

Stress Related Necrotizing Ulcerative Gingivitis: A Case Report

Boumdir Safaa*, El Kholti Wafa, Rhalimi Loubna and Kissa Jamila

Department of Periodontics, University of Hassan II of Casablanca, Casablanca, Morocco

Abstract

Necrotizing Ulcerative Gingivitis (NUG) is a classic form of necrotizing periodontal diseases. It has a rapid and aggressive onset with a multifactorial complex etiology such as stress, nutritional deficiencies, and immune system dysfunctions. Clinically, NUG is characterized by inflamed interdental papillae, gingival necrosis, gingival pain, bleeding, and halitosis. The treatment of NUG included an initial phase that should be provided immediately to stop disease progression and to control patient's feeling of discomfort and pain. The second phase of the treatment of the preexisting condition, then, the surgical correction of the disease sequelae. After active therapy was completed; a periodontal maintenance regimen was established. The aim of this case report is to describe the diagnosis approach and treatment of NUG in a male patient with no systemic disease and probable mechanism of pathogenesis of predisposing factors involved.

Keywords: Diagnosis • Necrotizing periodontal diseases • Necrotizing ulcerative gingivitis • Treatment • Stress

Introduction

Necrotizing periodontal diseases are considered to be among the most severe inflammatory reactions of periodontal tissues associated with dental plaque. These diseases are characterized by a rapid, acute onset, a multifactorial and complex etiology [1,2]. A classic example of necrotizing periodontal diseases is *Necrotizing Ulcerative Gingivitis* (NUG). It is a typical form of periodontal diseases caused by bacterial infection in patients with specific underlying risk factors (poor oral hygiene, smoking, stress, poor nutrition, compromised immune status [3]. Clinically, NUG is characterized by excessive accumulation of dental plaque, rapid onset of gingival pain, interdental gingival necrosis, bleeding, and tissue necrosis. It may be also associated with fever and lymph-adenopathy [4].

NUG was seen among military personnel, during World War II, due to multiple risk factors (poor oral hygiene, intense psychological stress, and poor nutrition [5]. After the war, NUG is observed in patients with an immune-compromised condition. According to recent data, the prevalence rate of NUG varies over a wide range from 6.7% in Chilean students between 12 and 21 years [6] to 0.11% in the British Armed Forces [7] Periodontal treatment of NUG is directed toward the remission of signs and symptoms of the acute process, including the removal of the local etiologic agents and relief of the painful condition. The aim of the present case report is to describe therapeutic approach and successful outcomes of a localized form of NUG.

Case Report

A 22 year old male patient, with painful gingival inflammation progressing

***Address for Correspondence:** Boumdir Safaa, Department of Periodontics, University of Hassan II of Casablanca, Casablanca, Morocco, Tel: +212613293692; E-mail: safaaboumdir@gmail.com

Copyright: © 2023 Safaa B, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: 08 June, 2023, Manuscript No. OHCR-23-101729; **Editor Assigned:** 10 June, 2023, PreQC No. P-101729; **Reviewed:** 21 June, 2023, QC No. Q-101729; **Revised:** 26 June, 2023, Manuscript No. R-101729; **Published:** 03 July, 2023, DOI: 10.37421/2471-8726.2023.9.81

since 3 days, consulted urgently the Department of Periodontology, Faculty of Dentistry, University of Hassan II of Casablanca, Morocco, in JUNE 2022. The patient reported spontaneous intensive pain and gingival bleeding during the clinical examination; we noted a thin, febrile, tired male, but no adenopathy on cervical ganglion area. He had a poor plaque control without any parafunction and was a non-smoker. No other significant medical history or known allergies was noted.

Clinical findings and diagnostic assessment

Clinical examination revealed a pseudo membrane formation along the gingival margins and decapitated ulcerated papillae was also noted especially on the upper anterior teeth and the lower central incisors (Figure 1). The papilla did not fill the entire interproximal space in some sites. Generalized extensive accumulation of dental plaque was observed on the dental surfaces. X-ray examination showed periodontal ligament enlargement in the lower central incisors and a no alveolar bone loss (Figures 2 and 3).

During the physical examination, no systemic condition was found that could predispose the patient to NUG. However, the patient reported that he had been experiencing severe stress as well as psychological pressure at school due to a period of academic probation. Based on the clinical data obtained at the examination, NUG was diagnosed (Figures 1 and 3).



Figure 1. Clinical views at baseline.

Therapeutic approach

The initial clinical treatment aimed to reduce the acute phase of NUG. We applied a diluted hydrogen peroxide to the necrotic pseudomembranous lesions using sterile swabs in conjunction with suitable ultrasonic supragingival debridement. The patient was prescribed oral antibiotic (250 mg metronidazole every 8 h for 7 days) and oral mouth rinse (0.12% chlorhexidine twice daily for 10 days). The gingiva state was evaluated 2 days and 7 days after the treatment (Figures 4 and 5).

