IS AMH LEVEL DIAGNOSTİC FOR PREMATURE TELARCHE, PREMATURE ADRENARCHE AND CENTRAL PRECOCIOUS PUBERTY?

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INTRODUCTION

Antimüllerian hormone (AMH) is produced by granulosa cells surrounding follicles that have undergone recruitment from the primordial follicle pool but have not been selected for dominance (preantral and early antral follicles). There are limited studies about the change of AMH levels at the pubertal onset. The aim of this study was to identify whether AMH levels could be diagnostic for CPP, PT and PA and to investigate the factors influencing AMH regulation.

MATERIAL AND METHODS

Girls with CPP (N=21), PT (N=24), PA (N=42), control prepubertal (N=22), control pubertal (N=39) are included in the study. Blood samples were drawn between 8 and 9 a.m. after an overnight fast.

RESULTS

Table 1. Anthropometric data of the groups at the time of diagnosis

	PT Group n=24	PA Group n=42	CPP Group n=21	Prepubertal Control Group n=22	Pubertal Control Group n=39	p
Chronological age (year)	7.16±0.62	7.29±0.62	7.45±0.87	6.52±1.1	8.81±0.59	0.000
Height (cm)	124.3±5.4	126.8±6.5	127.4±8.6	118.5±9.9	135.4±6.61	0.000
HSDS	0.48±0.87	0.7±1.07	0.88±1.5	-0.04±0.94	0.69±1.15	0.487
Weight (kg)	28±5.6	29.9±6.6	28.8±7.1	25.3±6.8	34.9±8.0	0.000
Weight SDS	2.95±7.72	1.03±1.07	0.9±1.04	0.48±1.21	0.8±1.18	0.637
BMI (kg/m²)	17.8±2.5	18.4±2.93	17.5±2.58	17.1±2.97	18.8±2.95	0.202
BMI SDS	0.77±0.93	1.11±1.08	0.41±1.08	0.25±1.4	0.95±0.98	0.333

Table 2. Laboratory data and comparison of the groups

	PT Group n=24	PA Group n=42	CPP Group n=21	Prepubertal Control Group n=22	Pubertal Control Group n=39	p
LH (mIU/ml)	0.1±0.06	0.08±0.02	0.28±0.33	0.09±0.07	0.46±1.28	0.090
FSH (mIU/ml)	1.84±1.45	1.6±0.9	2.61±1.33[a]	2.21±1.79	3.16±1.92	0.000
E_2 (pg/ml)	18.9±12.2	14.4±5.4	17.2±5.12	14.5±6.43	23.9±17.2	0.002
17OHP (ng/ml)	1.14±1.52	1.0±0.57	0.85±0.35	0.7±0.42	0.98±0.73	0.464
DHEASO4 (mcg/dl)	47.5±41.9	84.8±35.9	61.6±37.9	28.5±19	75.3±42.1	0.000
1.4 androstenedion (ng/ml)	0.69±0.51	0.86±0.4	0.88±0.59	0.29±0.26	0.79±0.36	0.000
t-testosteron (ng/dl)	13.9±10.1	15±8.54	13.7±7.43	12.8±6.93	16.6±8.7	0.250
f-testosteron (pg/ml)	0.6±0.4	0.84±0.38	0.81±0.54	0.54±0.19	0.85±0.35	0.014
SHBG (pmol/l)	85.8±42.5	60.5±28.6	84.4±44.1	109±56.3	61.2±22.8	0.000
AMH (ng/ml)	3.73±3	3.35±3.11	2.76±1.61	2.13±0.85	3.17±1.99	0.260

Chronological ages were similar in the PT, PA and CPP groups. Chronological age in these 3 groups was more advanced than the control prepubertal group but behind the control pubertal group (p=0.000). Height standart deviation score (HSDS), weight standart deviation score (WSDS) and BMISDS were similar between the groups.

AMH levels were not different between the groups (p=0.26). AMH levels showed a significant positive correlation with 17OHP levels (p=0.001, r=+0.387) in all five groups. When we examined the groups separately, AMH levels showed a significant negative correlation with LH, f-testosterone and DHEASO4 levels (p=0.04, r=-0.41; p=0.025, r=-0.464; p=0.01, r=-0.55, respectively) in the PT group. AMH levels were negatively correlated with BMI SDS values (p=0.04, r=-0.68) and positively correlated with SHBG levels (p=0.000, r=0.700) in the CPP group. These levels were positively correlated with SHBG levels (p=0.03, r=0.52) in the control prepubertal group. No correlation was found between AMH levels and other variables in the PA and control pubertal groups.

17OHP levels showed a significant positive correlation with 1.4 androstenedione (p=0.001, r=0.348) and significant negative correlation with SHBG levels (p=0.001, r=-0.247) in all five groups. Total testosterone levels showed a significant positive correlation with f-testosterone (p=0.001, r=0.414) and 1.4 androstenedione (p=0.001, r=0.335) in all five groups. Free testosterone levels showed a significant positive correlation 1.4 androstenedione (p=0.001, r=0.444) and DHEASO4 levels (p=0.05, r=0.191) and significant negative correlation with SHBG (p=0.001, r=-0.424) in all five groups. 1.4 androstenedione levels showed a significant positive correlation with DHEASO4 (p=0.001, r=0.240) and a significant negative correlation with SHBG levels (p=0.001, r=-0.254) in all five groups.

DISCUSSION

Serum AMH level is not affected from the activation of the pubertal and adrenal axis in female children. AMH levels follow a stable course in the prepubertal and pubertal years. LH, 17OHP, f-testosterone, DHEA-SO4 and SHBG are the factors that are effective in AMH regulation.