The presence of epithelial desquamation, erythema, and erosions on the gingival tissue is usually described in literature as desquamative gingivitis (DG). A wide range of autoimmune/dermatological disorders can manifest as DG, although the two more common are oral lichen planus (OLP) and mucous membrane pemphigoid (MMP). It has been reported that DG could play a role in increasing the long-term risk for periodontal tissue breakdown at specific sites, however there is scarce evidence to support this. In addition, no information is available on the association between the main periodontal pathogens in subgingival plaque samples of patients with DG and plaque-induced gingivitis (GI).

The aim of the present cross-sectional study was to investigate the prevalence of 11 periodontal-pathogenic microorganisms in DG cases and to compare it with microbiologic status of individuals affected by GI. Clinical and microbiologic data were obtained from a total of 66 subjects (33 in each group) who were recruited consecutively among Caucasian patients attending the Oral Medicine Section and the Periodontology Section of the C.I.R. Dental School, University of Turin (Italy). The study protocol was approved by the Institutional Ethical Committee (protocol n° 1015/2016).

The DG group comprised 19 patients with OLP and 14 patients with MMP. Histological diagnosis of OLP and MMP was made on the basis of WHO criteria and confirmed by direct immunofluorescence analysis. To be included in the study, the GI subjects had to be systemically healthy, have no probing depth (PD) and clinical attachment level >3 mm, and bleeding on probing (BoP) at sites ≥20%.

All the study participants received an oral examination performed by two calibrated and experienced clinicians, together with a full-mouth periodontal examination. Subgingival plaque samples were taken from 4 periodontally affected sites, one in each quadrant, with signs of gingival inflammation (BoP positive) and a PD of ≤3 mm, in both groups. The deepest site in each quadrant was selected. In patients with DG, sampled sites must also present clinical evidence of DG lesions. Pooled subgingival plaque samples were analysed with a semi-quantitative polymerase chain reaction (PCR) analysis by a blinded microbiologist.

Odds ratios (OR) and 95% confidence intervals were obtained from univariate and multivariate logistic regression analyses [adjusted for age, FMPS, FMBS, number of missing teeth and PD] to model the relationship between DG and bacterial exposure.

DG patients presented with significantly higher mean FMPS (73.35% versus 53.58%, P < 0.001), FMBS (70.61% versus 58.51%, P < 0.001), and PD values (2.73 mm versus 2.14 mm, P < 0.001) compared with the control group. However, these differences, probably due to the worse compliance of DG patients in daily oral hygiene, had little clinical significance.

The PCR results showed that at least one species of periodontal pathogens was found in each patient. Fusobacterium nucleatum/periodonticum was found in statistically higher levels in subgingival samples from DG than GI patients, followed by Eikenella corrodens and Aggregatibacter actinomycetemcomitans which displayed also higher detection frequency in the DG cases (66.7% versus 24.2%). In spite of the high detection rate and counts for the other tested bacteria in DG lesions, except for Parvimonas micra, no statistically significant differences could be observed when compared with healthy GI patients. After adjustment for age, FMPS, FMBS, PD and number of missing teeth the subgingival colonization of Aggregatibacter actinomycetemcomitans and Fusobacterium nucleatum/periodonticum was not yet significantly associated with DG, whereas high levels of Eikenella corrodens were associated with a 13-fold increased odds for DG. No statistical difference in the microbiologic profile was detected between OLP and MMP patients.

There is a considerable deficiency in present knowledge of the pathogenesis and risk factors of DG. To the best of the authors’ knowledge, this is the first controlled study comparing microbiologic profile in DG and GI patients. Microbiologic differences were found in subgingival plaque between autoimmune and plaque-induced gingivitis. This may suggest a possible association between periodontal pathogens and DG, as well as provide new knowledge to the field of oral manifestations of autoimmune systemic diseases. For this reason, affected patients should be advised regarding the possible risk of periodontal complications and should be informed to have routinely dental check-ups to avoid a deterioration of the condition. Future larger prospective studies could possibly give more valuable information.