The clinical examination showed favorable evolution with a reduction of erythema and swelling. At two days, after the emergency treatment, a subgingival debridement was conducted. A reinforcement of the oral hygiene instructions was realized to change the patient's oral hygiene behavior with regular and effective maintenance of oral hygiene habits. The inflammatory clinical condition was reversed, and periodontal health was observed within a two weeks. The patient was seen regularly, once a month. A favorable evolution was noted without any tissue squealed (Figures 4-6).

Necrotizing ulcerative gingivitis is restricted to the gingival tissue without affection of other tissues of the periodontium [8]. In 1993, the World Health Organization classified NUG with Necrotizing Ulcerative



Figure 4. Clinical views 2 days after emergency treatment.



Figure 5. Front view 7 days after emergency treatment.



Figure 6. Final front view 6-month post treatment.



Figure 2. Panoramic radiograph revealing no alveolar bone loss.

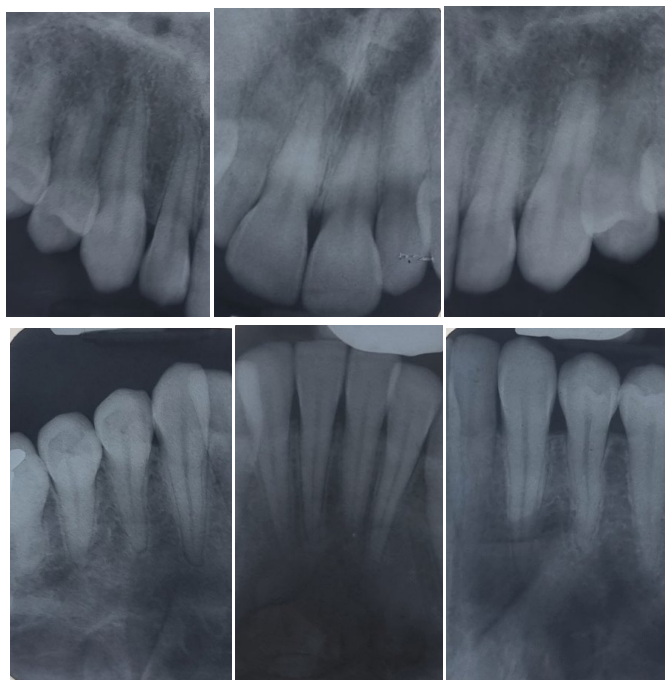


Figure 3. Baseline periapical radiographs.

Periodontitis (NUP) and linear gingival erythema in the group of periodontal disease related pathologies in HIV positive patients [8]. Later and according to the 1999 American Academy of Periodontics classification system, NUG was classified as necrotizing periodontal disease, with NUP.

Necrotizing Gingivitis (NG), Necrotizing Periodontitis (NP), and Necrotizing Stomatitis (NS) are severe inflammatory periodontal diseases caused by bacterial infection in patients with specific risk factors (poor oral hygiene, smoking, stress, poor nutrition, compromised immune status) [9].

In the present case report, systemic clinical symptoms indicate the less severity of the case

- The typically histopathological aspect of NUG is described on four different layers from the most superficial to the deepest layers of the lesion (Listgarten, et al.):
- The bacterial area with a superficial fibrous mesh composed of degenerated epithelial cells, leukocytes, cellular rests, and a wide variety of bacterial cells, including rods, fusiforms, and spirochetes.
- The neutrophil rich zone composed of a high number of leukocytes, especially neutrophils, and numerous spirochetes of different sizes and other bacterial morphotypes located between the host cells.

- The necrotic zone, containing disintegrated cells, together with medium- and large size spirochetes and fusiform bacteria.
- The spirochetel infiltration zone, where the tissue components are adequately preserved but are infiltrated with large- and medium-size spirochetes. Other bacterial morphotypes are not found.

The diagnosis of NUG may be confused with some viral infections (acute herpetic gingivostomatitis and infectious mononucleosis...), or with bacterial infections (gonococcal or streptococcal gingivitis...) and also with some mucocutaneous conditions (desquamative gingivitis, multiform erythema and pemphigus vulgaris) [10]. In this case report, the diagnosis clinical features are evident.

The risk factors have a main role on NUG by the down regulation of the host immune response facilitating bacterial pathogenicity. These factors include: psychological stress and insufficient sleep and poor nutrition. In the present case, poor nutrition and psychological stress due to exams are two NUG risk factors that were suspected. The proposed mechanisms to explain the association between psychological stress and NUG are based on reductions of the gingival microcirculation and salivary flow and increases in adrenocortical secretions which are associated with an alteration in the function of polymorphonuclear leukocytes and lymphocytes [10].

The treatment modalities of NUG are organized in successive steps: first, treatment of the acute phase; second, treatment of the preexisting condition; then, corrective treatment of the disease sequelae [11]. Followed by supportive or maintenance phase. The objective of the treatment of the acute phase is to stop the disease process and tissue destruction and to control the patient's general feeling of discomfort and pain that may interfere with nutrition and oral hygiene practices. These objectives can be achieved by a careful superficial ultrasonic debridement and chemical detersion of the necrotic lesions with oxygen-releasing agents "local oxygen therapy."

