

Cardiovascular risk factors are associated to self reported stress

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Introduction

- Psychosocial stress may cause increased sympathetic activity and is considered a risk factor for cardiovascular disease.
- Limited data on the relationship between psychosocial stress and cardiovascular risk factors.
- The objective of our study was to analyze the association of psychosocial stress with cardiovascular risk factors.

Methods

- We included 1844 subjects (74,9% men, 43±8 years old) participating in a check-up health program.
- All subjects were submitted to clinical (personal and family history of cardiovascular disease and risk factors, blood pressure, body mass index, rest heart rate), laboratorial (lipid profile, glucose, C reactive protein, uric acid, creatinine) and abdominal ultrasound (liver steatosis) evaluation.
- Metabolic syndrome was defined according to International Diabetes Federation definition.
- Psychosocial stress was self-reported.

Results

- Two hundred and thirty (12,4%) subjects referred stress.
- Stressed group have higher blood pressure, heart rate, body mass index and LDL-cholesterol.
- They also have higher prevalence of diabetes mellitus, metabolic syndrome and liver steatosis. See table 1
- After multivariate logistic regression analysis, we found that diabetes mellitus, liver steatosis and LDL-c were independently associated to self reported stress. See table 2.

Table 2- Variables associated to self reported stress

Variables	OR	CI 95%	p
Diabetes mellitus	3,47	1,24-9,53	0,017
Liver steatosis	1,55	1,15-2,08	0,003
LDL-c	1,005	1,000-1,009	0,031

Table 1- Comparison of clinical and laboratorial variables between subjects with self reported stress or not stressed

Variable	Stress N=230	No stress N=1614	P
Male (%)	162 (70,4)	1219 (75,5)	0,096
Age (years)	42,5±8,7	43,4±8,4	0,169
Personal history CVD (%)	2 (0,9)	17 (1,1)	0,796
Family history early CVD (%)	38 (16,5)	315 (19,5)	0,280
DM (%)	6 (2,6)	11 (0,7)	0,004
Smoking (%)	16 (7,0)	72 (4,5)	0,097
Metabolic syndrome (%)	56 (24,3)	268 (16,6)	0,004
Liver steatosis (%)	86 (37,4)	429 (26,6)	0,001
Systolic blood pressure (mmHg)	120±14	118±12	0,014
Diastolic blood pressure (mmHg)	79±9	78±7	0,031
Heart rate (bpm)	67±9	66±9	0,027
BMI (Kg/m ²)	27,67±4,31	26,94±4,07	0,011
TC (mg/dL)	197±37	193±37	0,083
LDL-c (mg/dL)	120±34	114±32	0,023
HDL-c (mg/dL)	50±15	52±15	0,062
TG (mg/dL)	136±67	131±78	0,416
Glucose (mg/dL)	91±15	90±13	0,730
C reactive protein (mg/L)	0,12	0,11	0,251
Uric acid (mg/dL)	5,60±1,45	5,52±1,40	0,407
Creatinine (mg/dL)	1,00±0,00	1,01±0,36	0,637

Conclusions

Markers of insulin resistance like diabetes mellitus and liver steatosis are associated with self reported stress. Further studies are needed to determine the pathophysiological association between stress and insulin resistance. Also if these findings are associated to higher cardiovascular risk.