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RESEARCH ARTICLE

Evaluation of TNF-α and IL-6 in saliva among diabetic retinopathy patients in East Coast Malaysia

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Sustainable Development Goal:: Good Health and Well-being.

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-α 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 ± 0.005 pg/ml) than in the non-DM group (0.027 ± 0.001 pg/ml) ($p < 0.001$ after adjusting for covariates). There was no significant difference in the mean salivary TNF-α 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 ± 0.003 pg/ml) and PDR (0.093 ± 0.023 pg/ml) groups than in the no DR group (0.027 ± 0.001 pg/ml) ($p < 0.001$ and $p < 0.001$, respectively). Mean TNF-α in saliva was significantly higher in the NPDR (0.086 ± 0.022 pg/ml) and PDR (0.093 ± 0.023 pg/ml) groups than in the no DR group (0.049 ± 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-α) 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.