

Periodontal Evaluation in Patients Diagnosed with Inflammatory Bowel Disease

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INTRODUCTION:

Inflammatory bowel disease (IBD) is a chronic condition affecting the digestive tract in different locations¹. Crohn's disease (CD) and ulcerative colitis (UC) are the most common forms of IBD, ² both conditions are characterized by chronic inflammation at intestinal and systemic level that seems to arise in response to a variety of stimuli³.

The course of IBD is characterized by periods of activity and remission, and features a wide variety of manifestations, both at intestinal and extra-intestinal level^{3,6}, being the oral cavity one of the most affected areas^{4,5}.

One of the oral diseases associate with IBD is periodontal disease (PD), the fact that both diseases display an aberrant immune response to the microbiota and have common pathogenic mechanisms led to various studies reporting its association.^{2,6}

AIM:

The aim of this study was to investigate the association between IBD and PD and their relation with oral hygiene, smoking habits, drug therapy, duration and activity of IBD.

MATERIALS AND METHODS:

For the present observational and analytical case-control study, we have selected a convenience sample, consisting of patients from the outpatient Inflammatory Disease of the Hospital Garcia de Orta who had been previously diagnosed with ulcerative colitis or Crohn's disease. The control group consisted of healthy individuals accompanying the study group patients to their appointments.

The assessment of disease activity was previously performed by the HGO gastroenterology team according to the Harvey-Bradshaw Index for DC and according to the Montreal Index of Activity for UC.

Regarding drug therapy five groups were formed: untreated patients; patients under salicylate therapy; patients under corticosteroids therapy; patients treated with immunosuppressant drugs – *azathioprine* and *cyclosporine* – and patients under biological therapy - *infliximab* and *adalimumab*. In patients treated with more than one drug we chose the group that most influences the evolution of the disease. In increasing order: salicylates, corticosteroids, immunosuppressant drugs, biological therapy.

Disease duration was divided into three ranges: short term [up to 3 years]; average term [more than 3 to 9 years] and long term [longer than 9 years].

Patients admitted in the study underwent a standardized questionnaire, in order to record the following information: age, gender, medical history, medication, smoking habits, oral hygiene habits and disease activity.

For the periodontal evaluation the Community Periodontal Index (CPI) was applied and for the quantification of dental plaque, we applied the Simplified Oral Hygiene Index (S-OHI).

RESULTS:

A final number of 171 individuals were included in the study – 113 patients (66.1%) in the study group and 58 controls (33.9%) in the control group.

Of the 113 individuals, 15% (n=17) were undergoing active disease, and 85% (n=96) were in remission.

The most common diagnosis was Crohn's disease in 57.5% (n=65), the remaining subjects (n=48) were diagnosed with ulcerative colitis.

The Simplified Oral Hygiene Index revealed no significant differences between the groups, with the average value for the S-OHI of 0.86 in the study group and 0.74 in the control group. In the study group, the majority of subjects, 78.7% (n=89) showed severe or very severe periodontal affection (CPI=3) or (CPI=4) while in the control group only 31.0% of cases (n=18) showed these degrees of severity for periodontal disease.

An average CPI of 2.0±1.07 was observed for the control group and 2.8±0.98 for the study group, showing increased severity of periodontal disease in the study group. This difference was statistically significant ($p < 0.0001$).

Patients in the active phase of IBD showed severe or very severe periodontal affection in 88.2% of the cases. Patients in remission showed the same degrees of periodontal affection in 77.1% of the cases. However, this difference was not statistically significant ($p = 0.345$).

Patients with CD showed a degree of severe or very severe periodontal disease in 83.7% of cases, while patients with UC showed it in 72.9% of the cases. The highest degree of periodontal affection in Crohn's disease when compared with ulcerative colitis was not statistically significant ($p = 0.598$).

The mean values of CPI observed for the different pharmacological therapies in study have not proven to be statistically significant ($p = 0,942$).

An increase of the severity of periodontal disease over the course of the disease was verified. For the [0-3] range the average CPI was 2.50; for the [>3-9 Years] range CPI=2.89; and for the [>9 Years] range CPI=2.93. Although an increase over time has been detected it was not statistically significant ($p = 0,450$).

DISCUSSION:

When comparing the CPI values for the study group and for the control group, a higher incidence of more severe degrees of periodontitis was observed in IBD patients ($p = 0.0001$). In accordance to these results, several authors have also reported on their studies this tendency⁶⁻⁸.

In this sample we also verified a higher incidence and severity of periodontal disease associated with IBD activity. This result was not statistically significant, however it has been previously reported the existence of a positive association between the activity of IBD and the decreased levels of periodontal health⁹.

In this study, the periodontal affection showed no significant differences between patients with CD and patients with UC. The same had already been reported in a previous study⁶.

The CPI values were not affected by any of the pharmacological regimens studied during this research, since there were not statistically significant differences between them.

An increased in the severity of PD throughout the course of IBD was detected for this sample, although this increase was not statistically significant. This may be partly associated with older age of subjects with longer disease duration.

CONCLUSIONS:

A positive association between inflammatory bowel disease and periodontal disease was established in this study, being IBD patients affected by more severe degrees of periodontitis. The time lapse since disease onset and the active phase of IBD may act as risk factors for periodontal disease.

These data highlights the importance of conducting future multicentric study with a larger sample to obtain more consistent conclusions.

CLINICAL SIGNIFICANCE:

The association between IBD and PD is a clinical problem that requires a multidisciplinary approach in order to promote the improvement of health care provided to these patients.

REFERENCES:

1. Gassull M, Gomollón F, Hinojosa J, Obrador A. *Enfermedad Inflamatoria Intestinal*. 3rd ed. Madrid: Arán Ediciones; 2007.
2. Grössner-Schreiber B, Fetter T, Hedderich J, Kocher T, Schreiber S, Jepsen S. Prevalence of dental caries and periodontal disease in patients with inflammatory bowel disease: a case-control study. *J Clin Periodontol*. 2006;33(7):478-8
3. Blumberg RS, Saubermann LJ, Strober W. Animal models of mucosal inflammation and their relation to human inflammatory bowel disease. *Curr Opin Immunol*. 1999;11(6):648-56.
4. Ardizzone S, Puttini PS, Cassinotti a, Porro GB. Extraintestinal manifestations of inflammatory bowel disease. *Dig Liver Dis*. 2008;40 Suppl 2:S253-9. doi:10.1016/S1590-8658(08)60534-4.
5. Fatahzadeh M. Inflammatory bowel disease. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2009;108(5):e1-10. doi:10.1016/j.tripleo.2009.07.035.
6. Brito F, de Barros FC, Zaltman C, et al. Prevalence of periodontitis and DMFT index in patients with Crohn's disease and ulcerative colitis. *J Clin Periodontol*. 2008;35(6):555-60. doi:10.1111/j.1600-051X.2008.01231.x.
7. Sigusch BW. Periodontitis as manifestation of Crohn's disease in primary dentition: a case report. *J Dent Child (Chic)*. 2004;71(3):193-6.
8. Bevenius J. Caries risk in patients with Crohn's disease: a pilot study. *Oral Surg Oral Med Oral Pathol*. 1988;65(3):304-7.
9. Meurman JH, Halme L, Laine P, von Smitten K, Lindqvist C. Gingival and dental status, salivary acidogenic bacteria, and yeast counts of patients with active or inactive Crohn's disease. *Oral Surg Oral Med Oral Pathol*. 1994;77(5):465-8.