Factors associated with geographic tongue
Clinical, immunological and microbiological aspects

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Factors associated with geographic tongue
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ABSTRACT

Geographic tongue (GT) is a common oral mucosal lesion. Research conducted on this lesion has been limited, and the etiology remains to be clarified. The aim of this thesis was to elucidate clinical, immunological and microbiological aspects of GT. In study I, the associations between GT and systemic diseases, the use of medication and tobacco, as well as the differences between referred and non-referred patients were investigated in a cohort of patients with GT. In study II, a novel methodology was developed to detect epidermal growth factor (EGF) and interleukin-8 (IL-8) in saliva using samples from healthy volunteers. This study opened new avenues to investigate these biomarkers, and vascular endothelial growth factor (VEGF) in saliva samples from patients with GT (study III). In study IV, the bacterial ecology of the tongue in patients with GT was explored using next-generation sequencing of DNA. Our results showed that:

- Hypertension, anti-hypertension medication and the use of snus (Swedish snuff) are factors potentially associated with GT. Furthermore, referred patients with GT represent a special group that consists mainly of young females with different clinical characteristics and more symptoms (Study I).
- Pretreatment of the saliva samples with sodium dodecyl sulfate (SDS) significantly improves the quantitative detection of IL-8 and EGF. It is important to consider age, gender, and the collection time of saliva sample when analyzing salivary biomarkers (Study II).
- Patients with GT are characterized by increased level of salivary IL-8 which is correlated with the severity of GT. Moreover, salivary levels of VEGF and EGF are altered in patients who were sub-grouped according to age, gender or presence of systemic diseases (Study III).
- The lingual microbiota is different in patients with GT than in healthy controls. We detected an under-abundance of Fusobacteria and an over-abundance of Spirochaetes members in patients with GT. We also showed that bacterial diversity is increased in GT lesions. In addition, the composition of the lingual microbiota is different at the lesions sites and at the healthy sites in patients with GT (Study IV).

In summary, this thesis links the clinical parameters of GT with new insights into the immunological and microbiological aspects. We present GT as a multifactorial disease, with several factors that have the potential to play important roles in its pathogenesis. We emphasize the importance of a multidisciplinary approach to clinical research that widens our knowledge and understanding of several aspects of the disease. This approach is of interest not only for researchers, but also for the clinicians who are meeting the patients and providing them with information about their disease.

Keywords: geographic tongue, benign migratory glossitis, tongue lesions, oral mucosal lesions, salivary biomarkers, lingual microbiota.

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