

# The Relationship between Prolactin and Development of Puberty in Girls with Early Breast development

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## OBJECTIVES

Prolactin (PRL) stimulates mammary glands and milk production in adult women. Also, high PRL level causes gonadal dysfunction by suppression of gonadotropin releasing hormone (GnRH) and luteinizing hormone (LH). The aim of this study was to evaluate, if any, the relationship between PRL level and development of puberty in girls with precocious breast development.

## METHODS

One hundred and ten girls with onset of breast development before age of eight were included in this study. They were 66 girls with precocious puberty (PP) and 44 girls with premature thelarche (PT). Nineteen girls had high PRL level ( $\geq 17$  ng/mL) and 91 girls normal PRL level. The relationships between PRL level and clinical and laboratory parameters were investigated.

Table 1. Comparison of clinical and laboratory parameters between PT and CPP.

	PT (n=44)	CPP (n=66)	P-value
CA (years)	7.76 ± 0.46	7.92 ± 0.42	0.073
BA (years)	9.90 ± 0.51	10.05 ± 0.58	0.170
Ht (cm)	131.46 ± 4.72	132.98 ± 5.12	0.119
Ht-SDS	1.38 ± 0.65	1.41 ± 0.70	0.801
Ht/MPH	0.82 ± 0.23	0.83 ± 0.30	0.123
Wt (kg)	32.02 ± 5.79	31.32 ± 5.45	0.524
Wt-Z	1.27 ± 0.77	1.03 ± 0.83	0.135
BMI (kg/m <sup>2</sup> )	18.42 ± 2.51	17.62 ± 2.30	0.089
BMI-Z	0.77 ± 1.09	0.50 ± 1.01	0.185
Basal LH (IU/L)	0.94 ± 1.42	0.90 ± 0.60	0.829
Peak LH (IU/L)	3.22 ± 1.13	11.72 ± 7.50	<0.001
Basal FSH (IU/L)	1.77 ± 1.05	2.61 ± 1.29	<0.001
Peak FSH (IU/L)	11.31 ± 4.58	12.56 ± 5.78	0.230
LH/FSH ratio	0.32 ± 0.21	1.03 ± 0.63	<0.001
E2	20.52 ± 13.92	18.12 ± 10.19	0.296
PRL (ng/mL)	12.57 ± 7.43	9.66 ± 5.18	0.017

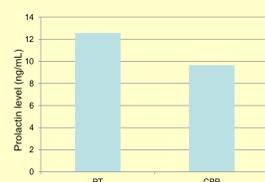


Fig 1. PRL level was higher in PT group than in PP group (12.57±7.42 ng/mL vs. 9.66±5.18 ng/mL).

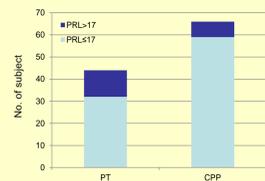


Fig 2. There were much more girls with high PRL level in the PT group (12/44, 27.3%) than in the PP group (7/66, 10.6%).

Table 2. Comparison of clinical and laboratory parameters between normal PRL and high PRL group.

	Normal PRL n=91	High PRL n=19	p-value
CA (years)	7.86 ± 0.44	7.81 ± 0.44	0.599
BA (years)	10.03 ± 0.58	9.80 ± 0.40	0.113
Ht (cm)	132.90 ± 4.88	129.85 ± 4.93	0.015
Ht-SDS	1.47 ± 0.62	1.03 ± 0.81	0.009
Ht/MPH	0.83 ± 0.03	0.80 ± 0.03	<0.001
Wt (kg)	32.03 ± 5.53	29.52 ± 5.47	0.074
Wt-Z	1.18 ± 0.79	0.87 ± 0.87	0.121
BMI (kg/m <sup>2</sup> )	18.06 ± 2.44	17.39 ± 2.32	0.274
BMI-Z	0.64 ± 1.06	0.43 ± 0.98	0.432
Basal LH (IU/L)	0.83 ± 0.46	1.34 ± 2.20	0.044
Peak LH (IU/L)	8.84 ± 7.52	5.83 ± 4.65	0.096
Basal FSH (IU/L)	2.32 ± 1.30	2.05 ± 1.05	0.402
Peak FSH (IU/L)	11.76 ± 4.80	13.52 ± 7.41	0.193
LH/FSH ratio	0.80 ± 0.63	0.48 ± 0.46	0.039
E2	18.36 ± 11.89	22.47 ± 11.16	0.169
PRL (ng/mL)	8.48 ± 3.62	22.02 ± 3.93	<0.001

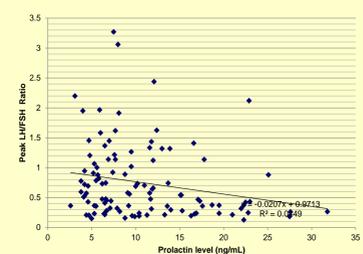


Fig 3. PRL level had a negative relationship with peak LH/FSH ratio ( $r = -0.212$ ,  $p = 0.026$ ).

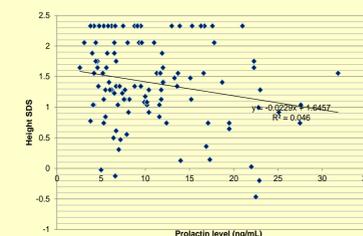


Fig 4. PRL level had a negative relationship with Ht-SDS ( $r = -0.214$ ,  $p = 0.025$ ).

## RESULTS

PRL level was higher in PT group than in PP group (12.57±7.42 ng/mL vs. 9.66±5.18 ng/mL).

There were much more girls with high PRL level in the PT group (12/44, 27.3%) than in the PP group (7/66, 10.6%).

Girls with high PRL level were shorter than girls with normal PRL level (129.8±4.9 cm vs. 132.9±4.9 cm). The ratio of Ht and mid-parental height (Ht/MPH) was also lower in high PRL group than in normal PRL group (0.80±0.03 vs. 0.83±0.03).

Girls with high PRL level had higher basal LH level (1.34±2.20 IU/L vs. 0.83±0.46 IU/L) but lower peak LH level (5.83±4.65 IU/L vs. 8.84±7.52 IU/L) compared with girls with normal PRL level. The ratio of peak LH and follicle stimulating hormone (FSH) level (LH/FSH ratio) was lower in high PRL group than in normal PRL group (0.48±0.46 vs. 0.80±0.63).

PRL level had a negative relationship with Ht-SDS ( $r = -0.214$ ,  $p = 0.025$ ) and Ht/MPH ( $r = -0.249$ ,  $P = 0.009$ ).

There was no relationship between PRL level and peak LH level.

But PRL level had a positive relationship with peak FSH level ( $r = 0.221$ ,  $p = 0.020$ ) and a negative relationship with LH/FSH ratio ( $r = -0.212$ ,  $p = 0.026$ ).

## CONCLUSIONS

More girls with PT had high PRL level than girls with PP. High PRL may suppress development of puberty in girls, but further study will be required the effect of PRL on peripubertal girls.

## References

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The author has nothing to disclose.