

Evaluation of body proportions in children with precocious or delayed puberty

Anaëlle Wagner¹, F. Phan-Hug², S. Stoppa-Vaucher², E. Elowe-Gruau², S. Pichard², A. Dwyer³, N. Pitteloud^{2,3}, M. Hauschild²

1. Faculty of Medicine, Lausanne, Switzerland

2. Department of Pediatric Endocrinology and Diabetology, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland

3. Service of Endocrinology, Diabetes and Metabolism, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland

Background

Over the past 20 years there is growing evidence that onset of puberty and changes in body proportions occur at an earlier age, especially in girls. Several studies have suggested this trend is linked to increasing rates of overweight and obese children. However, data on delayed pubertal trends are scant.

Objectives

- To evaluate for a trends in pubertal onset.
- To characterize body proportions of children evaluated for pubertal disorders.
- To define anthropometric markers associated to the need for treatment.

Methods

- Retrospective cohort study from a Swiss tertiary hospital (1996-2013).
- Anthropometric data were collected: height, weight, upper to lower body segment (U/LS) ratio, body mass index (BMI).
- Clinical outcomes were reviewed and analyzed.

Results

1. Clinical characteristics of patients presenting for pubertal disorders (1996-2013)

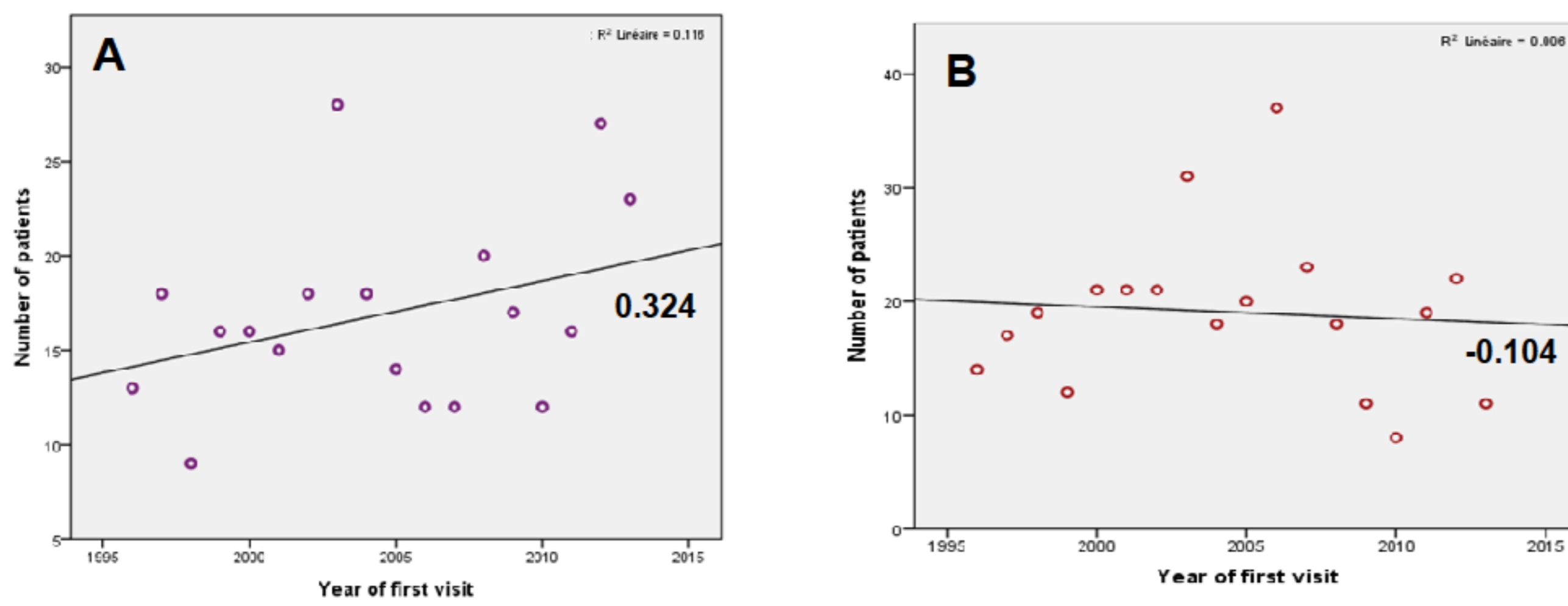
Precocious puberty referrals	Girls	Boys
N	262	42
age at first visit (mean ±SD, yrs)	7.6 ± 1.8	8.5 ± 3.1
mean bone age at first visit	9.6 ± 2.0	11.3 ± 2.6
Diagnosis (%)		
idiopathic central precocious puberty	72.1	52.2
precocious adrenarche	10.6	16.7
precocious thelarche	8.8	-
tumoral precocious puberty	3.1	16.7
congenital adrenal hyperplasia	4.6	14.4
ovarian hyperandrogenism	0.8	-
Patients treated	33%	36%

