Herpes Virus 1 - A Hidden Culprit in Perimplant Mucositis - A Case Report

Dr. Parthiban Saket[1], Dr. S.Gopalakrishnan[2], Dr. V.Shankarram[3]

1 Senior lecturer,
2 Reader,
3 Professor,
Thai Moogambigai Dental College & Hospital,
Mugappair, Chennai - 600107.

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ABSTRACT

Herpes simplex virus-type 1 (HSV-1) causes oral infection in lip, tongue, buccal mucosa and alveolar rmucosa and later it causes recurrent ulcers causing mucositis around tooth structure as well as around the prosthesis. This case report elaborates how HSV-1 may cause peri implant mucositis in a healthy implant site which was placed 5 years back. A 22-year-old female patient presented in a private dental hospital for the treatment of perimplantitis with chief complaint of marginal inflammation of the gingiva and vesicle formation accompanied by pain, fever, and regional lymphadenopathy. Patient was advised antibiotic and anti-inflammatory medications. Two weeks after medication, the patient returned complaining of increased in severity of the symptoms with vesicle formation around her lips. Perimplant curettage was done with plastic curettes and patient advised oral hygiene instructions. A biopsy was taken for histological and direct immunoflouresence examinations, which revealed the presence of herpetic origin of the lesion following which acyclovir was prescribed. After 1 week of antiviral therapy, inflammation around the implant site and lips disappeared, and healthy soft tissue margin around implant was observed.

KEYWORDS: Herpes simplex virus, Perimplant Mucositis Histological and Immunoflouresence examination.

Introduction

Herpes simplex viruses are the most ubiquitous form of viruses in the adult population. Highly virulent forms of the virus have been often been detected in the lips, tongue, buccal mucosa and alveolar mucosa causing recurrent oral infections. In alveolar mucosa it causes recurrent infection causing ulcer and vesicles around the soft tissue surrounding the tooth structure and prosthetic appliances[1]. Peri-implant diseases is a site-specific infectious disease that causes an inflammatory process in soft tissues, and bone loss around an osseointegrated implant prosthesis[2]. Peri-implant mucositis has been described as a disease in which the presence of inflammation is confined to the soft tissues surrounding a dental implant with no signs of loss of supporting bone[3].

From a clinical standpoint, signs that determine the presence of peri-implant mucositis include bleeding on probing and/or suppuration, which are usually associated with probing depths more than 4 mm and no evidence of radiographic loss of bone beyond bone remodeling[4]. The description of the inflammatory process of periimplant mucositis around an implant is quite similar to gingivitis around natural teeth. Glycoproteins from saliva adhere to exposed titanium surfaces with concomitant microbiological colonization. Similar to bacterial colonization, herpetic infection can possibly occur on the implant region[5]. A case report of similar condition was seen where perimplant Mucositis affected with herpes infection was successfully treated after proper diagnosis.

Case Report

A 22 Year old female patient presented herself in a private dental college for the treatment of inflammation around his previously placed implant. The patient reported of gingival recession with vesicle formation in her implant region which is placed 5 years back in her left upper lateral incisor region. The lesion was accompanied by pain, fever and regional lymphadenopathy and an unusual onset modality of perimplant mucositis and the associated symptoms led to suspect a likely viral etiology. Before the treatment of the perimplant mucositis the patient underwent scaling and periodontal parameters were assessed including plaque index, bleeding index, bleeding on probing, pocket depth and clinical attachment level in 12 region[6]. Due to the unusual and rapid development of inflammation in implant region accompanied by pain, fever and regional lymphadenopathy the patient was put on screening for two weeks with oral antibiotics and the .patient was instructed to report after two weeks. After two weeks the patient was examined and on oral examination, perimplant mucositis was similar in condition with increased suppuration with no plaque accumulation and patient developed vesicle formation in her lip region along with pain fever and persistant painful lymphadenopathy[7]. Patient was advised biopsy following which biopsy was taken by removing the lesional tissue around the implant. Cytologic smears also were taken from the epithelial surface and the specimens were delivered to the pathology department for histological and immunofluorescence examinations[8]. After removal of biopsy, the region was curetted with plastic curettes and oral hygiene instructions were given.

Histopathological Evaluation

The histopathological examination showed an intra epithelial vesicle containing exudates, inflammatory and virus infected epithelial cells. The infected cells showed the typical effects of HSV-1 infection with an increase in the size of the nuclei and margination of chromatin. The cytologic smear showed the same cellular changes[9]. Identification of HSV-1 was done by direct immunofluorescence and cytologic smears using the (FITC) Fluorescein Isothiocynade conjugated primary antibody to HSV-1[10]. The positivity of the smear was demonstrated by the yellow–green color which appeared with in the multinucleated epithelial cells[11]. A cytological specimen from normal mucosa was used as a normal control and a cytological specimen from a labial herpetic lesion as a positive control.

