Radio Graph 1: Acquired immunodeficiency syndrome, bone loss, panoramic radio.

Key Words: bone height than did age- and sex-matched controls without HIV.

Conclusions: Despite its limitations, this study shows that HIV-positive patients, even those with controlled viral loads and CD4 and CD8 levels, exhibited a greater loss of teeth and radiographic bone height than did age- and sex-matched controls without HIV.

Key Words: Acquired immunodeficiency syndrome, bone loss, panoramic radiography

Introduction
Currently, patients with HIV have a good quality of life. The development of antiretroviral therapy has increased the life expectancy of HIV patients, provided that they receive proper social and medical support. As in any other health area, dentistry should offer integrated resources so that these patients can achieve good systemic and emotional health. Infections of the oral cavity can pose risks to general health and create significant costs for governments and individuals.

The first signs of HIV infection often appear in the oral cavity. It is up to the dental surgeon to recognize the possibility HIV infection and advise the patient of the immediate need for a medical evaluation.

The use of such medications as antiretroviral therapy has changed the way patients with HIV relate to health centers. In dentistry, information on the periodontal health of patients with controlled HIV is necessary. The objective of this study is to evaluate the loss of bone insertion in patients with HIV.

Materials and Methods
This study was approved by the Research and Ethics Committee of the General University Hospital (Hospital Geral Universitário) under Protocol Number 2011-2024. The radiographs were obtained from the records service of the State Center of Dentistry for Special Patients, Cuiabá, MT.

The evaluator (ASS) underwent training and calibration to easily identify the anatomical structures to be analyzed in the study (κ = 0.87).

At the beginning of the study, 290 patients were selected; of these, only 66 had a panoramic radiograph with a diagnosis of the appropriate periodontal structures, had more than 10 teeth, had not received periodontal treatment, and had a viral load <80 copies and CD4 and CD8 levels <500, both monitored since 2003 a test group (triglyceride). The radiographs were taken beginning in 2006, the year in which the institution began operating until 2013 when data collection was finished. The patients HIV involved in the study were enrolled in program for patients with HIV in the State of Mato Grosso, Brazil.

To find a control group (CG), samples of radiographic images from HIV-positive patients were paired with radiographic
images from age- and sex-matched patients not infected with HIV, who were also free from any other underlying disease that could affect the progression of radiographic bone loss. Thus, the total study sample was 132 patients with a mean age of 37.29 years. The measurements were taken by analyzing alveolar bone loss using the space between the cementoenamel junction and the proximal alveolar bone crest as a reference. The radiographs were analyzed using a negatoscope, a magnifier, and a plastic ruler (Xalingo, São Paulo, SP, Brazil). The examination was performed in a darkroom.

The data were analyzed according to the number of teeth and the amount of bone loss, in millimeters (mm), for all the teeth except the third molars and root fragments. The data were separated into four groups: HIV-positive patients with bone loss >5 mm or <5 mm and patients not infected with HIV with bone loss >5 mm or <5 mm.

The statistical tests selected for the study were Student’s t-test for independent samples, the kappa test for calibration, the odds ratio test, and Pearson’s correlation tests. The level of statistical significance selected for this study was 5%.

Results

The results of this study demonstrate that in terms of the number of teeth (Table 1), the HIV-positive patients had greater tooth loss compared with the CG (P < 0.05).

Regarding radiographic bone loss (Table 2), the HIV-positive patients had greater loss in bone height compared with the CG for the following variables: Superior teeth, inferior teeth, and total (P < 0.05).

There was an association of 3.04 (1.34-6.89) between HIV-positive status and developing bone loss (Table 3). HIV-positive patients (older than 35) had a bone loss risk of 6.50 (1.41-29.9). The HIV-positive patients showed no sex-associated risk of the developing bone loss according to the analyzed data 1.22 (0.47-3.14).

A correlation was established between CD4 and CD8 levels and the number of teeth and the loss of bone height. There were no correlations between the data for these results.

Discussion

The results of this study demonstrate that the HIV-positive patients suffered greater radiographic bone loss, greater tooth loss, and a greater likelihood of the developing bone loss compared with the CG. The study also found a correlation between the viral load, CD4 and CD8 levels, and the loss of teeth and radiographic bone height. Patients with controlled HIV present with different clinical manifestations of diseases, especially if there is a controlled viral load and CD4/mm³ and if the patient is receiving antiretroviral therapy and participating in a social assistance program. These clinical changes occur mainly as a result of the combination of psychological support programs, the pharmacological action of the HIV medications, and the patient’s own immunological action.

Even when the systemic indicators of the disease are under control, the data regarding periodontitis are conflicting. Some HIV-positive individuals lack a notable progression of the disease compared with HIV-negative patients. However, there is evidence of contrary results, primarily associated with an increase in the HIV viral load in the periodontium.

The results of this study are similar to those of other studies, which demonstrated that a general lack of health indicators, such as smoking, a lack of good oral hygiene, and a lack of antiretroviral therapy increases the progression of periodontitis. However, unlike several other studies, this study longitudinally monitored the selected patients for viral loads <80 log and CD4/CD8 <200 since 2003. In addition, there was a correlation between the viral load, CD4, CD8, and the reported teeth or bone loss looks controversial.
Conclusions

Despite its limitations, this study shows that HIV-positive patients, even those with controlled viral loads and CD4 and CD8 levels, exhibited a greater loss of teeth and radiographic bone height than did age- and sex-matched controls without HIV.

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