

Serum anti-Müllerian hormone and inhibin B as potential markers for progressive central precocious puberty in girls

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OBJECTIVES

To investigate the potential of serum anti-Müllerian hormone (AMH) and inhibin B (INHB) levels as markers for pubertal progression rate in girls with central precocious puberty (CPP).

METHODS

A total of 128 girls were enrolled, including 65 girls with premature thelarche (PT) and 63 girls with CPP, grouped based on the results of Gonadotropin-releasing hormone (GnRH) stimulation tests. Serum AMH and INHB levels were assessed in all enrolled girls. Girls with CPP underwent a six-month follow-up, and were further divided into two subgroups: progressive CPP (P-CPP) group (n=50) and slowly progressive CPP (SP-CPP) group (n=13).

RESULTS

Our data showed that AMH and INHB offer the potential to act as markers that distinguish SP-CPP from P-CPP. Compared with SP-CPP group, girls with P-CPP showed lower AMH level (2.79 (1.04-6.16) ng/ml vs 4.82 (1.94-11.15) ng/ml, $p=0.0047$) and higher INHB level (56.94 (16.54-123.60) pg/ml vs 27.61(19.46-67.48) pg/ml, $p=0.1628$). Based on the receiver operating characteristics (ROC) analysis, the area under the curve (AUC) was 0.88 for the combination of AMH and INHB, with 93% sensitivity and 71.5% specificity.

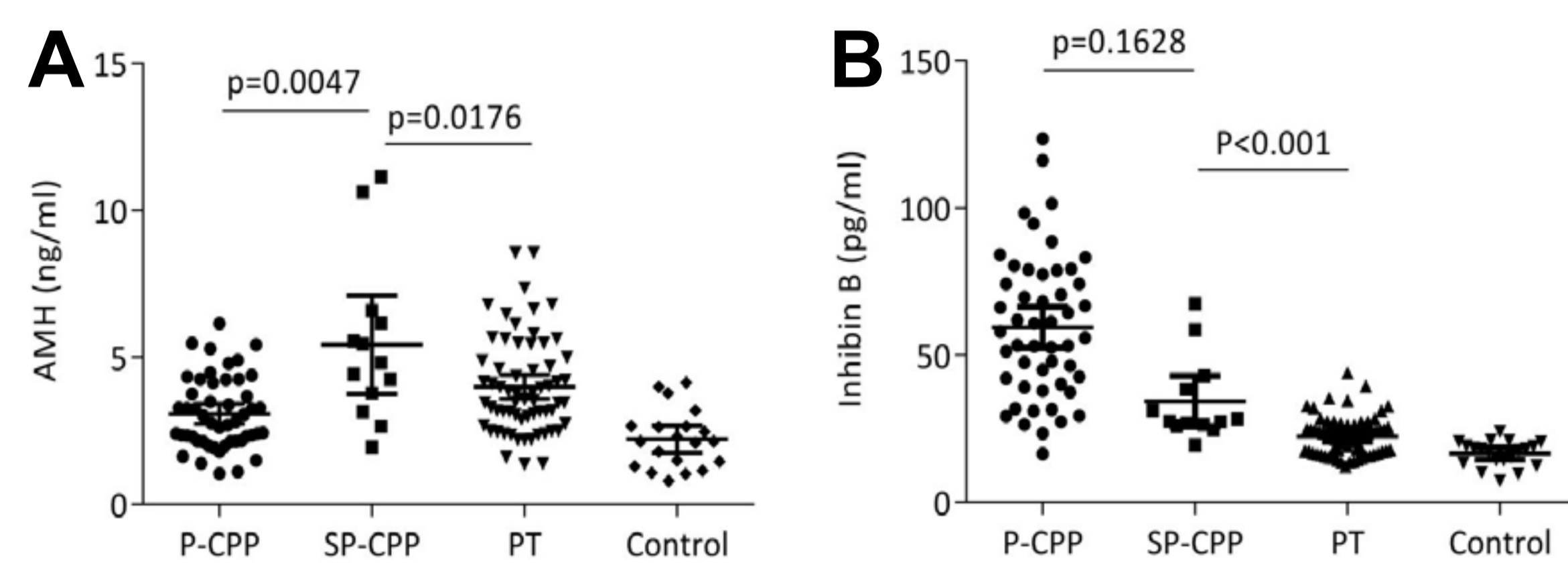


Figure 1. Serum AMH (A) and INHB (B) levels in girls.