Treatment

After the histopathological examination, Acyclovir was immediately prescribed at a dosage of 200mg 4 times daily for 7 days. One week later, the lesion had completely disappeared. During the following 6 months period, the patient was prescribed a meticulous program of supportive periodontal treatment to prevent recurrence of disease. A new prosthetic restoration with an esthetic supragingival margins was constructed as well. Professional prophylaxis was performed at 3 month intervals. During this time, the patient showed signs of good periodontal health with no signs of recurrent herpetic lesions in other areas too.

Discussion

In this paper, a patient with HSV-1 induced periimplant mucositis in relation to left lateral incisors (as confirmed by histopathological and immunofluorescence examinations) revealing clinical characteristics different from those associated with typical periimplant mucositis reported. The onset and progression of this lesion were extremely dramatic, resulting in the rapid deterioration of the marginal gingiva in only a few days of time. Moreover, it was accompanied by other clinical signs and symptoms such as pain, fever, and regional lymphadenopathy. This gingival lesion was treated by means of mechanical debridement with plastic curettes and based on the definitive diagnosis of HSV-1 infection, acyclovir was prescribed, which was successful in treating the lesions.12 The strict regimen of plaque control during supportive periodontal treatment was given and a new prosthesis was given. There was no marginal recession nor loss of gingiva occurring in the implant region or other regions in oral cavity later.

Some conclusions may be drawn from this case report:

Perimplant Mucositis may be caused not only by bacterial infection or improper prosthesis or with poor oral hygiene, but also by HSV-1 infection.[13]

The clinical characteristics of HSV-1 causing periimplant Mucositis are different from those caused by normal etiologies. The sudden onset, rapid progression and dramatic destruction of the perimplant mucosal tissues associated with pain, fever, and lymphadenopathy are the primary characteristics features.[14]

Based on these differences, clinical diagnosis must be performed by the periodontist at an early stage.

Acyclovir made it possible to successfully treat recurrent viral gingival lesion in its early stage.[15]

Strict collaboration with the oral pathologist may be useful in detecting HSV-1 infection in its early stage.[16]

Conclusion

HSV infection around implant region is a difficult diagnosis to establish. It should be considered in the differential diagnosis of any case of severe herpes infection with concomitant fever, pain and lymphadenopathy. Based on these clinical features, diagnosis of perimplantitis induced by HSV-1 must be carried out at an early stage to establish a successful therapy. If HSV infection is suspected, then therapy with acyclovir or vidarabine must be rapidly initiated for a better chance of a favorable outcome.

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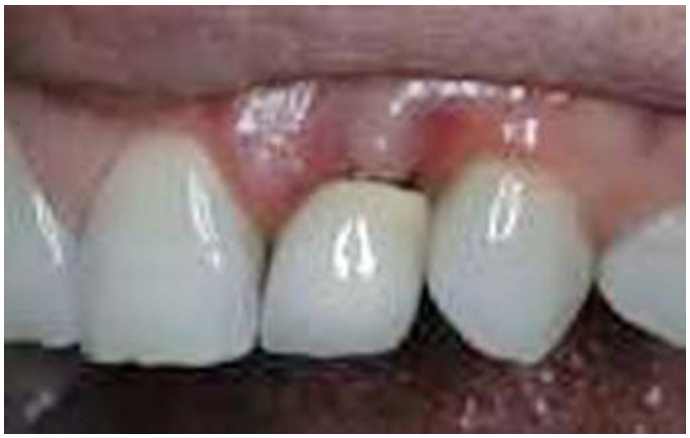

Fig 1: Infection and inflammation around the implant

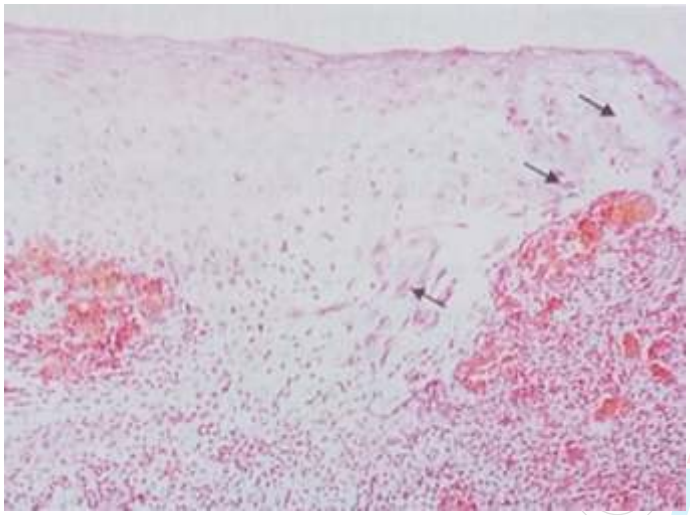

Fig 2: gingival biopsy reveals an intra epithelial vesicle with acantholysis and typical cytological feautures of HSV infection (arrows) (hematoxylin and eosin, original magnification 10)

