

Clinical treatment of necrotizing ulcerative gingivitis: a case report with 10-year follow-up

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The aim of this case report is to describe the diagnosis and treatment of a patient with necrotizing ulcerative gingivitis. An 18-year-old man with no systemic problems reported with chief complaints of gingival bleeding during toothbrushing and spontaneous pain. Clinical examination revealed significant plaque accumulation on the surfaces of all teeth as well as papillary necrosis involving mainly the anterior teeth. Treatment included an initial phase of supragingival plaque and calculus removal along with at-home use of 0.12% chlorhexidine gluconate mouthrinse twice a day for 30 days. After the initial phase, subgingival scaling was performed, and regular oral hygiene methods were resumed by the patient. After active therapy was completed, a periodontal maintenance regimen was established, and the patient was recalled for periodontal maintenance therapy. Follow-up occurred weekly throughout treatment, monthly for the first 6 months posttreatment, and 2-3 times a year during the periodontal maintenance therapy. Clinical results after 10 years showed that this approach controlled the acute phase and maintained the patient's periodontal health over time.

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Necrotizing periodontal diseases are considered to be among the most severe inflammatory reactions of periodontal tissues associated with dental plaque. They have a rapid, aggressive onset and a multifactorial, complex etiology.¹⁻³ A classic example of necrotizing periodontal diseases is necrotizing ulcerative gingivitis (NUG).⁴

Clinically, NUG is characterized by excessive accumulation of dental plaque; highly edematous, hemorrhagic, and inflamed interdental papillae; and, in most patients, tissue necrosis and foul breath, which may be associated with fever and lymphadenopathy.¹ The papillary area is usually covered by a white or grayish layer of soft consistency with an ulcerated gingival margin surrounded by an erythematous halo. Typically the lesion is painful and exhibits spontaneous bleeding. It presents as a limited, rapidly developing lesion that involves only the gingival tissue and does not result in loss of periodontal attachment.¹

A heterogeneous set of spirochetes, fusobacteria, and strains of *Treponema pallidum* and *Bacteroides intermedius* are associated with this pathosis.¹ Host factors, such as psychological stress, immunosuppression, a smoking habit, and poor oral hygiene, are also frequently associated with NUG.^{2,5,6}

During World War II, there was a high incidence of necrotizing periodontal disease (for example, approximately 14% of Danish military personnel were affected); however, after the war, the incidence of necrotizing periodontal disease decreased substantially.¹ More recent data have shown prevalence rates ranging from 0.11% in members of the British armed forces to 6.7% in Chilean students (aged 12-21 years).^{7,8} A recent review confirmed the low prevalence of NUG (less than 1%).⁷ However, despite the current low prevalence, it is important not to underestimate this acute periodontal condition.⁷

Clinical findings aid in the differential diagnosis of NUG from other pathoses such as primary herpetic gingivostomatitis and acute leukemia.¹ Periodontal treatment of NUG involves 2 phases: the initial and maintenance phases.¹ The initial treatment of the disease is directed toward the remission of the acute process, including the removal of the local etiologic agents and relief of the painful condition. In a second phase, periodontal maintenance therapy is consistently implemented and oral hygiene education is reinforced.

The literature has reaffirmed that careful professional maintenance is an integral and important part of periodontal treatment.^{1,4} Patients with NUG are susceptible to disease recurrence, mostly as a result of difficulties in controlling the oral biofilm.⁴ Therefore, the greatest challenge in treating NUG is to reinforce the patient's education on periodontal health, given that success will depend not only on proper control of the biofilm but also on the patient's modification of



Fig 1. Initial clinical appearance at the first evaluation.



Fig 2. Clinical appearance after gentle supragingival plaque removal during the second appointment.



Fig 3. Clinical appearance at the third appointment.



Fig 4. Clinical appearance at the fourth appointment.

