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In the network of periodontitis immunomediators

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Abstract

Background: Severe periodontitis is considered the sixth most prevalent disease worldwide [1]. It is a chronic inflammatory condition affecting the tooth-supporting structures due to genetic, environmental, and microbial factors [2]. The host immune response partially contributes to the magnitude of the inflammatory process. Furthermore, this process involves a diversity of immunomediators that initiate and sustain the inflammatory response, ultimately contributing to bone destruction [3]. Classical clinical parameters are reliable measures convenient for diagnosing and monitoring periodontitis, but they are less predictable in relation to disease progression. The focus is to identify quantifiable biomarkers in saliva. Saliva is a fluid that reflects the oral cavity environment and the immune status associated with periodontitis [4]. **Objective:** Our objective is to evaluate the clinical relevance of multiple immunomediators involved in the inflammatory response of periodontitis and explore biomarkers to severity and progression. **Methods:** The study includes 68 patients, divided in 17 patients with periodontitis stage I/II, 29 patients with periodontitis stage III/IV and 22 healthy controls (HC). The research assesses an extensive array of cytokines tied to inflammation, analyzed in salivary fluid, and detected using a Legendplex-panel by flow cytometry. **Results:** A pro-inflammatory profile is observed in patients with severe disease (stage III/IV), characterized by elevated levels of IL-1β and IL-6 compared to HC (p=0.006; p=0.015). Instead, anti-inflammatory IL-10 is significant increase in periodontitis patients in stage III/IV compared to HC (p=0.013). The chemokine IP-10, important in orchestrating a proper inflammatory response, demonstrates a significant decrease in patients with periodontitis. Additionally, correlations between the inflammatory profile and the phenotype of periodontitis are observed, as characterized by clinical measurements. **Conclusions:** This study highlights that IL-1β and IL-6 are more effective in identifying disease stage than clinical grade profile. Alongside the presence of IL-10 underscores its potential as combined biomarkers.

Keywords: immunomediators; saliva; periodontitis

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