

Stress Related Necrotizing Ulcerative Gingivitis: A Case Report

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Received: 21-June-2023, Manuscript No. IPHSJ-23-14053; Editor assigned: 26-June-2023, PreQC No. IPHSJ-23-14053 (PQ); Reviewed: 10-July-2023, QC No. IPHSJ-23-14053; Revised: 22-August-2023, Manuscript No. IPHSJ-23-14053 (R); Published: 19-September-2023, DOI: 10.36648/1791-809X.17.9.1056

Citation: Safaa B, Kholti W, Loubna R, Jamila K (2023) Stress Related Necrotizing Ulcerative Gingivitis: A Case Report. J Health Sci. Vol. 17 No. 09 1056.

Abstract

The basic form of necrotizing periodontal disease is Necrotizing Ulcerative Gingivitis (NUG). It has a rapid and aggressive start and a complex aetiology that includes stress, nutritional deficits and immune system dysfunctions. NUG is distinguished clinically by inflammatory interdental papillae, gingival necrosis, gingival discomfort, bleeding and halitosis. The therapy of NUG comprised a first phase that should be administered immediately in order to halt disease progression and regulate the patient's discomfort and pain. The second phase of the preexisting condition's treatment, followed by surgical correction of the disease's sequelae. Following the completion of active therapy, a periodontal maintenance programme was created. The purpose of this case report is to present the method to diagnosis and treatment of NUG in a male patient with no systemic disease, as well as the likely mechanism of pathogenesis of predisposing factors implicated.

Keywords: Diagnosis; Necrotizing Periodontal Diseases (NPD); Necrotizing Ulcerative Gingivitis (NUG); Treatment; Stress

Introduction

Necrotizing periodontitis is one of the most severe inflammatory reactions of periodontal tissues caused by dental plaque. These disorders have a quick, acute onset, as well as a multiple and complex aetiology. Necrotizing Ulcerative Gingivitis (NUG) is a classic example of a necrotizing periodontal disease. It is a common kind of periodontal disease caused by bacterial infection in people who have certain underlying risk factors (poor dental hygiene, smoking, stress, poor nutrition, reduced immunological function, etc).

Clinically, NUG is distinguished by high dental plaque accumulation, quick onset of gingival discomfort, interdental gingival necrosis, bleeding and tissue necrosis. It is also linked to fever and lymphadenopathy. During World War II, NUG was observed among military soldiers due to a combination of risk factors (poor oral hygiene, significant psychological stress and inadequate diet). NUG is seen in people with immune-

compromised conditions after the conflict. According to current data, the prevalence of NUG ranges from 6.7% in Chilean students aged 12 to 21 years to 0.11% in the British armed forces [1].

The periodontal therapy of NUG is aimed at remission of the acute process's signs and symptoms, including the removal of the local causative factors and comfort of the painful condition. The purpose of this case study is to describe a localised form of NUG's therapy strategy and successful outcomes.

Case Presentation

In June 2022, a 22-year-old male patient presented to the department of periodontology, faculty of dentistry, university of Hassan II of Casablanca, Morocco, with painful gingival inflammation that had been present for three days. The patient complained of sudden intense discomfort and gingival bleeding. We observed a slender, feverish, fatigued male during the clinical examination, but no adenopathy on the cervical ganglia area. He was a nonsmoker with poor plaque management and no parafunction. There was no other significant medical history or recognised allergies [2].

Clinical findings and diagnostic assessment

Clinical examination indicated a pseudo membrane formation along the gingival edges, as well as headless ulcerated papillae, particularly on the upper anterior teeth and lower central incisors (Figure 1). In rare cases, the papilla did not completely fill the interproximal area. On the teeth surfaces, there was a generalised and extensive deposit of dental plaque. X-rays revealed periodontal ligament expansion in the lower central incisors but no alveolar bone loss (Figures 2 and 3). During the physical examination, no systemic condition that could predispose the patient to NUG was discovered. However, the patient indicated that he had been under considerable stress and psychological pressure at school as a result of a period of academic probation. Based on the clinical data obtained at the examination, NUG was diagnosed [3].



Figure 1 Clinical views at baseline.

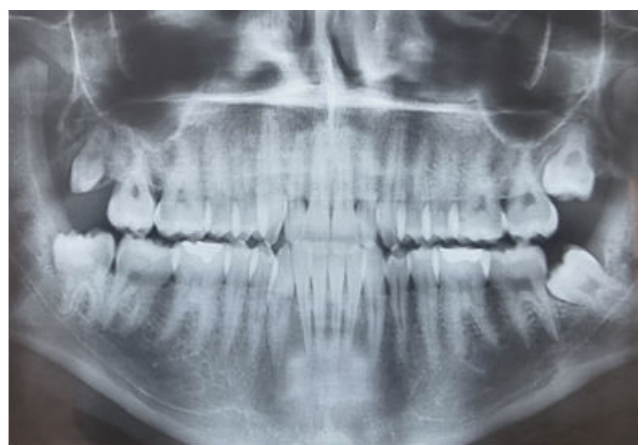


Figure 2 Panoramic radiograph revealing no alveolar bone loss.