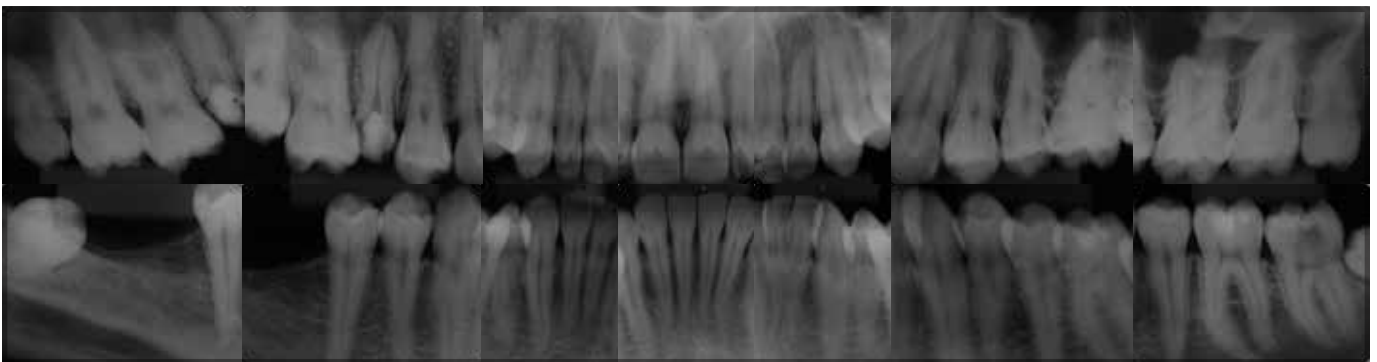


Fig 5. Radiographic evaluation at the fourth appointment, revealing no interproximal bone loss.

behavior and compliance with the periodontal treatment. The objective of the present case report is to describe the successful clinical treatment of a patient with NUG over a period of 10 years of maintenance.

Case report

Patient information

An 18-year-old man with leukoderma was referred for treatment to the School of Dentistry at Federal University of

Pelotas, Pelotas, Brazil. His main concerns were gingival bleeding when toothbrushing and pronounced halitosis that caused him embarrassment.

Clinical findings and diagnostic assessment

Clinical examination revealed necrosis and ulceration of the interdental papilla, which were covered by a grayish slough (pseudomembrane). The papilla did not fill the entire interproximal space in some sites, and generalized, extensive accumulation



Fig 6. Clinical appearance during periodontal maintenance therapy. A. Six-month follow-up. B. One-year follow-up. C. Two-year follow-up. D & E. Ten-year follow-up.

of oral biofilm was observed on the dental surfaces (Fig 1). The teeth were well positioned in the arch. Radiographic examination was not performed at the first evaluation due to the condition of the soft tissue.

During the physical examination, no systemic condition was found that could predispose the patient to NUG. However, the patient's parents 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.

Therapeutic interventions

At the second appointment, 7 days after the evaluation and diagnosis, the initial clinical treatment involved the careful removal of the supragingival plaque, aided by topical anesthetics (Fig 2). The patient was instructed to perform extensive atraumatic and careful oral hygiene procedures and to rinse with a 0.12% chlorhexidine gluconate mouthwash twice a day for 30 days.

At the third appointment, 7 days later, supragingival scaling was performed along with supervised brushing and reinforcement of the oral hygiene instructions (Fig 3).

At the fourth appointment, 7 days after the third, subgingival scaling was performed on specific sites. Supragingival scaling, planing, and polishing of the tooth surfaces were also performed along with reinforcement of the oral hygiene instructions (Fig 4). A radiographic examination was performed, and no bone loss was detected (Fig 5). Impressions of the maxillary and mandibular arches were taken for future rehabilitation planning.

A motivational approach to changing the patient's oral hygiene behavior was emphasized by the clinical team from the first evaluation. With regular and effective maintenance of oral hygiene habits by the patient, the inflammatory clinical condition was reversed, and periodontal health was observed within a few weeks.

After the completion of the cause-related therapy phase, the patient was enrolled in a periodontal maintenance program to optimize the therapeutic interventions. The process

of educational and motivational intervention began with the presentation of detailed information—through illustrative photographs and pamphlets—to the patient at each session. The educational materials emphasized the signs and symptoms of the disease and their relationship to the presence of bacterial biofilm. The patient was also instructed to be aware of the signs, symptoms, and locations of periodontal disease.

Detailed information about the importance of efficient daily oral hygiene was followed by demonstration of oral hygiene protocols on a model—using a toothbrush technique appropriate for the patient's specific clinical condition—as well as detailed, precise instruction in the use of dental floss. At each clinical session, a dye solution that stains plaque was used as an educational tool to demonstrate the location of bacterial plaque. Plaque-disclosing tablets were given to the patient for weekly home use.