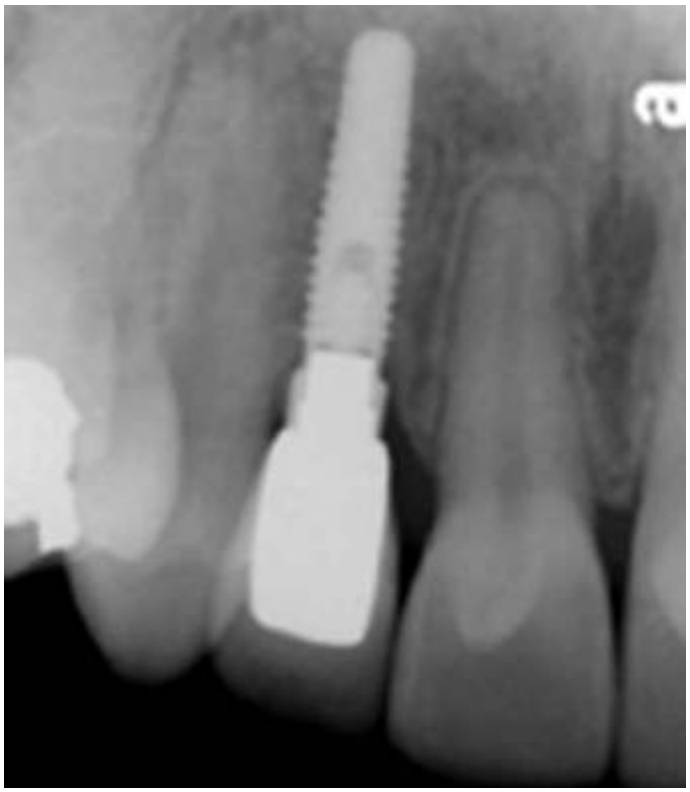

Fig 3: Radiographic picture of the patient

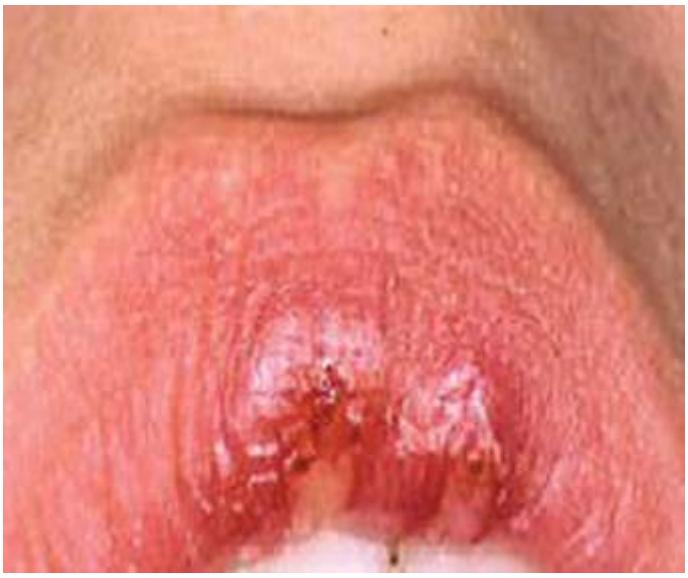

Fig 4: Vesicles present on the lips

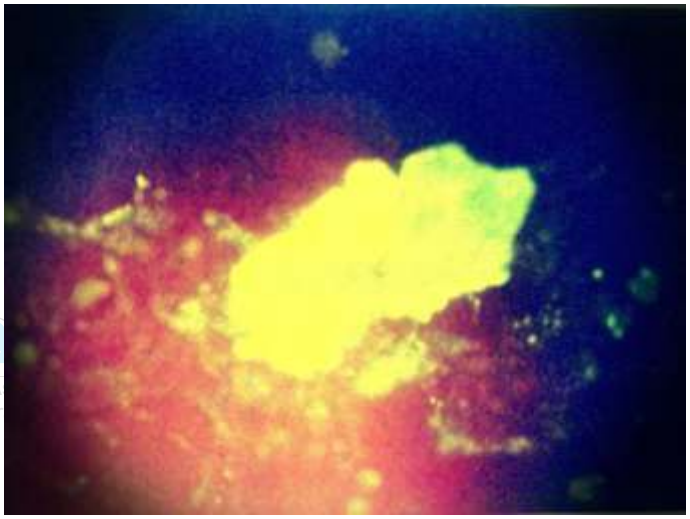

Fig 5: Direct immunofluorescence on cytologic smear shows HSV-1positively revealed by the typical yellow green color of grouped cells (original magnification 10)

Fig 6: Postoperative clinical Picture of 12 region