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**Background and Aim:** Premature pubarche (PP) is known to be a risk factor for the development of metabolic syndrome (MS) and hyperandrogenism. It is aimed to evaluate if glucose and insulin metabolism, cardiovascular risk factors and cardiovascular risk factors in family (FCVRF) create a risk for insulin resistance (IR) and if PP is a risk factor alone for MS and hyperandrogenism in normal weighted prepubertal PP girls.

**Methods:** Prepubertal and non-obese 35 PP girls with normal birth weight and 35 healthy controls with same properties were evaluated for clinical features, biochemical findings, hormonal findings and bone age. OGTT was performed on PP cases. PP cases were also divided into two subgroups according to the presence of FCVRF.

**Results:** The clinical characteristics of the two groups were similar except BMI SDS which was significantly higher in PP group (Table 1). In PP group SHBG was significantly lower and FAI was significantly higher than in control group, while the other laboratory findings were similar in two groups (Table 2). Besides there was no difference in the clinical characteristics between two subgroups (Table 3), except for the mean leptin level which was significantly higher in FCVR+ group than FCVRF- group (Table 4).

**Table 1.** Clinical characteristics of the subjects with PP and controls

	PP (n=35)	Control (n=35)	p
	mean±SDS	mean±SDS	
Birth weight (g)	3230±405,9	3290,2±371,7	NS
Gestation week (week)	39,4±0,9	39,4±0,8	NS
Family	n (%)	n (%)	
CVRF +	16 (45,7)	14 (40)	NS
CVRF -	19 (54,3)	21 (60)	NS
At enrollment	mean±SDS	mean±SDS	
Age (year)	8,3±1,1	8,1±1	NS
Weight SDS	0,56±0,97	0,15±0,95	NS
Height SDS	0,92±1,11	0,65±1,23	NS
BMI SDS	0,34±0,83	-0,04±0,78	*0,026
BA SDS	-0,21±1,31	-0,66±1,52	NS
Waist/Hip ratio	0,86±0,04	0,85±0,04	NS
Systolic BP (mmHg)	93±3,47	93,14±3,44	NS
Diastolic BP (mmHg)	63,29±4,36	63,71±3,5	NS

\*comparison with T-Test

**Table 3.** Clinical characteristics of the subjects with PP divided into two subgroups based on FCVRF

	FCVRF+ (n=16)	FCVRF- (n=19)	p
	mean±SDS	mean±SDS	
Birth weight (g)	3300±445,5	3171±371,1	NS
Gestation week (week)	39,5±0,8	39,3±1	NS
Diagnosis age (year)	7,2±0,7	7,1±0,9	NS
At enrollment			
Age (year)	8,3±1,1	8,3±1,1	NS
Weight SDS	0,9±0,81	0,28±1,02	NS
Height SDS	1,3±1,22	0,59±0,92	NS
BMI SDS	0,61±0,5	0,12±0,99	NS
BA SDS	0,15±1,24	-0,52±1,33	NS
Waist/Hip ratio	0,87±0,48	0,86±0,03	NS
Systolic BP (mmHg)	92,8±3,6	93,1±3,4	NS
Diastolic BP (mmHg)	62,5±4,4	63,9±4,2	NS

**Conclusion:** PP is not a risk factor alone for impaired glucose metabolism and IR in non-obese girls with normal BW before puberty. Additionally, low SHBG levels can be a predictive marker of hyperandrogenism in prepubertal girls with PP and high leptin levels in FCVR+ subgroup, of upcoming obesity in the future.

**Table 2.** Laboratory data of subjects with PP and controls

	PP (n=35)	Control (n=35)	p
Adipocytokine and adipokines	mean±SDS	mean±SDS	
TNF-alpha (pg/ml)	1,95±0,84	1,81±0,93	NS
Leptin (ng/ml)	12,27±8,53	13,33±13,03	NS
Adiponectin (µg/ml)	14,06±5,42	15,81±11,69	NS
Fasting lipid profile (mg/dl)			
Cholesterol	152,3±26,6	155,4±29,4	NS
Triglyceride	65,8±31	67,7±27,6	NS
LDL	90,2±25,8	93±22,8	NS
HDL	58±12,4	57,9±11,3	NS
OGTT			
glucose (mg/dl)			
0. min	79,7±8,2	80,6±7,6	NS
120. min	97±15	-	-
insulin (µU/ml)			
0. min	6,6±2,9	7,3±4,1	NS
120. min	31,6±18	-	-
HbA1c (%)	5,1±0,3	5,1±0,2	NS
HOMA-IR	1,2±0,6	1,4±0,8	NS
Fasting glucose/insulin ratio	15,2±8,6	14,7±8,8	NS
SHBG (nmol/L)	52,9±24,2	72,9±38,2	*0,010
AI	1,2±0,69	1,22±0,62	NS
FAI	1,15±0,62	0,85±0,85	*0,001

\*comparison with T-Test

**Table 4.** Laboratory data of the subjects with PP divided into subgroups based on FCVRF

	FCVRF+ (n=16)	FCVRF- (n=19)	p
	mean±SDS	mean±SDS	
DHEAS (µg/dl)	124,9±54,2	109,6±48,4	NS
17-OHP (ng/ml)	0,81±0,3	0,96±0,28	NS
Androstenedione (ng/ml)	0,75±0,37	0,7±0,41	NS
Testosterone (ng/dl)	16,3±8,5	14,2±3,3	NS
SHBG (nmol/L)	47,7±16,6	57,4±28,8	NS
TNF-alpha (pg/ml)	2,07±0,78	1,84±0,9	NS
Leptin (ng/ml)	15,2±9,1	9,7±7,2	*0,016
Adiponectin (µg/ml)	13,4±5	14,5±5,7	NS
Cholesterol (mg/dl)	154,7±26,8	150,3±26,9	NS
Triglyceride (mg/dl)	71,8±35	60,6±27,2	NS
LDL (mg/dl)	97,7±27,1	83,9±23,6	NS
HDL (mg/dl)	54,8±11,5	60,6±12,9	NS
Fasting blood glucose (mg/dl)	79,6±9,5	79,8±7,3	NS
2nd hour blood glucose (mg/dl)	96,5±14,4	97,4±15,9	NS
Fasting insulin (µU/ml)	7,1±3,3	6,1±2,6	NS
2nd hour insulin (µU/ml)	32,4±14,8	30,9±20,8	NS
HbA1c (%)	5±0,2	5,1±0,3	NS
HOMA-IR	1,39±0,72	1,21±0,58	NS
Fasting glucose/insulin ratio	14,7±9,9	15,7±7,5	NS
AI	1,38±0,82	1,05±0,53	NS
FAI	1,34±0,77	0,99±0,41	NS

\*comparison with T-Test

Disclosure Statement: The authors have no conflicts of interest to declare.

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