TEXT

Metabolism and gonadal axis of early menarche girls and girls treated with GnRHa during puberty

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OBJECTIVES

Early menarche may be associated with diabetes, metabolic syndrome, cardiovascular disease and oligomenarrhea in adults. While the state of metabolism and gonadal axis of early menarche girls and girls who treated with Gonadotropin-releasing hormone analogs (GnRHa) during puberty was not so clear.

We assessed in a retrospective unicenter study the state of metabolism and gonadal axis of early menarche girls and girls who treated with GnRHa during their puberty.

METHODS

Thirty-nine early menarche girls and 58 girls who had treated with GnRHa were enrolled in our study and 19 normal menarche girls were enrolled as control group.

All of them were two years within puberty. Data were collected in height, weight, gonadal hormone, blood glucose, insulin, blood lipid, leptin, adiponectin and the size of uterus and ovary.

Metabolism of 3 groups

	case	age	BMI	BMISDSba	Insulin	FBG	HOMA-IR	HOMA-ISI
C group	19	11.7±0.7	17.1±2.1	-0.50±0.73	11.4±4.0	4.8±0.5	2.4±0.9	22.1±10.9
EM group	39	9.9±0.7	18.2±3.8	0.27±0.78a	12.0±5.1	4.9±0.4	2.7±1.4	19.9±8.2
GT group	58	12.4±1.2	19.4±3.5b	0.42±1.49b	14.3±7.6ᵇ	4.9±0.4	3.1±1.5 b	18.8±10.9

	Chol	TG	HDL	LDL	Leptin	Adiponectin	IGF-1
C group	4.3±1.1	0.9±0.3	1.4±0.3	2.8±1.1	8.3±6.1	(8.3±2.5)×10ᵀ	434.9±113.5
EM group	4.3±0.9	1.0±0.4	1.3±0.4	2.6±0.9	8.8±5.5	(9.5±6.9)×10ᵀ	468.3±136.6
GT group	4.2±0.6	1.1±0.5	1.4±0.2	2.5±0.5	10.2±6.2	(9.2±2.3)×10ᵀ	556.7±141.2ᵇ

C group: control group; EM group: Early menarche group; GT group: GnRHa treatment group.

RESULTS

Both BMI SDS for chronological age (CA) and for bone age (BA) of early menarche girls were significantly higher than normal menarche girls (P<0.05). The ratio of insulin resistance in early menarche girls (20.5%) was also significantly higher than normal girls (0%). No significant difference in lipid metabolism and gonadal axis between two groups. In girls treated with GnRHa, BMI SDS, insulin, HOMA-IR and the ratio of insulin resistance (20.7%) were all significantly higher than normal group (P<0.05). Meanwhile, DHEAS, androstenedione and testosterone of GnRHa treated girls were significantly higher than early menache girls, and DHEAS was higher than normal girls. The size of uterus in treated group was larger than the other two groups.

CONCLUSIONS

Early menarche and GnRHa treatment may take negative effect to BMI and glucose metabolism. Androgen was higher in GnRHa treated group. Therefore, suggestion was that BMI, insulin, blood glucose and androgen should be monitored in early menarche girls and girls treated with GnRHa.

References

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