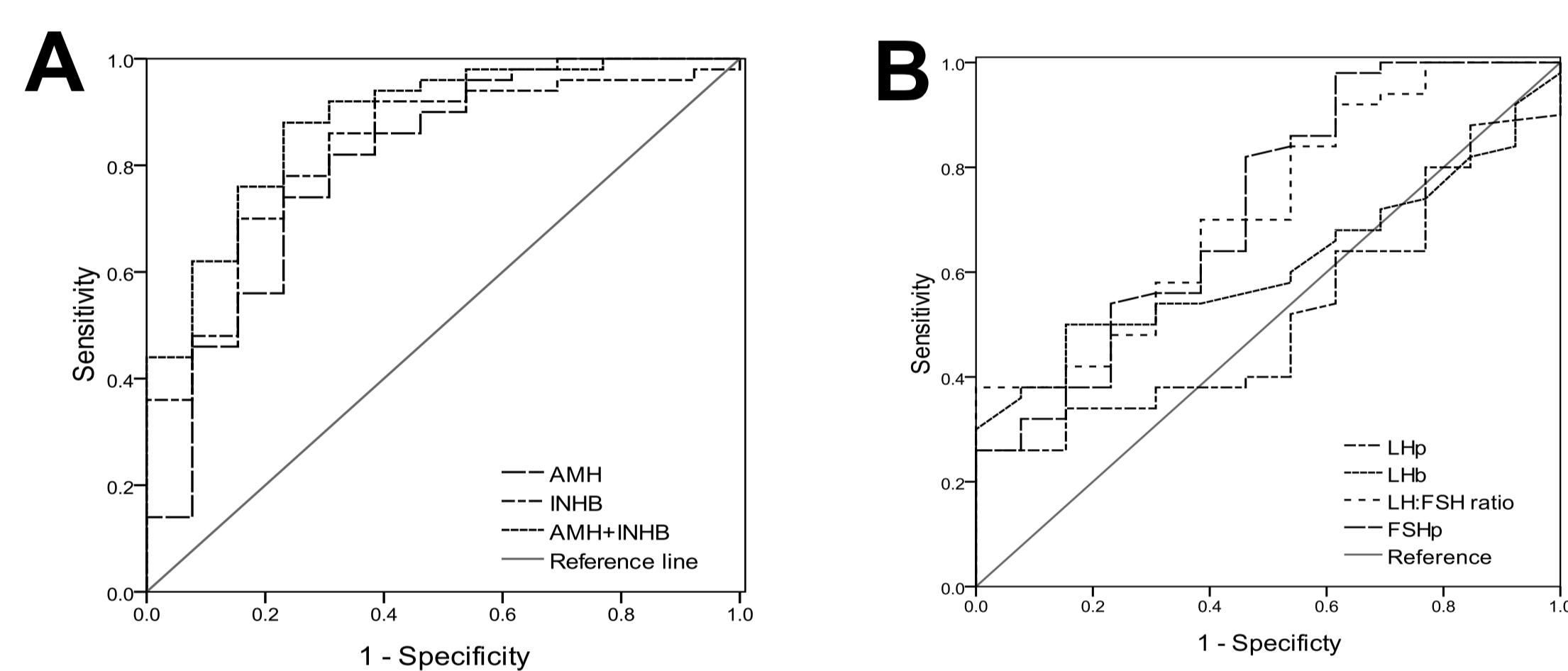


Figure 2. ROC curves for the analysis of AMH and INHB (A), and basal and peak LH (B).

	P-CPP	SP-CPP	PT	Control
Age (yr)	6.50 (5.00-8.00)	6.75 (5.33-8.00)	6.75 (5.25-8.00)	6.67 (5.42-7.92)
BMI (kg/m ²)	15.60 (13.89-16.48)	15.79 (14.16-16.25)	15.35 (13.95-16.25)	14.75 (13.97-16.31)
Bone age (yr)	8.6 (7.3-11.2) *&	8.9 (7.8-11.1) *&	7.8 (6.3-9.6) *	6.3 (5.0-8.0)
Uterine length (mm)	23 (14-34) *&	24 (20-27) *&	19 (13-26) *	17 (14-20)
Uterine volume (ml)	2.38 (0.64-5.48) *&	2.56 (1.47-3.56) *&	1.17 (0.59-2.49) *	0.65 (0.26-1.81)
Ovarian volume (ml)	2.21 (1.03-4.92) *&	2.23 (1.12-3.63) *&	1.46 (0.65-3.61) *	0.82 (0.31-2.14)

Table 1. Clinical and ultrasound characteristics of the four groups. Data are expressed as median (range). * $p < 0.05$: significantly different compared to subjects with controls. & $p < 0.05$: significantly different compared to subjects with PT group.

	P-CPP	SP-CPP	PT	Control
Basal E2 (pmol/L)	43.8 (27.6-173.2) *&	41.9 (22.5-94.4) *&	13.2 (<11.8-35.4)	<11.8 (<11.8-15.6)
Basal LH (IU/L)	0.31 (0.11-1.92) *&	0.25 (0.12-0.41) *&	<0.07 (<0.07-0.26)	<0.07 (<0.07-0.09)
Basal FSH (IU/L)	2.66 (0.73-7.35) *	2.32 (0.89-5.46) *	2.37 (<0.1-5.4)	0.85 (<0.1-2.13)
Peak LH (IU/L)	5.93 (5.01-22.06) &	6.50 (5.08-10.20) &	2.36 (1.06-4.80)	NA
Peak FSH (IU/L)	13.04(6.13-17.92) &	15.46(9.48-20.38) &	17.16(7.06-28.50)	NA
LH:FSH Ratio	0.51(0.32-1.57) &	0.38(0.25-0.65) &	0.14(0.04-0.37)	NA

Table 2. Serum hormone levels of the four groups. Data are expressed as median (range). * $p < 0.05$: significantly different compared to subjects with controls. & $p < 0.05$: significantly different compared to subjects with PT group.

CONCLUSIONS

Our results suggest that serum AMH and INHB levels provide a reliable method in differentiating SP-CPP from P-CPP.

References

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