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Predictive value of the results from reported genome-wide association studies (GWAS) for estimation of the venous thromboembolism risk in Czech Republic

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The aim of study: Was to establish the frequencies of the thrombophilic alleles reported in GWAS between healthy population and patients with venous thromboembolism (VTE) from the Czech Republic and to determine their predictive values for VTE risk.

Methods: The single nucleotide polymorphisms (SNP) of F V Leiden, F II 20210G>A, 4/5G PAI-1, SERPINC1 (IVS +141G >A), GP6 13254T>C, CYP4V2 (Lys259Gln) and AB0 blood group (rs 8176719) were determined using PCR in control group of 1460 healthy individuals and in 2369 patients with VTE. X2 test and logistic regression method were tested using the statistical program SAS with tools for population genetics. Odds ratio (O.R.) > 1.5 was considered as clinically significant for prediction of the VTE risk.

Results: Control group : Frequencies of the risk alleles A for FV Leiden and FII 20210G>A SNPs were 4.5% and 1.3%, respectively. Frequencies of other risk alleles were: allele 4G of the PAI-1SNP at 55.5%, allele A of the SERPINC1 at 11.3%, allele T of the GP6 13254T>C at 87.7%, allele A of the CYP4V2 (Lys259Gln) at 65.2% and allele G of the AB0 blood group SNP (rs 8176719) at 44.5% . Patients with VTE: Frequencies of the risk alleles A for the FV Leiden and FII 20210G>A SNPs were 19.86% and 4.52%, respectively. Frequencies of other risk alleles were: 4G of the PAI-1 SNP at 55.89%, allele A of the SERPINC1 SNP at 12.1%, allele T of the GP6 13254T>C SNP at 87.9%, allele A of the CYP4V2 (Lys259Gln) SNP at 68.25% and allele G of the AB0 blood group SNP (rs 8176719) at 54.7%. Only the FV Leiden risk allele A with O.R.5.19 and the FII 20210G>A SNP risk allele A with O.R.3.41 were clinically significant (both with p <0,0001) for a determining of VTE risk. Another a weak association with VTE was found after examination of the SNP rs 8176719 (O.R. 1.51, p <0.001) in patients with non-0 blood group (determined by the G allele). Although the frequency of the CYP4V2 (Lys259Gln) SNP risk allele A was higher in pts with VTE (p= 0.007) , the O.R.value 1,14 was low, and therefore clinically no significant.

Conclusion: The examinations of the FV Leiden, F II 20210G>A and AB0 blood group rs 8176719 (non-0) SNPs are valid for a clinically relevant prediction of the VTE risk in Czech Republic, only.

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Biography

Jan Kvasnicka is professor of medicine and haematology and Zdenek Krska is professor of surgery at General University Hospital and Charles University in Prague, Czech Republic. Both are members of the Czech Society on Thrombosis and Haemostastasi and participate in study of thrombophilic states and in prevention of venous thromboembolism. Others authors are their coworkers at Thrombosis Centre. J.K. published 212 papers and has 1032 citation WOS ISI, his H-index is 14. Z.K. published 212 papers and has 720 citation WOS ISI, his H-index is 12.

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