Aim: Sickle cell disease (SCD) is a chronic inflammatory disease in which vaso-occlusive crisis and endothelial dysfunction are present. The aim of this study was to investigate the relationship between periodontal and systemic inflammation in children with SCD.

Material and Methods: Forty-three children with SCD and 43 healthy children were included in the study. Physical, dental and periodontal statuses were examined, and blood, saliva and dental plaque samples were taken. Levels of pro-inflammatory, prothrombotic, endothelial dysfunction and oxidative stress mediators in serum and saliva were evaluated by microarray. The presence of Streptococcus mutans, Lactobacillus and Candida species, Prophyromonas gingivalis, Prevotella intermedia and Fusobacterium nucleatum were investigated in tongue coating and plaque samples by culture techniques.

Results: The periodontal and microbiological findings of the groups were similar. The majority of the subjects in both groups had gingivitis. In SCD group, significantly higher serum high sensitive C-reactive protein (Hs-CRP), interleukin (IL)-6, IL-8, tumor necrosis factor (TNF)-a, total oxidant status (TOS), nitric oxide (NO), E-Selectin and salivary IL-6, IL-8 and TNF-a levels were observed whereas serum and salivary total antioxidant status (TAS) levels significantly decreased in comparison with the controls (p < 0.05). There were positive correlations between serum and salivary IL-6 (r = 0.303, p = 0.048) and serum IL-6 levels and salivary NO (r = 0.412, p = 0.006). Serum tPA levels correlated with salivary TOS (r = 0.372, p = 0.014) and NO (r = 0.340, p = 0.026).

Conclusion: Salivary cytokine levels were increased in SCD patients as were serum cytokine levels. Although, observed oral health status and microflora were similar in both groups, increased levels of local pro-inflammatory cytokines were determined in the patients with SCD.