human papilloma virus induced proliferation of epithelial cells, which causes asymptomatic lesions in the oral mucosa. Heck's disease is more prevalent among children or in a family. Despite the self-limitation of lesions, they may progress or cause esthetical and functional discomforts. Hence, early diagnosis is necessary.

Case Presentation: A middle-aged man with a peripheral multiple soft, elevated, sessile, smooth, lobulated surface and nodular lesions in his right buccal mucosa was referred. The dimensions of the lesions varied from 5 to 25 mm. Through clinical and histopathological examinations, Heck's disease was diagnosed. The diode laser (wavelengths of 980 nm), 1-W power using continuous waves) was applied serially (in 2 sessions with a 1-week interval) for surgically removing the lesions. The patient was followed up for 6 months with no lesion recurrence, and gradual healing was observed.

Conclusion: The laser is an effective treatment with no scar remaining after the procedure and brings satisfaction to patients.

Keywords: Focal epithelial hyperplasia; Heck's disease; Human papillomavirus (HPV); Diode laser.

Introduction

Focal epithelial hyperplasia (FEH), or multifocal papilloma known as Heck's disease, is a rare proliferation of oral mucosa that makes benign and asymptomatic lesions characterized by painless multiple slightly elevated and sessile papules with a smooth surface, white to pinkish color, and 5-10 mm that occur diffusely on lips and labial and buccal mucosa. Lesions spontaneously disappear after several years with no sign of malignancy.[1-5] The prevalence of FEH is higher in females, children and adolescents. Due to children's immaturity of the immune system, they are incapable of eliminating the infection.[1-4]

FEH was initially diagnosed in Indian children in 1965 by Archard et al.[5] It has been revealed in Eskimos in Greenland and Canada, Inuits, Central American Indians, Nahuatl population in Mexico, and Aboriginals in Australia. It is more common in South and North America and Africa and is less common in Europe. In Asia, FEH is a rare disease.[1,2,4-6]

Some other risk factors proposed for the disease are horizontal transmission through food and utensils, poor hygiene, nutritional deficiencies, low socioeconomic environment and immunocompromised patients who get high antiviral doses treatment like HIV.[3,4,6]

The disease frequently occurs in the same family; it is presumed that genetic predisposition increased susceptibility to human papillomavirus (HPV) 13 and 32 infections. In some cases, Human lymphocytic antigen (HLA-DR4 DRB1* 0404) alleles are identified to be related to the disease.[1-4]

HPV infection induces squamous cell proliferation. HPV low-risk types 13 and 32 are the original cause of the disease; however, other subtypes are capable as well. FEH creates benign lesions, but patients tend to remove them for aesthetical reasons. In some researches, it has been mentioned lesions have a tendency to become malignant. For detection of HPV in lesions, electron microscopy and DNA testing (polymerase chain reaction analyses) are used. Lesions distinguish hyper parakeratosis, acanthosis, elongation and anastomosis of the rete ridges, classical koilocyte, perinuclear cytoplasmic halos, and nuclear dysplasia.[3,4,7-10]

The lesions are clinically classified into 2 groups: in young patients, pink and smooth papulonodular subtype appears on buccal and labial mucosa, palate and commissures; in adult patients, white cobble stoning papillomatous subtype appears on lingual and gingival tissues.[3] Multifocal papillomavirus epithelial hyperplasia (MPVEH) is a condition that usually occurs in children. This condition is defined as diffuse confluent

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papillomatous lesions in the oral mucosa.[9]

A wide range of treatments has been suggested to remove FEH lesions. Conservative methods such as treatment with the carbon dioxide laser or systemic treatment with interferon-α or topical treatment of interferon-β and retinoic acid or more aggressive methods like scalpel surgery, cryotherapy, cauterization, and electrocoagulation can be used.[11,12]

Laser surgery represents utilitarian characteristics rather than removal surgery with a scalpel. It decreases edema, post-op pain and scars, inflammation and muscle contraction, as well as bolstering tissue healing and regeneration. Lasers establish hemostasis, which gives more control to an operator. Less swelling results in better hygiene, which helps the healing process and leads to more patient comfort after the procurer which is considered as another positive point of using a laser. It also diminishes neural and musculoskeletal discomforts. By producing heat from the laser beam, which disinfects the surface, the antibiotic prescription is restricted. Laser therapy is a noninvasive and drug-free method which needs no suturing.[13,14] Lesion elimination of this extension was performed for the first time by means of a 980-nm diode laser.

