**Aromatase Inhibitors in Girls: Anastrozole Combined to an LHRH Analogue is a Safe and Effective Strategy in Girls with Early or Precocious Puberty with Compromised Growth Potential**

Dimitrios T Papadimitriou\(^a\), Eleni Dermitzaki\(^a\), Vassiliki Papaevangelou\(^a\), Anastasios Papadimitriou\(^a\)

*Division of Pediatric Endocrinology, 3rd Department of Pediatrics, Attikon University Hospital, Athens, Greece; \(^a\)Division of Pediatric Endocrinology, Athens Medical Center, Athens, Greece

**info@pedoendo.gr**

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**No disclosures**

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**Background**

Third generation aromatase inhibitors have been used to increase predicted adult height (PAH) in boys but in girls only in McCune-Albright syndrome.

**Objective and hypothesis**

We overcame the theoretical concern of secondary hyperandrogenism by combining anastrozole to an LHRH analogue in a 6-year prospective study to test whether the combination therapy could significantly improve PAH compared to inhibition of puberty alone.

**Results**

At 24 m height for bone age (HFBA) improved significantly in group-A: -1.10±0.64 (p<0.001) vs -1.05±0.19 (p=0.24) in group-B. PAH SDS in group-A improved already by 12 m: 0.73±0.35 (+4.5 cm), at 18 m: 1.07±0.87 (+6.64 cm) and even more at 24 m: 1.19±0.62 (+7.39 cm) compared to group-B at 24m: 0.33±0.83 (+2.05 cm, p<0.01).

Group-A did not present clinical nor biochemical hyperandrogenism, had unchanged normal bone density z-scores for BA (DXA scans yearly) and normal lumbar spine/prox/rot X-rays (yearly).

**Method**

Forty girls with idiopathic precocious or early puberty with PAH < -2 SDS or > 1.5 SDS lower than their target height (TH) were enrolled for 2 years. Twenty started on anastrozole 1 mg x 1/day p.o. + Leuprolire/Triptorelin (group A) and 20 on LHRH analogue alone (group B).

**Table 1. Patients’ characteristics, mean (± SD)**

<table>
<thead>
<tr>
<th>Group</th>
<th>Age (yrs)</th>
<th>Height (SDS)</th>
<th>Height for BA (SDS)</th>
<th>Gain in Height for Bone Age (SDS)</th>
<th>BMI (SDS)</th>
<th>Height Velocity (yrs)</th>
<th>Bone Age Advancement (yrs)</th>
<th>Gain in Predicted Adult Height (SDS)</th>
<th>Predicted Adult Height (SDS)</th>
<th>PAH (SDS)</th>
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<tr>
<td>A</td>
<td>(n=20)</td>
<td>8.65</td>
<td>-0.16 (±0.82)</td>
<td>-1.33 (±0.68)</td>
<td>1.2 (±0.92)</td>
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<td>B</td>
<td>(n=20)</td>
<td>8.85</td>
<td>-0.45 (±0.82)</td>
<td>-1.63 (±0.79)</td>
<td>0.17 (±0.59)</td>
<td>1.28 (±0.65)</td>
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<td>1.66 (±0.75)</td>
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**Table 2. Evolution (mean ± SD) of height, height for bone age, BMI, height velocity and bone age advancement in group-A (LHRH analogue and anastrozole) and group-B (LHRH analogue alone). Gain in height for bone age, gain in bone age advancement and gain in predicted adult height are reported (p: vs visit 0; p: A vs B).**

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**Figure 1. Gain in height for bone age (HFBA, SDS), gain in bone age advancement (BAA, years) and gain in predicted adult height (PAH, SDS) in group-A and group-B**

**Figure 2. A virtual growth curve for group-A: LHRHa + anastrozole (left)**

and group-B: LHRHa (right) using the mean age, height and bone age at each visit

**Conclusion**

Inhibition of puberty with co-administration of anastrozole for up to 2 years is safe and effective in improving PAH in girls with precocious/puberty with compromised growth potential.