

# The evolution of bone age in girls with precocious adrenarche (PA)

Marakaki C, Theodoropoulou S, Papadimitriou DT, Dermitzaki E, Papadimitriou A

Pediatric Endocrinology Unit, Third Department of Pediatrics, National and Kapodistrian University of Athens, "Attikon" University Hospital, Athens, Greece

**Background:** In PA children bone age (BA) may be greater than chronological age (CA), however final height is usually within target height (TH).

**Objective:** Aim of the study was to evaluate the evolution of BA in girls with PA.

**Method:** We studied retrospectively the files of 60 girls with PA followed in our unit. Anthropometric data and Tanner pubertal status were determined in each visit and BA was evaluated in 12-month intervals. Predicted adult height (PAH), estimated at presentation and at last visit, was compared to target height

**Results:** Mean follow-up time was 3.6 years.

At presentation, mean age (SD) was 6.55 (1.0) years, Height SDS 0,868 (1.0), BMISDS was 1.23 (1.1) and BA was +1.13 (0,86) years greater than CA.

19/60 girls (31.7%) were obese (BMISDS>2).

PAH at presentation was 0.454 SDS less, whereas at the last visit (3 years later) was 0.244 less than mean parental height (TH).

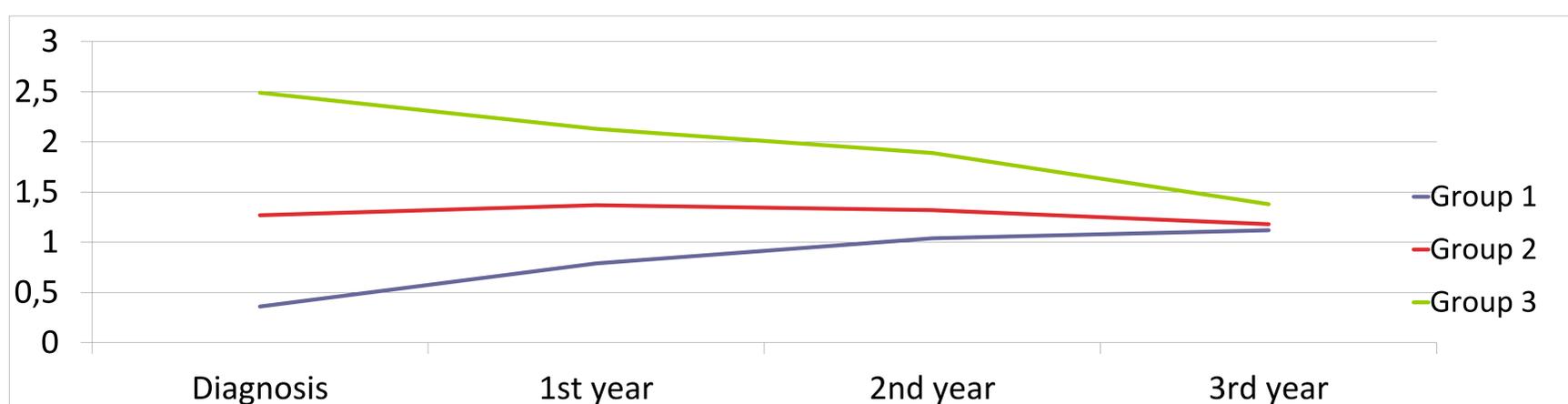
We subdivided the PA girls, according to baseline  $\Delta$ BA-CA, into 3 subgroups.

**Table 1.**

| Group | $\Delta$ BA-CA      | number   | Age at diagnosis | Age at adrenarche | BMI SDS    | DHEAS, $\mu$ g/dl |
|-------|---------------------|----------|------------------|-------------------|------------|-------------------|
| 1     | <1                  | 21 (35%) | 6.36 (1.17)      | 5.7 (1.3)         | 0.92(1.0)  | 80.7 (38.7)       |
| 2     | $1 \leq \Delta < 2$ | 30 (50%) | 6.49 (1.0)       | 5.9 (1.3)         | 1.28 (1.0) | 92.9 (40,0)       |
| 3     | >2                  | 9 (15%)  | 7.18 (0.6)       | 6.9 (0.7)         | 1.79 (1.2) | 73.9 (30.8)       |
|       |                     |          | p=0.128          | p=0.051           | p=0.119    | P=0.399           |

The evolution of the  $\Delta$ BA-CA in the 3 subcategories of girls with PA is shown in

**Figure 1**



**Conclusion:** The majority of PA girls present advanced BA. It seems that the norm for BA in PA girls is to be advanced by about one year. Girls with  $\Delta$ BA-CA <1 year or  $\geq 2$  years are expected to present in the next 3 years after diagnosis, an increase or decrease in BA advancement, respectively. The evolution of BA resembles to the statistical phenomenon of regression to the mean, only that the mean is BA advancement by one year. The latter could be attributed to the above average height of PA girls.