Influence of genetic polymorphisms in CYP11B2, AGT, and AGTR1 genes on hypertension and drug treatment in a population sample of the Emilia-Romagna Region

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Background. Blood pressure variance is largely attributed to an individual's genetic makeup. However, it is increasingly clear that there is no single genetic variants that cause hypertension, but rather a number of common genetic variant, each having a small effects. This has implication also on the management of hypertensive patients. Drug treatment of the hypertensive patient is largely based on an empiric multi-step method that has several negative consequences, including waste of economic resources – medical checks and blood tests - on ineffective treatments, patient and doctor demotivation, delay in introducing effective intervention. **Aim**. With the present study we aimed to provide an original insight on the role of genetic variation on the individual's risk of developing hypertension and interindividual differences in drug-sensitivity in a group of 1655 healthy Caucasian volunteers identified from the Brisighella Heart Study. **Materials and methods**. Genetic analysis has been performed on genomic DNA isolated from peripheral lymphocytes using a commercially available DNA isolation kit. Genotypes of selected polymorphisms in Cyp11B2, AGT, and AGTR1 have been determined by polymerase chain reaction (PCR) - based assays [restriction fragment length polymorphism (RFLP) and/or real-time] according to published methods or as recommended by manufacturer. **Results**. Genotypes distribution of CYP11B2 (rs1799998 – C>T 5'-near gene), AGT (rs699 – T>C Met268Thr), and AGTR1 (rs5186 – A>C 3'-UTR) in the whole population are in Hardy Weinberg equilibrium. Additional statistical analyses are ongoing to evaluate the prevalence of the selected polymorphisms in subjects reaching an adequate control of blood pressure. Moreover we will evaluate the association of the identified polymorphisms with an aberrant answer with the used antihypertensive treatments (in the subgroup of treated subjects only).