

SHORT COMMUNICATION

O-5. IMPACT OF TYPE 2 DIABETES ON THE DEVELOPMENT OF PERIODONTAL DISEASE IN THE MOUSE

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Key words

Periodontitis, Metabolic Disease, Periodontal disease, Inflammation.

Introduction

Cross-sectional studies suggest a positive correlation between diabetes and periodontal disease (PD) (1-4). The common cellular mechanism linking the metabolic disorders and the occurrence of the PD could be inflammation (5, 6, 7). The aim of this study is therefore to investigate the impact of diabetes on PD.

Materials and Methods

To investigate the impact of diabetes on periodontal tissue, twenty nine 4-week-old female mice were fed a normal chow diet (NCD) or a diabetogenic, high-fat carbohydrate-free diet (HFD, known to induce insulin resistance before the onset of obesity) for four weeks (8). Mice were randomly separated in two groups: NCD (n=12) and HFD (n=17).

The diabetic phenotype was evaluated by performing an Intra Peritoneal Glucose Tolerance Test (IPGTT). Moreover, liver and white adipose tissue inflammatory cytokines were quantified by Real-Time PCR. Mandibles were collected and scanned by micro-computed tomography (μ CT), and results were evaluated with GE microview software to quantify alveolar bone resorption (9).

Results

Mice fed with HFD were affected by metabolic disorders compared to Mice fed with NCD. HFD-induced glucose homeostasis impairment was associated with an increased systemic inflammation (p=0.01). High fat diet favors the occurrence of alveolar bone loss (a common feature of periodontitis).

Discussion

The data presented herein show that the induction of metabolic disease favors a change in periodontal status. Inflammation could be a triggering factor for the occurrence of PD. In addition, our data also indicate that metabolic troubles are associated with periodontal defects, as suggested by many epidemiologic studies (10-12). Further experiments will focus on the key factor of this association.

Conclusions

Our preliminary observation suggests that an improved treatment of type 2 diabetes could help reducing the occurrence of periodontal diseases.

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