




RESEARCH ARTICLE

## Evaluation of TNF- $\alpha$ and IL-6 in saliva among diabetic retinopathy patients in East Coast Malaysia

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## Abstract

### Objective

To compare tumour necrosis factor-alpha (TNF) and interleukin (IL)-6 levels in saliva between different stages of diabetic retinopathy (DR).

### Methods

This comparative cross-sectional study was conducted between January 2018 and November 2020. This study included diabetes mellitus (DM) patients with no DR, non-proliferative DR (NPDR), and proliferative DR (PDR). None of the patients with DM were included in the control group. Unstimulated saliva samples were then collected. TNF- $\alpha$  and IL-6 levels were measured.

### Results

Altogether, 120 patients were included in the study (DM without DR, 33 patients; DM with NPDR, 30 patients; DM with PDR, 32 patients; non-DM, 25 patients). The mean IL-6 level in saliva was significantly higher in the DM group ( $0.033 \pm 0.005$  pg/ml) than in the non-DM group ( $0.027 \pm 0.001$  pg/ml) ( $p < 0.001$  after adjusting for covariates). There was no significant difference in the mean salivary TNF- $\alpha$  between patients with DM and those without DM after adjusting for covariates. The mean IL-6 in saliva was significantly higher in the NPDR ( $0.036 \pm 0.003$  pg/ml) and PDR ( $0.093 \pm 0.023$  pg/ml) groups than in the no DR group ( $0.027 \pm 0.001$  pg/ml) ( $p < 0.001$  and  $p < 0.001$ , respectively). Mean TNF- $\alpha$  in saliva was significantly higher in the NPDR ( $0.086 \pm 0.022$  pg/ml) and PDR ( $0.093 \pm 0.023$  pg/ml) groups than in the no DR group ( $0.049 \pm 0.011$  pg/ml) ( $p = 0.015$  and  $p = 0.003$ , respectively).

### Conclusion

There is an association between inflammatory biomarkers in saliva (IL-6 and TNF- $\alpha$ ) and severity of DR among patients with DM, suggesting that these salivary biomarkers are potential biomarkers for screening, monitoring, and predicting the progression of DR.

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