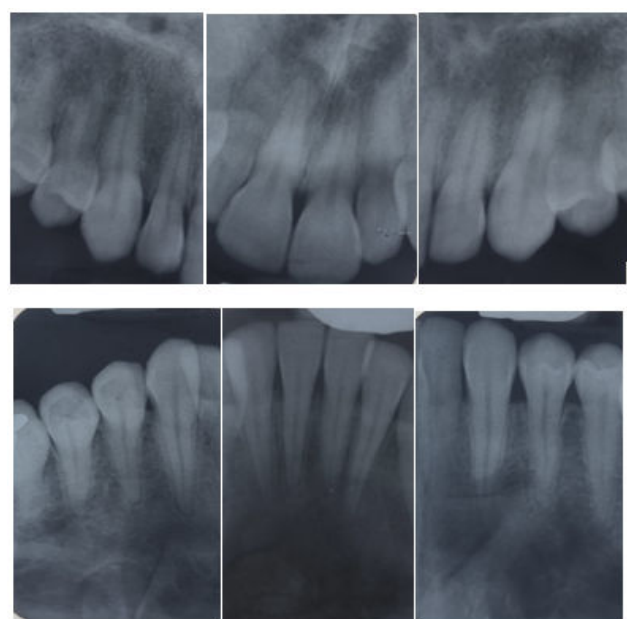


Figure 3 Baseline periapical radiographs.

Therapeutic approach

The primary clinical treatment goal was to shorten the acute period of NUG. Using sterile swabs and appropriate ultrasonic supragingival debridement, we administered diluted hydrogen peroxide to the necrotic pseudomembranous lesions. The patient was given an oral antibiotic (250 mg metronidazole every 8 hours for 7 days) as well as an oral mouth rinse (0.12% chlorhexidine twice day for 10 days). The gingiva condition was assessed two days and seven days after therapy. The clinical examination revealed that the patient's condition was

improving, with less erythema and swelling. A subgingival debridement was performed two days following the emergency therapy [4].

A reinforcement of the oral hygiene instructions was realised in order to change the patient's oral hygiene behaviour with regular and effective oral hygiene habits maintenance. Within two weeks, the inflammatory clinical state was corrected and periodontal health was noted. The patient was seen once a month on a regular basis. There was no tissue squealing, thus the evolution was positive (Figures 4-6) [5].



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.

Results and Discussion

Necrotizing ulcerative gingivitis is limited to the gingival tissue and does not impact other periodontal tissues. The World Health Organisation (WHO) designated NUG, along with Necrotizing Ulcerative Periodontitis (NUP) and linear gingival erythema, as periodontal disease-related diseases in HIV-positive patients in 1993. Later, according to the American academy of periodontology's 1999 categorization scheme, NUG was classed as necrotizing periodontal disease (NUP). Necrotizing Gingivitis (NG), Necrotizing Periodontitis (NP) and

Necrotizing Stomatitis (NS) are severe inflammatory periodontal diseases caused by bacterial infection in patients who have certain risk factors (poor dental hygiene, smoking, stress, poor diet, reduced immunological function and so on [6].

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:

- 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 spirochetal infiltration zone, where the tissue components are adequately preserved but are infiltrated with large and medium size spirochetes. Other bacterial morphotypes are not found [7].

The diagnosis of NUG can be confused with some viral infections (acute herpetic gingivostomatitis and infectious mononucleosis...), bacterial infections (gonococcal or streptococcal gingivitis) and also some mucocutaneous conditions (desquamative gingivitis, multiform erythema, pemphigus vulgaris). The risk factors play a significant role in NUG by suppressing the host immune response and enhancing bacterial pathogenicity. Psychological stress, low sleep and poor diet are among these variables. In this case, two NUG risk factors were suspected: Poor diet and psychological stress caused by tests. The proposed mechanisms to explain the relationship between psychological stress and NUG are based on reductions in gingival microcirculation and salivary flow, as well as increases in adrenocortical secretions, which are associated with changes in the function of polymorphonuclear leukocytes and lymphocytes. NUG therapy modalities are organised in three steps: First, treat the acute phase; second, treat the previous condition; and last, treat the illness sequelae [8]. Then comes the supportive or maintenance phase. The goal of acute phase treatment is to stop the disease process and tissue deterioration, as well as to regulate the patient's general sense of discomfort and pain, which may interfere with nutrition and oral hygiene practises. These goals can be met through careful superficial ultrasonic debridement and chemical deterrence of necrotic lesions with oxygen-releasing chemicals, referred to as "local oxygen therapy." Metronidazole (250 mg, every 8 hours) is the primary choice of medicine for systemic antimicrobials due to its active action against stringent anaerobes. Other systemic medications with acceptable results in the literature include penicillin, tetracyclines, clindamycin, amoxicillin or amoxicillin with clavulanate. Locally delivered antimicrobials are not recommended for the huge number of bacteria present in tissues, where the local medication will not acquire acceptable concentrations. Antifungal drugs are especially useful in immunocompromised patients receiving antibiotics [9]. Once

the acute phase is under control, treatment of the previous chronic illness, such as chronic gingivitis, should begin, which may include professional prophylaxis and/or scaling and root planing. Instructions on oral hygiene and motivation should be strengthened. Overhanging restorations and interdental open areas, for example, should be addressed as predisposing local variables. Systemic risk factors such as smoking, insufficient sleep and stress reduction should be addressed and controlled. Treatment success is dependent not only on biofilm control approaches, but also on patient behaviour change and adherence to treatment regimens. In the current clinical example, patient compliance was a beneficial aspect in the clinical situation's favourable evolution. He has good plaque control, follows control appointments and is still in the maintenance phase [10].

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.

Conflict of Interest

The authors declare that they have no competing interest.

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