

Apa-I Polymorphism in VDR Gene is Related to Metabolic Syndrome in Polycystic Ovary Syndrome

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Introduction

Women with PCOS frequently present insulin resistance and metabolic comorbidities, such as dyslipidemia, diabetes and hypertension. Variants on vitamin D receptor (VDR) gene have been associated with insulin resistance and diabetes in general population.

Aims

- ✓ To determine the genotype distribution of the Apa-I polymorphism (rs7975232) of the VDR gene in PCOS and control women.
- ✓ To investigate whether Apa-I polymorphism (rs7975232) in the VDR gene is associated with metabolic syndrome in PCOS and control women.

Methods

Design → Cross-sectional study.

Subjects → 190 PCOS (Rotterdam criteria) and 100 non-hirsute and ovulatory controls. Endocrine and clinical measurements were assessed. Body mass index (BMI) was calculated.

Metabolic syndrome → was defined by NCEP-ATP III.

Genotype analysis → Participants were genotyped for Apa-I polymorphism (rs7975232) by real-time PCR, with allelic discrimination assays.

Results

Table 1. Endocrine and clinical features of PCOS and control women

	PCOS (190)	Controls (100)	p
Age, yr	22.9±6.7	25.2±7.7	0.013
BMI (Kg/m ²)	29.7±6.4	27.03±6.1	0.001
TT (ng/mL)	0.90±0.40	0.54±0.17	<0.001
MS % (n)	26.5 (49)	4.8 (4)	<0.001 ^a
Apa-I SNP			
CC % (n)	21.6 (41)	16.0 (16)	0.503 ^a
CA % (n)	46.3 (88)	48.0 (48)	
AA % (n)	32.1 (61)	36.0 (36)	

Values are expressed as mean±SD, median and interquartile range (25-75%) or percentages. p value by Two-tailed Student's t-test. ^a Pearson's Chi-square test. BMI: Body mass index TT: Total Testosterone, MS: Metabolic Syndrome.

Table 2. Odds ratio for Metabolic Syndrome according to genotypes of Apa-I

	OR	95% CI	P [*]
PCOS			
CC vs. CA + AA genotype	2.133	1.020 – 4.464	0.042
Controls			
CC vs. CA + AA genotype	5.154	0.665 – 39.954	0.145

Table 3. Components of Metabolic Syndrome in PCOS and controls according to Apa-I SNP grouped by the presence of polymorphic allele

	PCOS		Controls		P _{Gen}	P _{Diag}	P _{INT}
	CC	CA + AA	CC	CA + AA			
Waist (cm)	91.97±15.46	88.56±14.96	81.42±13.08	77.41±11.20	0.149	<0.001	0.908
SBP (mmHg)	127.02±19.79	119.49±13.69	113.83±11.35	108.60±13.10	0.009	<0.001	0.637
DBP (mmHg)	81.30±13.46	77.21±10.84	72.77±10.17	70.41±9.24	0.079	<0.001	0.635
Glucose (mg/dL)	87.88±13.18	89.14±15.92	90.47±7.13	88.08±7.65	0.805	0.738	0.425
HDL (mg/dL)	46.12±10.73	49.59±10.86	53.73±11.21	52.65±12.55	0.529	0.005	0.231
Tgl (mg/dL)	91.00 (71.50-147.50)	87.00 (61.00-129.00)	69.00 (63.00-117.00)	62.50 (47.75-91.50)	0.149	0.003	0.676

Values are expressed as mean±SD or median and interquartile range (25-75%). p value by two-way ANOVA. BMI: Body mass index, SBP: Systolic Blood Pressure, DBP: Diastolic Blood Pressure, TC: Total Cholesterol, HDL: high-density cholesterol, LDL: low-density cholesterol, Tgl: Triglycerides

Conclusions

- ✓ The results suggest that variant Apa-I in VDR gene may be associated with metabolic syndrome in PCOS women from Southern Brazil.

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