Case Report

A 50-year-old male patient was referred to the department of oral and medicine of Jahad clinic with multiple lesions in his right buccal mucosa. Physical examination of the patient was assessed and it was normal. There was no history of systemic disease or medicine usage, and he had a positive history of smoking and no family history of lesions in the mouth. In the clinical examination of the oral cavity, a peripheral multiple soft, elevated, sessile, smooth, lobulated surface and nodules were found in his right buccal mucosa and also on the surface of the right angular part of the lip. The dimensions of the lesions varied from 5 to 25 mm, and the lesions were not ulcerated or inflamed. The patient expressed that the lesions which were slowly spreading without any symptoms had been seen for 5 years. The patient previously received no treatment. The patient was fully informed about the producer, and signed written consent. A biopsy was done in 2 sessions and the histopathological report approved FEH (Figure 1). Afterward, microscopic assessments revealed acanthotic squamous coverage and elongated rete ridges with vacuolated cells as well as some mitoses in intact basal membrane surrounded in the fibrous background with arterial congestion (Figures 2 and 3).

Based on the clinical examinations, a provisional diagnosis of HPV-associated oral mucosa disease was recognized. The patient and the dentist protected their eyes with laser safety glasses. The lesions were excised with the diode laser in 2 sessions with a 1-week interval (Figure 4).

The 980 nm diode laser was applied with 1-W power using continuous waves. This excision was done suture-free. The patient received post-operative rules with no antibiotic prescription. The patient was advised to quit smoking and maintain oral hygiene. No complications and infection were observed on a visit after one month (Figure 5), and no recurrence was observed at a 6-month follow-up.

Figure 1. Biopsy Specimen.

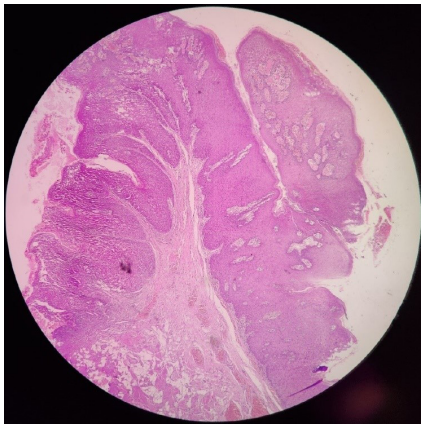

Figure 2. Histological Examination: Hyperplastic Squamous Epithelium With Mitosoid Bodies, Acanthotic Squamous Epithelium With Widened, Elongated Rete Ridges and Groups of Koilocytes in the Upper, H&E stain.

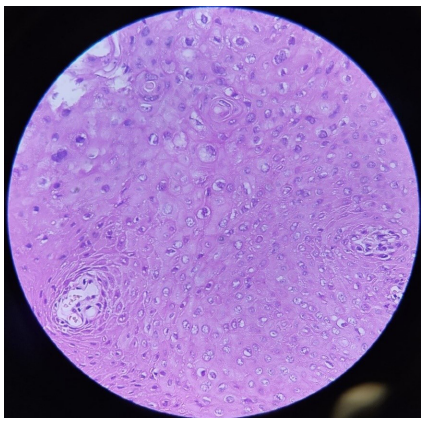

Figure 3. Altered Nucleus and Mitosoid Cell.

Figure 4. Excision of the Lesion With the Diode Laser.

Figure 5. Scar Healing after one month not a week.

