

Relationship between cardiovascular risk factors and coronary artery disease as detected by multidetector computed tomography

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Purpose: Traditional cardiovascular risk factors such as HTN, DM, and smoking was known to predict less than one half of cardiovascular events. The presence of coronary plaque is recently known to be independent factor for the prediction of cardiovascular events. We evaluated the association between cardiovascular risk factors and extent of CAD. Methods: We studied 1,788 patients (807 males, 61.3±12.7 years) with known or suspected CAD undergoing 64-slice MDCT. The severity and extent of CAD, plaque of coronary arteries and clinical and laboratory parameters were analyzed. Results: 903 patients (49.8%) had CAD, 391 patients (21.6%) had obstructive CAD (>50% luminal stenosis). The extent of any plaques were more higher in obstructive CAD patients than nonobstructive (4.56±2.19, 2.51±1.59, p=0.000). On multivariate logistic analysis, clinical predictor for presence of CAD was DM, HTN, CVA, HDL, apoA and apoB (p<0.05). The predictors of obstructive CAD was DM, HTN, HDL, apoB (p<0.05). Conclusions: Our data suggest that traditional clinical risk factors and laboratory parameters might be associated with the severity and extent of CAD.

Patient and MDCT Characteristics					Laboratory Characteristics				
	No CAD (n=885)	Nonobstructive CAD (n=512)	Obstructive CAD (n=391)	p Value		No CAD (n=885)	Nonobstructive CAD(n=512)	Obstructive CAD (n=391)	p Value
Age(yrs)	59.92±12.55	64.77±10.14	66.80±10.45	0.000	WBC(10 ³ /ml)	6.94±2.11	7.40±2.33	7.45±2.42	0.000
Men	359(40.6%)	245(47.9%)	203(51.9%)	0.000	Creatinine(mg/dl)	0.90±0.55	0.99±0.86	1.11±1.56	0.003
Diabetes	84(9.5%)	103(20.1%)	270(30.6%)	0.000	GFR(ml/min)	89.25±31.06	76.46±28.07	68.60±23.76	0.000
Hypertension	234(26.5%)	208(40.6%)	185(47.4%)	0.000	Total cholesterol(mg/dl)	179.41±37.19	176.84±42.01	177.62±39.36	0.538
Dyslipidemia	75(8.5%)	26(5.1%)	42(10.8%)	0.006	Triglyceride(mg/dl)	140.90±81.03	151.34±92.47	141.86±105.00	0.156
Smoking	180(20.4%)	112(21.9%)	120(30.8%)	0.000	HDL(mg/dl)	51.87±14.74	47.44±13.57	46.44±12.97	0.000
Obesity	58(6.6%)	35(6.9%)	18(4.6%)	0.321	LDL(mg/dl)	113.94±33.97	117.68±35.93	115.01±37.64	0.322
Old CVA	36(4.1%)	44(8.6%)	36(9.2%)	0.000	apoA(mg/dl)	145.82±24.66	144.21±24.09	139.61±28.13	0.005
Family history	67(7.6%)	26(5.1%)	39(10.0%)	0.019	apoB(mg/dl)	78.19±20.94	84.96±22.92	83.86±23.90	0.000
Extent of any plaques(P)	0	2.51±1.59	4.56±2.19	0.000	apoB/apoA	0.55±0.01	0.60±0.20	0.62±0.21	0.000
Extent of noncalcified P	0	0.79±0.89	1.54±1.36	0.000	Lipoprotein(mg/dl)	34.20±26.62	38.14±35.02	37.76±37.13	0.180
Extent of mixed P	0	0.75±1.01	1.93±1.72	0.000	hsCRP(mg/l)	7.45±20.48	10.45±29.54	6.89±20.42	0.128
Extent of calcified P	0	0.97±1.23	1.08±1.50	0.000	Homocysteine(μmol/l)	12.51±13.30	12.49±6.06	11.93±6.61	0.744
Coronary calcium scores	0	224.20±364.23	732.11±889.63	0.000	proBNP(pg/ml)	686.28±3112.56	1156.92±4212.27	1365.36±4443.40	0.069

The presence of CAD					The presence of obstructive CAD				
Variables	Univariate		Multivariate		Variables	Univariate		Multivariate	
	OR(95%CI)	P value	OR(95%CI)	P value		OR(95%CI)	P value	OR(95%CI)	P value
Sex,male	1.443(1.196-1.740)	0.000	2.488(1.715-3.609)	0.000	Sex,male	1.582(1.245-2.010)	0.000	1.074(1.048-1.100)	0.000
Age	1.068(1.058-1.078)	0.000	1.082(1.062-1.103)	0.000	Age	1.080(1.067-1.093)	0.000	0.975(0.415-2.401)	0.000
CVA	2.292(1.529-3.437)	0.000	1.959(1.0957-3.505)	0.023	CVA	0.418(0.259-0.675)	0.000	0.501(0.238-1.052)	0.068
DM	3.118 (2.377-4.089)	0.000	2.076 (1.397-3.084)	0.000	DM	0.238 (0.174-0.325)	0.000	0.355 (0.220-0.574)	0.000
HTN	2.145(1.758-2.617)	0.000	1.536(1.135-2.078)	0.005	HTN	0.399(0.311-0.512)	0.000	0.673(0.459-0.988)	0.043
HDL	0.975(0.967-0.983)	0.000	0.971(0.958-0.984)	0.000	HDL	0.972(0.962-0.982)	0.000	0.975(0.958-0.991)	0.003
apoA	0.994(0.989-0.999)	0.015	1.010(1.003-1.018)	0.009	apoA	0.990(0.984-0.996)	0.001	1.006(0.997-1.016)	0.198
apoB	1.013(1.007-1.019)	0.000	1.014(1.007-1.020)	0.000	apoB	1.012(1.005-1.019)	0.001	1.013(1.004-1.023)	0.003