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EFP European Federation of Periodontology

Scientific release from the European Federation of Periodontology

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Study:

Acute phase response following full-mouth versus quadrant non-surgical periodontal treatment. A randomised clinical trial

Graziani, F., Cei, S., Orlandi, M., Gennai, S., Gabriele, M., Filice, N., Nisi, M., D'Aiuto, F.

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Relevant background to study:

Non-surgical periodontal therapy (PT) has been shown to be effective with regard to periodontal and patient-reported outcomes. Various non-surgical PT approaches exist but limited evidence is available regarding their systemic impact. One intensive approach, Full-Mouth Scaling and Root Planing (FM-SRP), has been associated with a sharp increase in inflammatory biomarkers of short duration; this is believed to relate to the procedural trauma and associated post-operative bacteraemia. As inflammatory markers have been linked with increased vascular risk and mortality, use of such intensive PT approaches may be associated with an elevated risk for patients with uncontrolled comorbidities such as cardiovascular disease.

Study aims:

To compare Quadrant Scaling and Root Planing (Q-SRP) versus (FM-SRP) with regard to acute and medium-term biochemical (inflammatory and endothelial injury markers) as well as medium-term clinical responses following treatment.

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Methods:

38 patients participated in this single-centre trial with a three-month follow-up. Patients presenting with interproximal attachment loss of ≥3mm in ≥2 non-adjacent teeth, BOP≥25% and radiographic bone loss were included. Blood samples were collected at baseline and vital signs were recorded.

Probing pocket depth (PPD), recession, bleeding, and plaque were also recorded. Fasting serum samples were taken and analysed for lipid fractions, serum CRP, inflammatory biomarkers (IL-6, IL-8, IL-10, IL-12, IFN-γ, TNF-α) and endothelial injury markers (E-selectin, P-selectin, ICAM-3, and thrombomodulin). Patients were randomly assigned to Q-SRP (n=19) or FM-SRP (n=19) groups. Periodontal treatment consisted of supra-and sub-gingival debridement by a single periodontist. FM-SRP patients received treatment within 24 hours on two separate sessions.

Q-SRP patients received four sessions of individual quadrant therapy one week apart. Patients were re-examined one, seven, and 90 days after treatment (Day 1 in FM-SRP was 24 hours after treatment completion; for Q-SRP, Day 1 was 24 hours after completion of the first quadrant).
Blood samples, medical history, and vital signs were recorded at each visit; clinical parameters were recorded at Day 90.

Results:

Both treatment approaches produced significant clinical benefit in periodontal parameters at Day 90; no significant differences were seen between the methods employed. There was a statistically significant increase in serum levels of CRP, IL-6, and TNF-α at 24 hours for the FM-SRP group when compared to the Q-SRP group. Inflammatory biomarkers returned to baseline levels at three months. Serum CRP and IL-6 levels at Day 1 were strongly correlated with treatment time and the number of periodontal pockets ≥6mm; serum CRP levels were highly correlated with treatment time irrespective of group allocation. A statistically significant elevation in body temperature was also noted in the FM-SRP group at Day 1.

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Limitations, conclusions and impact:

Limitations:

- Small patient sample.
- All participating patients were systemically healthy. It is therefore uncertain if patients with comorbidities would respond in a similar manner.
- The participating patients were not examined between Day 1 and Day 7. The duration of the acute phase response is therefore unclear.

Conclusions:

FM-SRP triggers a moderate acute-phase response of at least 24-hours duration compared to Q-SRP. This could be the result of bacteraemia and/or increased local trauma to soft tissues, possibly associated with increased treatment time for this procedure.

Clinical and inflammatory responses following FM-SRP were comparable to Q-SRP at Day 90.

Impact:

The acute phase response following non-surgical instrumentation appears to differ according to the treatment approach adopted and appears to be more significant in intensive treatment protocols such as FM-SRP. In patients with complicated medical histories and/or uncontrolled comorbidities, it may be prudent for clinicians to follow a conventional quadrant-scaling approach.