

ABSTRACT

**CORRELATION BETWEEN PLASMA TNF- α CONCENTRATIONS
WITH DEGREE OF SEVERITY OF DIABETIC RETINOPATHY IN
UNCONTROLLED TYPE 2 DIABETES MELLITUS**

**(Cross Sectional Analytical Observational Study in Ophthalmology's and
Diabetes-Endocrinology Outpatient Clinic in Dr. Soetomo Hospital Surabaya)**

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Objective: To determine TNF- α plasma concentrations in varying severity of diabetic retinopathy and also correlation between TNF- α plasma concentrations and the severity levels of diabetic retinopathy in uncontrolled type 2 diabetes mellitus

Methods: An analytic cross sectional observational study had been done at Dr. Soetomo hospital. The subject was 50 patients with uncontrolled type 2 diabetes mellitus that match with the inclusions criteria. Data retrieval includes general data for age and gender, duration of type 2 diabetes mellitus, physical examinations: blood pressure, height and weight measurements. Seven fields fundal photo examination performed on each patient's eye. The severity levels of diabetic retinopathy was determined based on the ETDRS classification and divided into four groups. HbA1C examination for the determination of blood glucose control and examination of TNF- α plasma concentrations using ELISA *human TNF- α immunoassay*

Results: Mean of diabetes mellitus type 2 duration was 9.42 ± 5.44 years and no significant difference with $p=0.708$ ($p \geq 0.05$). Mean of HbA1C concentrations was $8.29 \pm 1.46\%$ and the results of Spearman statistical analysis showed a significant correlations between HbA1C concentrations with the degree of severity of diabetic retinopathy groups, with $p=0.003$ ($p < 0.05$). The results of Fisher Exact Test statistical analysis showed no significant difference on diabetes mellitus medication with $p=0.193$ ($p \geq 0.05$), hipertension with $p=0.544$ ($p \geq 0.05$), dislipidemia with $p=0.328$ ($p \geq 0.05$), renal disease with $p=0.849$ ($p \geq 0.05$), obesity with $p=0.486$ ($p \geq 0.05$). Mean of TNF- α plasma concentrations was 3.00 ± 1.64 pg/mL. The results of Spearman statistical analysis showed no significant difference between TNF- α plasma concentrations with the degree of severity of diabetic retinopathy groups, with $p=0.785$ ($p \geq 0.05$)

Conclusions: TNF- α might be involved in the progression of diabetic retinopathy. TNF- α is a potential cytokine for the prognosis of diabetic retinopathy and might act as a therapeutic target in diabetic retinopathy.

Keywords : *Type 2 diabetes mellitus, TNF- α plasma concentrations, Severity of diabetic retinopathy.*