21.03.2022

Macrophage Markers in Periodontal and Peri-implant Health and Disease (NCT05242354)

Study protocol

Background

CD80, CD163 and CD206 have been used in prior research in specifying macrophage phenotypes in periodontal and peri-implant tissues (1-5). However, there are no previously published studies on total gingival levels of CD163, CD206 and CD80 comparing peri-implantitis, periodontitis, peri-implant health and periodontal health.

Primary objective

- to reveal the differences in CD163, CD206 and CD80 tissue levels between peri-implantitis, periodontitis, peri-implant health and periodontal health

Subject population (n=36)

- applied to Biruni University between March-December 2021
- systemic healthy and ≥18 years-old non-smokers with no regular medicine intake who are willing to participate
- no antibiotics or anti-inflammatories for the last 3 months
- not pregnant, not in lactation
- according to the healthy or diseased groups:
  - diagnosed with peri-implantitis or generalized Stage III periodontitis - at least one BoP+ periodontal/peri-implant pocket with a PPD of 6 – 10 mm
  - periodontally healthy in need of crown lengthening, gingivectomy, tooth extraction or dental implant application (having no pockets with PPD ≥ 4 mm and having a full mouth score of BoP < 10%)
  - having a submerged implant, which is partially exposed and has no visible signs of inflammation

Clinical data

Probable pocket depth, indirect clinical attachment loss, and bleeding on probing from six sites of all teeth / implants

Tissue samples

- Periodontitis and peri-implantitis samples – during non-surgical therapy with a single stroke using Gracey curette
- Healthy peri-implant mucosa – during implant exposure surgery with an incisional biopsy
- Healthy gingiva – during the corresponding treatment with a crestal incision reaching the bottom of the crevice.

Quantification of CD163, CD206 and CD80

- grinding of tissues with a high-speed tissue homogenizer
- protein determination with a commercial protein determination kit
- immunoblot analysis of each sample according to their total protein counts
- quantification of the band intensities

Statistics

- Kruskal-Wallis test – to reveal the differences of CD163, CD206 and CD80 levels (arbitrary units) between groups (peri-implantitis, periodontitis, peri-implant health, periodontal health)
- Mann Whitney U test – pairwise comparison of groups showing significant differences according to Kruskal-Wallis test.
- Chi-square – qualitative variables
- $p < 0.05$ – significant

References

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