Angiotensin- Converting Enzyme Insertion/Deletion Gene Polymorphism in Egyptian Obese Children and Adolescents: Relation to Hypertension Risk

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Background/Aims:

Relatively few studies have examined the contribution of angiotensin converting enzyme (ACE) candidate genes for development of childhood obesity-hypertension phenotype.

Thus, we aimed to screen Egyptian obese children and adolescents for insertion/ deletion (I/D) polymorphism in the gene encoding ACE and its relation to hypertension

Methods:

Seventy children and adolescents with simple obesity were compared to 72 controls. All were subjected to history, blood pressure measurement, anthropometric assessment and assessment of fasting lipid profile and fasting glucose and insulin. In addition, DNA extraction and genotyping for ACE I/D gene polymorphism was done.

Results:

Obese children had higher frequency of DD genotype (cases 30% versus 11.1 % in controls, p=0.01) and D alleles (cases: 61.8% versus 48.6% in controls, p=0.01) and lower frequency of II genotype (cases: 27.1% versus 34.7% in controls, p=0.04) and I alleles (38.2% versus 51.4% respectively, p=0.01) than controls.

Also, obese children with hypertension and pre-hypertension had higher frequency of DD genotype and D alleles than II genotype and I alleles (Table 1).

DD genotype and D allele were risk factors for hypertension (OR:9.86 and 11.57 respectively, p<0.001) while dyslipidemia and insulin resistance were not associated with I/D polymorphism in the ACE gene.

Table 1. Relation between ACE I/D genotype frequency and blood pressure in Egyptian obese children and adolescents (n=70)

Frequency n(%)	Normal BP (n=42)	Pre-hypertension (n=18)	Hyper tension (n=10)	p
Genotype				
II	18(42.9)	1(5.6)	1(10)	0.01
ID	19(45.2)	8(44.4)	2(30)	0.04
DD	5(11.9)	9(50)	7(70)	0.001
Allele				
I	27(64.3)	5(27.8)	2(20)	0.03
D	15(35.7)	13(72.2)	8(80)	0.001

Conclusions:

DD genotype and D-allele of I/D polymorphism in the ACE gene were associated with a higher risk of hypertension and pre-hypertension in Egyptian obese children.