Discussion

Multifocal papilloma is a rare but not malignant proliferation of epithelial cells. Although it is a self-restricted disease, it causes discomfort for patients either in speaking and eating or in appearance. Children are more susceptible to the disease, and the ratio of prevalence is around 4-5:1 in females to males. HPV types 13, 32 and also 6, 11 and 18 provoke FEH lesions in the oral cavity.[3,4,6] Differential diagnosis should be ruled out by clinical examinations and the exact patient history. Some of the differential diagnoses are multiple endocrine neoplasia syndrome type IIb (neurofibromas) with sessile lesions on the tongue, Goltz–Gorlin syndrome known by multiple nevoid basal cell carcinoma and keratocyst and some skeletal abnormalities. Inflammatory fibrous hyperplasia, inflammatory papillary hyperplasia, verruciform xanthoma are reactive lesions and their etiological factor is irritation. Irritation fibroma occurs by the long presentation of papules. They are characterized by irritation factors; lesions are pale and expanding. Cowden's disease is fibroepithelial hamartomas polyps which are stable and more common in older ages and propose more risk to other neoplasias. One of the similar differential diagnoses to FEH is Condyloma acuminatum. They are HPV-induced and create individual lesions, but Heck's disease creates more lesions which are more even in comparison with papillary surface lesions of Condyloma acuminatum. Moreover, distinguishing the location of Heck's disease lesions is very helpful due to the fact that condyloma acuminatum lesions appear on the mouth floor and ventral tongue. In situ hybridization analyses including HPVs 6, 11, and 13 as well as immunohistochemistry for cytokeratins 4 and 13 can differentiate Heck's disease from condyloma and white sponge nevus, which can be hard to differentiate on clinical and histologic observations.[4,9,10,15]

The diode laser is more available and user-friendly than the CO2 gas laser. Also, the diode laser has different fiber sizes which make it more versatile to use. The cost of keeping the diode laser is less in comparison to the CO2 gas laser.[16]

The diode laser is applied in soft tissue operations like soft tissue biopsies, gingivoplasty, gingivectomy, and decreasing tuberosity.[17] Some other studies were in line with our findings. Nallanchakrava et al removed three lesions on the right and left the side of the lower lip and the left ventral aspect of the tongue using an 810-nm diode soft tissue laser with 3–3.5 W power for a 5-year-old patient with diagnoses of FEH. By one month of follow-up, lesions were healed and no new one formed.[1] Özle et al applied an 810-nm diode laser with 4.0-W power, 0.5 ms and 1000 Hz frequency power for removing FEH lesions on lips and buccal mucosa of a 35-year-old female patient. No recurrence happened following a 24-month follow-up.[8]

In another study, a CO2 laser was manipulated (10600 nm, Continuous pulse, & 2-W power) for an 11-year-old patient's lesions. During 1 year after surgery, no sign of recurrence was seen.[6] Akyol stated a 17-year-old patient was referred with lesions on the lower lip, buccal mucosa, gingiva and tongue. They applied 3 sessions of the CO2 laser, followed by Interferon alpha-2b (3*3 million IU/week) for 8 months. No recurrence occurred during a 2-year follow-up.[11] Galanakis et al operated biopsy procedure by a 532 nm potassium-titanyl-phosphate laser with a 300-μm fiber and 1.4-W power in continuous mode (power density 1980.22 W/cm^2) in a 37-year-old patient with an HIV history. After biopsy results, lesions were surgically removed with the same operative producer. The patient after 1-year follow-up showed no recurrence.[9] Durso et al stated they just followed up a 21-year-old patient with lesions in labial mucosa and tongue for one year without any treatment, and they saw no changes in lesions.[18] For 4 months, Ghalayani et al just followed up 30- and 12-year-old patients who were relatives, with lesions in labial and buccal, confirmed for Heck's disease by biopsy diagnosis, and without any treatment, the lesions were healed notably.[19]

Due to the beneficial effects of the diode laser, such as reducing postoperative complications including pain

and edema, the efficiency of cutting accompanied by coagulation effects, ability to control the thermal effect by choosing gated pulse mode, it can be suggested as an alternative procedure for the treatment of oral lesions.[14] More studies with appropriate sample sizes and parameters are needed to achieve definitive results.

Conclusion

Although Heck's disease is a rare disease, it causes unbearable esthetical and functional problems for patients; therefore, suitable treatment should be suggested as soon as possible. The laser is an effective treatment with no scar remaining after the procedure and brings satisfaction to patients.

Conflict of Interests

The authors declare that they have no conflict of interest.

Ethical Considerations

Written informed consent was taken before procedure.

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