

Patients with acute coronary syndrome have lower testosterone than healthy controls

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OBJECTIVES

Several studies report the association of low testosterone with ischaemic heart disease although the results are inconsistent. In our study we tried to evaluate the relationship between sex hormones and incidence of acute coronary syndrome (ACS).

METHODS

This was a cross-sectional study. In 111 subjects (69 patients with ACS and 42 age-matched controls) we measured total testosterone, estradiol, SHBG, FSH and LH by electrochemiluminescence and calculate free androgen index (FAI). Patients with cancer, antiandrogen or testosterone treatment were excluded. In all patients we examined risk factors of myocardial infarction (hypertension, diabetes mellitus, dyslipidaemia, smoking, waist circumference and BMI). Results were correlated by independent T-test and linear regression in SPCC system. In all subjects quartile analysis according to testosterone levels was performed.

RESULTS

	Patients Mean	Controls Mean	Unit	Normal range	significance
Age	73	69	years	-	ns
testosterone	12.37	15.66	nmol/l	10-28	0.009
FAI	32.5	36.4	%	16-102	ns
FSH	10	8.9	IU/l	1.5-12.4	ns
LH	8.7	6.4	IU/l	1.7-8.6	ns
estradiol	122.2	112.5	pmol/l	-	ns
Waist	102.8	99.4	cm	-	ns
BMI	27.8	28.5	kg/m ²	-	ns
Diabetes mellitus	38	25	%	-	ns
Dyslipidaemia	78	71	%	-	ns
Hypertension	84	59	%	-	0.006
Smoking	38	7	%	-	<0.001

Linear regression model:

	R ²	p
	testosterone	
Waist	0.082	0.002
Weight	0.076	0.002
BMI+ weight+ waist	0.13	0.009

Testosterone quartile analysis:

testosterone	Number	ACS (%)	DM (%)	Dyslipid. (%)	Hyperten. (%)	Smoking (%)	Waist (cm)	BMI (kg/m ²)
1st Quartile	30	80%	13%	27%	25%	11%	106.5	29.8
4 th Quartile	28	46%	7%	16%	19%	6%	94.03	25.8
RR (CI)		1.72 (1.1-2.6)						

DISCUSSION and CONCLUSIONS

Patients with ACS have significantly lower total testosterone levels and inversely, patients in the lowest testosterone quartile have higher incidence of ACS although this is accompanied with higher incidence of obesity and other cardiovascular risk factors. Testosterone levels correlate significantly with weight and waist circumference so we can conclude that low testosterone is strongly associated with adiposity in patients with ACS and probably plays a role in metabolic syndrome.

