Spousal concordance for factors related to metabolic syndrome in families of patients with premature coronary heart disease.

MV. Konnov, LM. Dobordzhginidze, AD. Deev, NA. Gratsiansky

Center for Atherosclerosis, Institute Of Physico-Chemical Medicine, Moscow, Russian Federation

Background It is important to elucidate the role of environment in cardiovascular disease risk factors (RF) among patients with 'premature' coronary heart disease (CHD) and their spouses.

Purpose: To elucidate risk factors concordance between spouses, one of **whom** satisfies criteria of "premature" CHD.

Material: We examined 174 spouse pairs. There were 174 probands with premature (onset before 55 years) CHD aged 32-63 years and 174 their spouses aged 28-63 years. Among probands 18.4% had angina pectoris only and 81.6% had history of myocardial infarction. There were 10 patients with CHD among spouses (5.75%).

Methods: Before logistical regression for reduction of continuous coronary RF variability and to suppress possible outliers symmetric censoring of 1% of their values was carried out. Continuous and ordinal RF correlations were estimated by Spearman's correlation coefficient, nominal – by X^2 criteria adjusted for sex and age.

Pairs were divided in 2 groups according to proband age (32-47 and 35-63 years). Spousal concordance for characteristics studied was evaluated separately in younger (probands 32-47, spouses 28-53 years) and older (probands 48-63, spouses 35-63 years) age groups with presumably different duration of marriage/cohabitation after Fisher's z-transformation by T-test.

Parameters registered: alcohol consumption, tobacco smoking, education, body mass index (BMI), waist circumference (WC), heart rate (HR), systolic & diastolic blood pressure (SBP, DBP), total, low and high density lipoprotein cholesterol (TC, LDL-C, HDL-C), triglycerides (TG), apo-proteins A-I and B, lipoprotein (a) (LP (a), blood glucose and insulin, homeostasis model assessment--insulin resistance (HOMA-IR), fibrinogen, activity of plasminogen activator inhibitor type 1 (PAI-1), arterial pre- and hypertension (JNC 7 criteria), diabetes mellitus (WHO), metabolic syndrome (IDF).

Results

Table 1. Spousal correlations

CHD RF	n	$mean_p \pm sd_p$	$mean_s \pm sd_s$	R	p
Insulin, µU/ml	109	13.3±9.44	9.69±8.23	.424	**.0001**
HOMA-IR	106	3.75±3.28	2.26±2.21	.421	**.0001**
Waist circumference, cm	171	96.1±12.0	87.1±12.7	.294	**.0001**
Glucose, mmol/l	171	5.74±1.82	5.07±0.75	.261	**.0007**
Triglycerides, mmol/l	174	2.11±1.43	1.21±0.58	.222	**.0036**
Fibrinogen, g/L	154	3.99±1.31	3.83±1.05	.222	**.0063**
Body mass index, kg/m²	172	28.6±4.57	28.0±5.38	.195	**.0111**
Diastolic BP, mm Hg	174	78.6±13.1	80.8±12.3	.185	**.0158**
LDL-cholesterol, mmol/l	162	4.01±1.44	3.81±0.87	.148	*.0641*
Plasminogen activator inhibitor -1 activity, U/ml	124	21.1±13.3	16.1±10.2	.159	*.0811*
Systolic BP, mm Hg	171	124.6±20.6	127.0±22.3	.128	*.0982*
Apo-protein B, mg/dl	87	143.4±48.4	103.1±26.6	.115	.2959
Total cholesterol, mmol/l	174	6.04±1.67	5.61±0.97	.084	.2749
Lipoprotein (a), mg/dl	86	22.6±29.8	19.7±28.3	.058	.6002
Heart rate, beats per minute	174	68.0±11.7	68.6±9.74	.049	.5220
HDL-cholesterol, mmol/l	172	1.07±0.26	1.30±0.33	.049	.5271
Apo-protein A-I, mg/dl	48	127.2±24.4	154.5±22.5	-.119	.4365

n – pairs number; $mean_p$, sd_p and $mean_s$, sd_s – mean, standard deviation of probands and spouses, respectively;
R – Spearman's correlation coefficient; P – p-level

Table 1. Spousal correlations (continued)

CHD RF	OR	95% CI	P
education	3.85	2.68 to 5.53	**.0001**
metabolic syndrome	2.92	1.51 to 5.63	**.0014**
tobacco smoking	1.31	0.96 to 1.78	*.0897*
alcohol	1.35	0.88 to 2.08	.1702
arterial pre- and hypertension	1.23	0.82 to 1.86	.3220
diabetes mellitus	0.79	0.09 to 6.96	.8298

OR, CI, p – odds ratio, confidence interval and p-level, respectively

Table 2. Spousal correlations in younger and older age groups

CHD RF	younger		older		T	p
	n	R_{young}	n	R_{old}		
Plasminogen activator inhibitor -1 activity, U/ml	59	-.0345	65	.3198	-2.035	**.042**
Total cholesterol, mmol/l	79	-.0617	95	.1611	-1.473	.141
Body mass index, kg/m²	77	.0882	95	.2778	-1.284	.199
LDL-cholesterol, mmol/l	70	.0264	92	.1889	-1.039	.299
Fibrinogen, g/L	70	.1318	84	.2603	-0.827	.408
Glucose, mmol/l	78	.2271	93	.3141	-0.612	.541
Lipoprotein (a), mg/dl	44	.0363	42	.1205	-0.393	.694
Waist circumference, cm	76	.2594	95	.3037	-0.313	.755
Apo-protein A-I, mg/dl	22	-.2044	26	-.1191	-0.303	.762
Insulin, µU/ml	55	.3649	54	.3850	-0.122	.903
HOMA-IR	54	.3868	52	.3945	-0.047	.963
Apo-protein B, mg/dl	45	.0948	42	.1042	-0.044	.965
Triglycerides, mmol/l	79	.2438	95	.2108	0.229	.819
HDL-cholesterol, mmol/l	77	.0734	95	.0285	0.294	.769
Diastolic BP, mm Hg	79	.2391	95	.1640	0.514	.607
Systolic BP, mm Hg	76	.2568	95	.0872	1.139	.255
Heart rate, beats per minute	79	.1727	95	-.0346	1.373	.170

n – pairs number; p, s – probands and spouses, respectively; $mean_p$, sd_p and $mean_s$, sd_s – mean, standard deviation of probands and spouses, respectively;
T – T-criterion; P – p-level

Conclusions

(1) In families of patients with premature CHD we found various degree of spousal concordance of studied parameters mostly of factors considered to be related to metabolic syndrome;

(2) Spousal correlations for risk factors in young and old age groups (presumably with shorter and longer cohabitation) were similar (except for PAI-1 activity). This allows to assume that observed spousal concordance has been to a greater extent due to assortative mating but not to cohabitation.

For further information or comments: konnov-mihail@yandex.ru