Periodontal clinical control was guided by the patient's adherence to the recall system of weekly follow-up appointments throughout treatment, monthly follow-up for the first 6 months posttreatment, and follow-up 2-3 times a year during periodontal maintenance therapy; at each visit, the needed frequency of attendance was assessed. The findings at multiple follow-up examinations showed that periodontal health and function were successfully reestablished and maintained over time (Fig 6). Clinical and radiographic examinations revealed healthy tissues and no evidence of progressive periodontal attachment loss.

Discussion

Necrotizing ulcerative gingivitis is restricted to the gingival tissue without the involvement of other tissues of the periodontium. Progression of this disease involves the attachment apparatus with consequent tissue loss.⁴ Nonetheless, case reports have emphasized that conservative local treatment of NUG without systemic involvement can produce good outcomes. According to this premise, therapies are based on local debridement and scaling and root planing sessions together with good plaque control through a strict oral hygiene regimen; local

antimicrobial therapy, using solutions of 0.1% or 0.2% chlorhexidine, is only required until lesion remission.

The dental literature lacks consensus about an optimal treatment regimen for NUG. Due to its low prevalence, it is difficult to design controlled clinical trials. Most of the currently used treatment modalities are related in case reports and literature reviews.^{7,9,10} However, there is evidence proving the importance of prompt intervention with adequate periodontal treatment, which includes careful and superficial mechanical debridement, use of chemical agents (eg, chlorhexidine), establishment of effective oral hygiene habits, and control of any predisposing factors.³

The patient must be closely monitored, and if the response to the acute treatment phase is unsatisfactory and the symptoms suggest systemic involvement (ie, fever and/or malaise), the use of systemic antibiotics may be considered.^{1,3,7,11} Metronidazole seems to be the first choice due to its action against resistant anaerobes, but the literature shows different dosages and duration regimens (eg, 250 mg, 3 times a day for 7 days, or 200 mg, 3 times a day for 3 days).^{1,3,7,11,12} To the best of the authors' knowledge, there was no indication for prescribing a systemic antibiotic during treatment of the patient in the present case. There were no signs of systemic involvement, and the NUG was resolved by proper periodontal treatment.

Patients with NUG are generally young adults with poor oral hygiene. In the present case, the high degree of psychological stress experienced by the patient may be considered a risk factor for this disease.

The initial phase of treatment consists of eliminating or minimizing the acute phase of the disease, characterized by the evolution of tissue necrosis.¹ Once the acute disease process is controlled, scaling and planing, education, and oral hygiene motivation procedures should be intensified.^{1,4} The adoption of periodontal treatment planning for the short-, medium-, and long-term should result in a good prognosis. In the medium- and long-term, the main focus should be the strict control of dental plaque.⁴ The patient's compliance in performing all the procedures of plaque control is essential to obtaining good results. Motivating the patient and communicating the importance of his or her role as cotherapist in the success of treatment may be the difference between success and failure of periodontal treatment. The information should be passed on to the patient gradually and steadily from the beginning of treatment, so that excellent results can be obtained. This educational stage of treatment is sometimes not valued by the patient as much as it is by the professional, but it is a key step in achieving and maintaining success.

Clinical experience has shown that careful professional maintenance is an integral part of periodontal treatment. Patient education is important in this context also, since success depends not only on the control of biofilm techniques but also on the patient's behavior modification and compliance with the suggested control regimen. In the present case, the patient was instructed about the need of self-care for oral hygiene, and motivational approaches consisted of direct demonstration on models, illustrative photographs, and radiographs. The patient's comprehension during clinical care was satisfactory, since he

observed areas with dental plaque after their disclosure and received instructions on the correct use of dental floss and interdental brushes. The challenge of this periodontal treatment was maintaining the patient's adherence to the recall system, which required weekly, biweekly, and monthly follow-up examinations throughout treatment; at each appointment, the need for consistent attendance was explained to the patient.

After a stressful time during the probationary period, the patient became calmer due to his achievements at school. The association between psychological stress and NUG is biologically plausible because the production of high levels of stress hormones, such as cortisol, favors the growth of periodontopathogenic bacterial species.^{6,13,14}

Conclusion

In a young man with NUG, use of 0.12% chlorhexidine twice a day for 30 days, in conjunction with weekly coronal polishing and supragingival scaling for 3 weeks and scaling and root planing in the third week, allowed for the control of the acute phase and maintained periodontal health over time. Periodontal maintenance therapy was shown to be adequate for the maintenance of periodontal health over a 10-year period.

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