

MTHFR (C677T and A1298C) polymorphisms and diabetic nephropathy

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Introduction

Diabetic nephropathy (DN) is initiated by hyperglycemia but its progression can proceed through several pathways, both sequential and parallel.

The clinical manifestations of this disease, i.e., proteinuria, decreasing glomerular filtration rate, and increasing blood pressure are similar in both type I and type II diabetes.

There is evidence to suggest that diabetic nephropathy has a genetic background.

The present research endeavored to study the association between diabetic nephropathy and the C677T and A1289C polymorphisms of the MTHFR gene.

Methods

Thirty-five patients (24 women and 11 men) as well as 50 healthy subjects were recruited for this case-controlled study.

A statistical analysis evaluated the frequency of those alleles as markers in determining the genetic predisposition to the disease.

Genotyping was accomplished via the PCR-RFLP technique. This is the first study to ascertain an association between these polymorphisms and DN carried out in Tunisian patients.

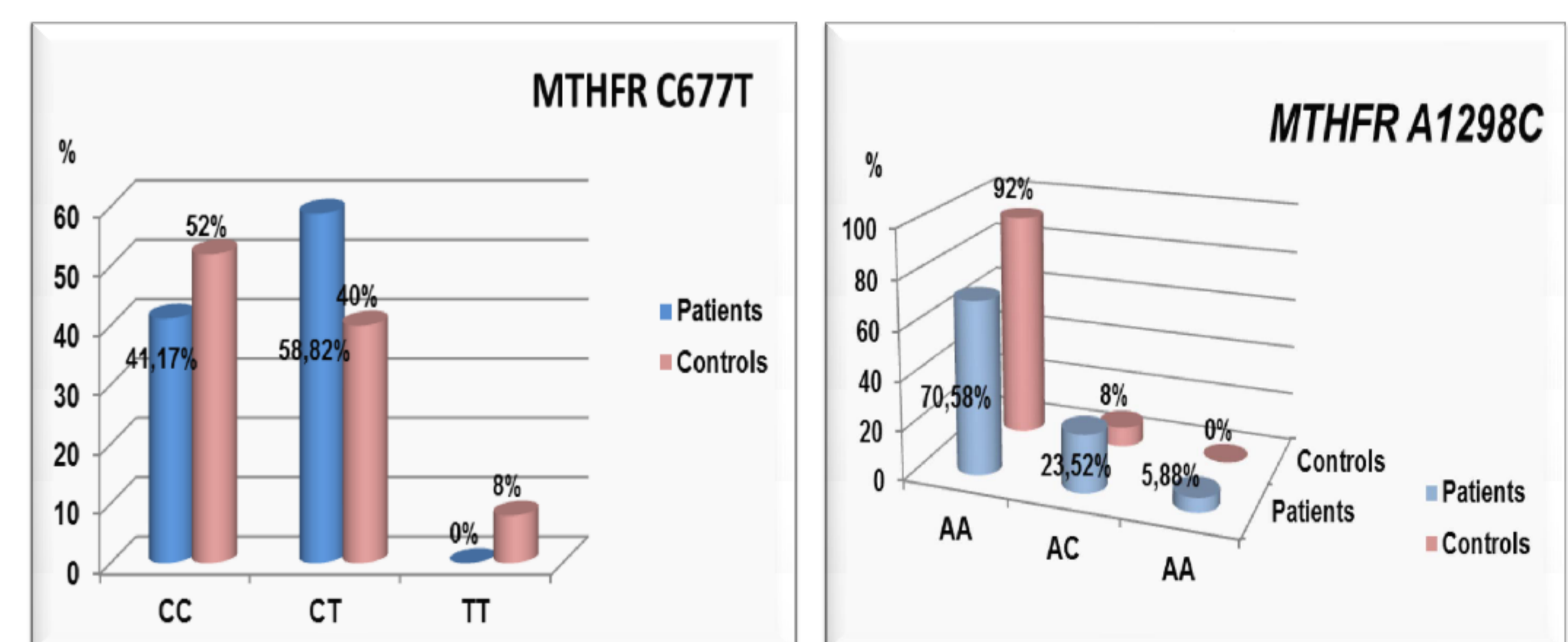
References

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Results

Our findings suggest the absence of any association between diabetic nephropathy and different genotypes for the MTHFR C677T gene. Nevertheless, a protective effect of the C allele against this disease was demonstrated (OR=0.49, $p<0.05$); whereas, the T allele (OR=2.03, $p=0.03$) conferred a predisposition to DN.



Genotypic distribution of mutations in the MTHFR (C677T and A1298C)

Moreover, statistical analysis revealed that the heterozygous (MTHFR 1298AC) and wild-type (MTHFR 1298AA) genotypes were statistically significant and accorded a predisposition for (OR= 4.82, $p=0.01$) and protection against (OR=0.15, $p=0.003$) disease, respectively. Also, a protective effect of the A allele against this disease was demonstrated (OR = 0.10, $p<10^{-3}$) while the C allele (OR = 9.59, $p<10^{-3}$) conferred a predisposition to the pathology.

Conclusion

This study was limited by the small size of subjects; however, there is evidence of an association between the MTHFR 677 and 1298 polymorphisms and diabetic nephropathy. A study involving a larger cohort is required to understand more definitively the role of these mutations in this pathology.

