Polymorphism in NOS3, ACE and PAI-1 Genes and Risk of Recurrent Spontaneous Miscarriage in Gaza Strip

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Abstract

Background: Recurrent miscarriage (RM) has traditionally been defined by 3 or more consecutive pregnancy losses before 20 weeks of gestation. RM has been estimated to occur in approximately 2% to 4% of pregnant women. A series of aetiological factors, including uterine anomalies, maternal/paternal balanced translocations, luteal phase defect, hyperprolactinaemia, and hyperhomocysteinaemia have been identified for this condition. In up to 50% of cases, however, the exact underlying pathophysiological mechanisms remain undetermined. An inherited component for these recurrent miscarriages (RM) has been suggested. Plasminogen activator inhibitor-1 (PAI-1), angiotensin converting enzyme (ACE), and endothelium-derived nitric oxide synthase (NOS3) are thought to be involved in RM. This study is intended to investigate the correlation between RM and common polymorphisms in ACE, NOS3 and PAI-1 genes among women experiencing RM in Gaza Strip.

Methods: The presence of these genetic profiles was determined for 100 women who had at least three constitutive abortions and 100 control without any abortion using molecular biological technique.

Results: The ACE D/D polymorphism was present in 49% experimental patients and in 54% of the controls (p= 0.479). Similarly there was no significant difference detected in the distribution of polymorphisms for the PAI-1 with the (4G/4G) genotype present in 16 % of 100 experimental patients and same distribution in controls group (p= 1.00). The NOS3 (4a/4a) was present in 4% of experimental patients and in none of 100 controls group (p= 0.123). In this study we also discovered a new variant in NOS3 gene name as 4C allele one in patient and other in control subjects. In this study, also, we find that elevated blood pressure was more frequent in patients who were genotyped as I/D+D/D as compared to patients who were homozygous for the insertion allele although no significant difference was observed (p= 0.212). But in patients who was genotyped as 4G/5G+4G/4G compared to 5G/5G and 4a/4b+4a/4a compared to 4b/4b patients in the RM group showed no significant difference (p= 0.848), (p= 0.844), respectively.

Conclusion: There is no significant association between the ACE (I/D), PAI-1 (4G/5G) and NOS3 (4a/4b) and the occurrence of first trimester RM. The non significant difference in NOS3 gene may be the result of the small sample size enrolled in this study. So, Depth investigation of the association of NOS3 gene (4a/4b) is strongly recommended.
REFERENCES