Discussion

Regarding systemic antimicrobials may be considered, Metronidazole (250 mg, every 8 h) is the first choice of drug due to its active action against strict anaerobes [2,10]. The literature reported other systemic drugs, with acceptable results, as a penicillin, tetracyclines, clindamycin, amoxicillin, or amoxicillin plus clavulanate [2]. Locally delivered antimicrobials are not indicated for the large numbers of bacteria present within the tissues, where the local drug will not be able to achieve adequate concentrations [10]. Antifungal agents are, especially, indicated in immunodepressed patients who are undergoing antibiotic therapy [10]. Once the acute phase has been controlled, treatment of the preexisting chronic condition, such as preexisting chronic gingivitis, should be started, including professional prophylaxis and/or scaling and root planning.

Oral hygiene instructions and motivation should be intensified. The predisposing local factors, such as overhanging restorations and interdental open spaces, should be treated. Systemic predisposing factors including smoking, inadequate sleep, and reduction of stress should be controlled and taken into consideration [11-13].

The success of treatment depends not only on the control of biofilm techniques but also on the patient's behavior modification and compliance with the treatment modalities. In the present clinical case, the patient compliance was a positive factor in the favorable evolution of the clinical situation. He has a good plaque control and respects the appointments of controls and still on maintenance phase.

Conclusion

NUG is a form of periodontal necrotizing disease. Different clinical and

systemic symptom and risk factors are behind the diagnostic assessment. Treatment should be organized on successive stages, and the acute phase treatment should be provided immediately to prevent sequelae and craters in soft tissues that could lead to new relapses. Finally, a good compliance with the oral hygiene practices and maintenance are the guarantee of successful outcomes.

Acknowledgement

None.

Conflict of Interest

The authors declare that they have no competing interest.

References

1. Holmstrup P and J. Westergaard. "Necrotizing periodontal disease." *In Clin Periodont Implant Dentistry* (2015): 421-436.
2. Herrera, David, Bettina Alonso, Lorenzo de Arriba and Isabel Santa Cruz, et al. "Acute periodontal lesions." *J Periodontol* 65 (2014): 149-177.
3. Holmstrup, Palle, Jacqueline Plemons and Joerg Meyle. "Non-plaque-induced gingival diseases." *J Clin Periodontol* 89 (2018):S28-S45.
4. Hu, Jessie, Paul Kent, Joshua M. Lennon and Latania K. Logan. "Acute necrotizing ulcerative gingivitis in an immunocompromised young adult." *BMJ Case Rep* (2015).
5. Rowland, Randal W. "Necrotizing ulcerative gingivitis." *Ann Periodontol* 4 (1999): 65-73.
6. Lopez, R., O. Fernandez, G. Jara and V. B. Aelum. "Epidemiology of necrotizing ulcerative gingival lesions in adolescents." *J Periodontol Res* 37 (2002): 439-444.
7. Dufty, J., N. Gkraniyas, A. Petrie and R. McCormick, et al. "Prevalence and treatment of Necrotizing Ulcerative Gingivitis (NUG) in the British Armed Forces: A case-control study." *Clin Oral Investig* 21 (2017): 1935-1944.
8. American Academy of Periodontology. "Parameter on acute periodontal diseases." *J Periodontol* 71(2000): 863-868.
9. Folayan M.O. "The epidemiology, etiology, and pathophysiology of acute necrotizing ulcerative gingivitis associated with malnutrition." *J Contemp Dent Pract* 5 (2004): 28-41.
10. Ardila, Carlos M. and Isabel C. Guzman. "Association of *Porphyromonas gingivalis* with high levels of stress induced hormone cortisol in chronic periodontitis patients." *J Investig Clin Dent* 7 (2016):361-367.
11. Malek, Rayhana, Amina Gharibi, Nadia Khilil and Jamila Kissa. "Necrotizing ulcerative gingivitis." *Contemp Clin Dentistry* 8 (2017): 496-500
12. Martos, Josue, K. V. Ahn Pinto, T. M. Feijo Miguelis and Marília Cabral Cavalcanti, et al. "Clinical treatment of necrotizing ulcerative gingivitis: A case report with 10-year follow-up." *Gen Dent* 67(2019): 62-5.
13. Lang, Niklaus, W. A. Soskolne, Gary Greenstein and David Cochran, et al. "Consensus report: Necrotizing periodontal diseases." *Annal Periodontol* 4 (1999): 78.

How to cite this article: Safaa, Boubdir, El Kholti Wafa, Rhalimi Loubna and Kissa Jamila. "Stress Related Necrotizing Ulcerative Gingivitis: A Case Report." *Oral Health Case Rep* 9 (2023): 81.