Background and Objective

Metabolic syndrome (MetS) is a combination of risk factors (e.g. impaired glucose tolerance, hypertension, and dyslipidaemia) that significantly contribute to the development of cardiovascular diseases. The aim of the study was to compare the effects of nonsurgical periodontal treatment (NSPT) on inflammatory and oxidative stress markers in individuals with MetS and systemically healthy (SH) who were chronic periodontitis (CP).

Material and Methods

A total of 50 patients with chronic periodontitis (25 with MetS and 25 SH) were included. Clinical periodontal measurements were recorded, and serum and whole-saliva samples were collected from all patients at baseline, and 3 and 6 mo following NSPT. The levels of fasting plasma glucose, glycated haemoglobin (HbA1c), triglyceride (TRG), total cholesterol, high-density lipoprotein cholesterol and low-density lipoprotein cholesterol were analysed. The levels of high-sensitivity C-reactive protein (hs-CRP), interleukin (IL)-6 and IL-10 were determined using ELISA kits, and total oxidant status (TOS), total antioxidant capacity (TAC) and oxidative stress index (OSI) levels were measured.

Results

After NSPT, significant and similar improvements of all periodontal parameters were observed in both groups compared with baseline measurements. There were decreases in the levels of serum hs-CRP and IL-6, whereas increases in serum IL-10 were found in both groups, at all time points. Serum TOS and OSI showed no significant change in either group at any time point. Compared with the SH group, serum TAC levels were higher in the MetS group at baseline but lower at the 3-mo time-point. There was no difference in TAC levels between the groups at 6 mo. Saliva IL-6 was higher in the MetS group than the SH group at all time points. The levels of IL-6 and OSI in saliva decreased following NSPT in both groups, whereas salivary TAC concentrations increased. In the MetS group, TRG and HbA1c levels decreased significantly at 3 mo.

Conclusion

NSPT decreased oxidative stress and the inflammatory status of patients with MetS and chronic periodontitis. Although similar periodontal improvements were achieved in both groups, the decreases in levels of hs-CRP and IL-6 in the MetS group did not reach the levels in the SH group. Based on these results, NSPT could be more effective in the control of systemic inflammation in patients with MetS in the short-term.