

Association between 4G/4G Plasminogen Activator Inhibitor-1 Polymorphism, PAI-1 Activity and Diabetic Retinopathy Abstract:

Background and Objectives:

Plasminogen activator inhibitor-1 (PAI-1) is a key regulator of fibrinolysis; however, the relationship between PAI-1 and the most common diabetic microvascular complication, retinopathy, is unclear. The aim of this study was to examine the association between PAI-1 gene polymorphism with diabetic retinopathy (DR) as well as with the plasma levels of the PAI-1 among Egyptian patients.

Methods:

Thirty-three patients who had type 2 diabetes for more than 10 years were compared with 63 patients with proliferative diabetic retinopathy (PDR). Both groups were compared with 48 healthy control subjects (HC). All groups were matched for age and sex. PAI-1 genotyping was carried out by a PCR and the PAI-1 levels were measured by an enzyme-linked immunosorbent assay method.

Results:

Higher plasma PAI-1 activity was associated with a higher risk of DR. The overall frequency of the 4G allele was 54.54% among type 2 diabetes patients versus 78.79% among PDR patients ($P < 0.001$). The patients with PDR had a higher representation of the genotype 4G/4G ($P < 0.05$, odds ratio: 3.15, 95% confidence interval 0.13–0.89). Meanwhile the 4G/5G & the 5G/5G were not statistically different among PDR group compared to type 2 diabetics ($P > 0.05$ and $P > 0.05$ respectively). The 4G/4G patients studied had higher plasma levels of PAI-1 activity compared to the 5G/5G ($P < 0.01$). Also the plasma levels of PAI-1 activity of 4G/5G was significantly statistically different compared to the 5G/5G patients ($P < 0.001$)

Conclusions:

The PAI-1 gene polymorphism 4G/4G contributed to the genetic susceptibility to DR and a higher PAI-1 plasma level was independently associated with a higher risk of retinopathy among Egyptians.

Key words:

Diabetic retinopathy - plasminogen activator inhibitor-1 gene polymorphism - plasminogen activator inhibitor-1 activity