The Finnish diabetes risk score (FINDRISC) as a marker of coronary disease risk, metabolic syndrome, subclinical inflammation and hepatic steatosis

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Statement of Purpose

• The Finnish Diabetes Risk Score (FINDRISC) is a questionnaire that detects diabetes risk in a 10-year period using lifestyle , family history and body mass index parameters. No laboratorial test is used.

• We evaluated whether FINDRISC can be used to track the presence of the metabolic syndrome (MS), subclinical inflammation expressed by increased high sensitivity C reactive levels (CRP), hepatic steatosis (HS) and the calculated 10-year coronary heart disease (CHD) risk in asymptomatic subjects.

Methods

• 991 consecutive non-diabetic subjects (76% males, mean age 46.2 years) submitted to an obligatory health evaluation paid by their employers were studied. The diabetes risk was classified as: low, intermediate, moderate, high and very high using the FINDRISC score .

•Plasma lipids, glucose, and C reactive protein (CRP) levels were determined after fasting. Subclinical inflammation was detected as CRP levels ≥ 2mg/L.

•The metabolic syndrome (MS) was defined by the ATP III criteria.

•Hypertension was defined as previous blood pressure Rx use.

•10-year CHD risk was calculated by Framingham risk score.

•Steatosis was detected by hepatic ultrasound.

•FINDRISC association with parameters was done by multivariate analysis comparing very high and high against low diabetes risk.

•The discriminative value for the detection of risk was calculated by C statistics (AUC).

Results

• Very high and high and low diabetes risk were found in 9.7% and 48.9% of subjects respectively.

• Clinical and laboratory characteristics are shown in table 1.

• Subjects at higher diabetes risk were older, had a greater CHD risk, higher CRP levels and prevalence of steatosis.

•The MS was more frequent in higher risk subjects 52% vs. 3% (p<0.001).

•As expected subjects with high FINDRISC presented a greater prevalence of impaired fasting glucose –IFG (≥ 100 mg/dL) (22% vs. 1% p=0.001) ,

Table 1 - Comparison between clinical and laboratorial characteristics, CHD risk, subclinical inflammation, and presence of steatosis in subjects with Low vs. High and Very High diabetes risk according to FINDRISC

Variable	*Low risk n=485*	*High Risk n=96*	*p*
Males	76%	89%	<0.001
Age	41±9	51±8.5	<0.001
BMI	24±2.5	31±3.5	<0.001
Smoking	7.6%	11.5%	0.28
Hypertension	8.5%	54%	<0.001
10-year CHD risk	3.8±5.5	10.5±4	<0.001
CHD risk >10%	11%	51%	0.001
MS	3%	52%	<0.001
LDL-c(mg/dl)	127±32	126±34	0.054
TG (mg/dL)	118 ±66	171±81	<0.001
HDL-c (mg/dl)	50±12	41±10	<0.001
Glucose (mg/dL)	83±7	95±14	<0.001
CRP mg/L	1(0.1-29)	2.1(0.1-9.8)	<0.001
CRP > 2 mg/L	19%	52%	0.001
Steatosis %	15%	83%	0.001

• The multivariate association of high and very high FINDRISC (adjusted for age, gender,blood pressure, smoking, body mass index, lipids, and blood pressure medication) with CHD,CRP, and HS (adjusted also for MS presence) with studied parameters was as follows [odds ratio (95% CI)]:

CHD ≥ 10% 1.8 (1.007-3.32)

CRP ≥ 2mg/L 2.8 (1.39-5.53)

HS 3.0 (1.15-7.64)

MS 4.0 (1.76-8.9)

IFG 5.42 (1.51-19.46).

The AUC were: dysglicemia (0.78), CHD risk (0.72), CRP (0.6), HS (0.8) and MS (0.7).

Statement of Conclusions Reached

•FINDRISC was useful for detecting increased CHD risk , subclinical inflammation, the MS, IFG and hepatic disease.

•Since FINDRISC uses no laboratorial tests it could be useful as a screening tool not only for increased diabetes risk but also for subclinical inflammation, cardiovascular disease risk and hepatic disease.

•Subjects with high and very high FINDRISC should be submitted to intensive risk factor interventions.