Delayed puberty referrals	Girls	Boys
N	116	231
age at first visit (mean ±SD, yrs)	13.6 ± 1.6	14.6 ± 1.2
mean bone age at first visit	11.6 ± 1.9	12.6 ± 1.3
Diagnosis (%)		
constitutional delay of puberty	73.9	91.8
hypergonadotropic hypogonadism	17.2	4.3
hypogonadotropic hypogonadism	8.9	3.9
Patients treated	33%	29%

2. Number of referrals/year (1996-2013):

Precocious puberty patients (n=304)

Delayed puberty patients (n=347)

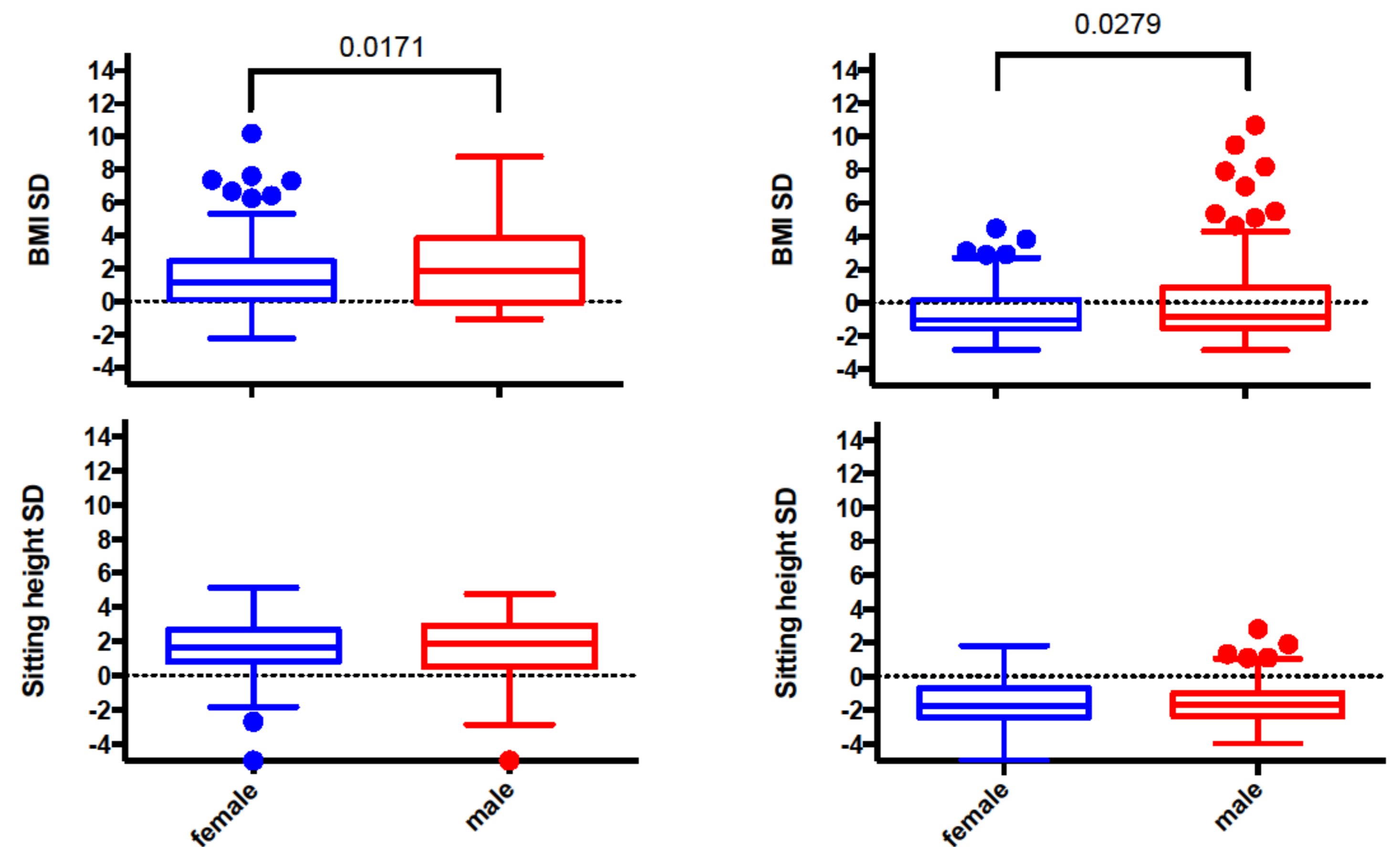


(A) We observed a trend of ↑ numbers of referrals for early onset of puberty. (B) Referrals for evaluation of delayed puberty remained relatively stable.

3. Body proportions at initial evaluation

Precocious puberty patients (n=304)

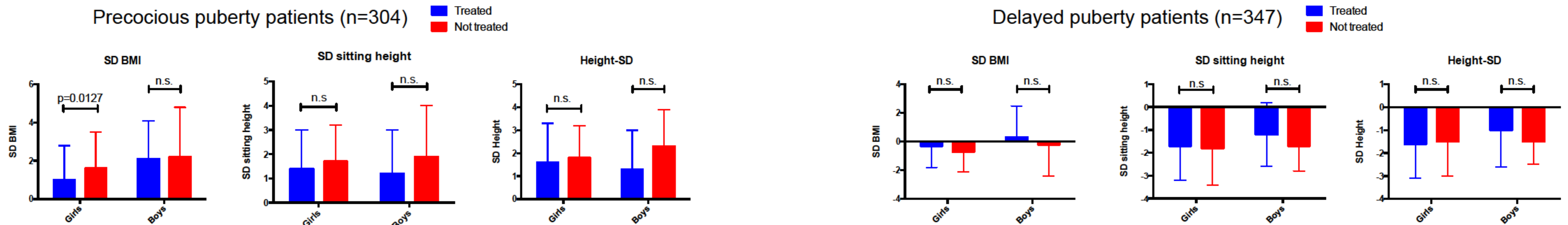
Delayed puberty patients (n=347)



4. Anthropometric factors associated with treatment indication

Precocious puberty patients (n=304)

Delayed puberty patients (n=347)



Discussion & conclusions

- We observed ↑ trend for referral/evaluation of early puberty while delayed puberty referrals remained stable.
- Body proportions (BMI & sitting height) differ significantly in children referred for precocious vs. delayed puberty.
- The only factor associated with starting treatment was BMI z-score among girls with early puberty.
- Long-term clinical follow-up of pubertal disorders remains essential.

References

- Kaplowitz et al., Earlier onset of puberty in girls: relation to increased body mass index and race, Pediatrics, 2001.
- Mogensen et al. Diagnostic Work-up of 449 Consecutive Girls Who Were Referred to be Evaluated for Precocious Puberty, J Clin Endocrinol Metab., 2011

ESPE Barcelona 2015, Anaëlle.Wagner@unil.ch