

POPULATION ATTRIBUTABLE FRACTION (PAF) OF GENETIC AND NONGENETIC RISK FACTORS IN PROSTATE CANCER IN A ROMANIAN SAMPLE

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Objectives

In Romania, prostate cancer (PrCa) is the third most common cancer diagnosis. There are many genetic and nongenetic (environmental, life style, demographic) factors that could contribute to the disease. In this study we estimated the PAF for 34 single nucleotide polymorphisms (SNPs) associated with PrCa in a Romanian sample, combined with several nongenetic factors.

Methods

Participants in the study were 979 cases (70.9±8.0 years) and 1027 controls (63.2±12.8 years). Data on life style and epidemiologic measures were collected by a questionnaire. We calculate PAF for each genetic (Table 1) and nongenetic risk factor (Table 2) and also a joint PAF. This study was funded in part by The European Union FP7 (ProMark project 202059) and by the EEA grant (ROMCAN project RO14-0017). All analyses were performed with Stata MP13 software.

Results

The PAFs for each SNP ranged from 0 to 19.5%. The estimated joint PAF for all 34 SNPs was 89.9% and 81.9% for the 19 SNPs having p-value <0.05. Joint PAFs of the first 5, 10 and 15 SNPs with highest PAF were 56.4%, 73.5 % and 81.3 %. The results in Table 2 show that age, pelvic X-rays exams (more than six), family history of cancer, cystic fibrosis and hypertension explain 72,6% of risk. Combining the PAFs of the first 5 SNPs and of the first 5 nongenetic factors, we found a joint PAF of 88%.

Conclusions

Data suggest that combining different risk factors for PrCa it is possible to create plausible risk profiles and elaborate preventive or early detection strategies.

Table 1 PAFs of all 34 SNPs							
SNP	PAF%	SNP	PAF%	SNP	PAF%	SNP	PAF%
rs10486567	19.5	rs5759167	8.2	rs4962416	5	rs401681	3
rs445114	16.6	rs5945572	7.8	rs4054823	4.1	rs1447295	2.4
rs2735839	16.4	rs6983267	7	rs16902094	3.8	rs721048	1.8
rs10896450	12.3	rs9364554	6.9	rs1859962	3.7	rs16901979	1.6
rs11649743	11.5	rs12418451	6.2	rs11228565	3.6	rs6465657	1.3
rs4430796	10.1	rs12621278	5.9	rs12500426	3.6	rs10934853	1.2
rs10993994	9.8	rs2660753	5.8	rs8102476	3.5	rs17021918	1.2
rs2736098	9.6	rs1512268	5.5	rs1465618	3.2	rs9623117	0
rs7679673	9.6	rs7127900	5.1				

Table2 PAFs of nongenetic factors			
	PAF%		PAF%
Age	53.7	Aspirin intake	3.2
Pelvic X-rays more than 6	15.7	Multiple sexual partners	3.2
Cystic fibrosis	11.5	Occupational exposure to radioactive sources	2
Family history of cancer	11	Smoking	1.7
Blood hypertension	10.9	Phlebitis	1.3
Alcohol consumption	4.6	Herpes simplex	1.2
Gallstones	3.5	Sexually transmitted disease	1