

Final Height Outcomes in Short Statured Pubertal Males Treated with Aromatase Inhibitors

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The current FDA-approved therapeutic options for short-statured adolescent boys, such as growth hormone (GH) and gonadotropin-releasing hormone (GnRH) analogs, have the ability to adversely affect the pubertal growth period. Therefore, the off-label use of aromatase inhibitors (AIs) has been explored as an alternative therapy. AIs delay the closure of growth plates while allowing pubertal progression by inhibiting the conversion of androgens to estrogens. Estrogen is the principal hormone for epiphyseal plate closure; thus, inhibiting its production should delay growth plate fusion and prolong the bone growth period. If efficacious, this treatment could be helpful for children who progress rapidly through puberty and therefore have less time for linear growth, as well as those with idiopathic short stature. AIs may also benefit children with advanced or advancing bone age who are receiving growth hormone therapy by delaying growth plate closure and allowing more time to capitalize on the linear growth effects of growth hormone. Published studies involving pubertal boys have shown conflicting findings regarding the use of AIs on final height. The primary objective of this study is to further evaluate the efficacy of AIs as a potential treatment option.

This study is a retrospective medical chart review comparing the predicted adult height and final adult height of short-statured peri-pubescent male patients at CHNOLA/Manning Family Children's Hospital diagnosed with idiopathic short stature, rapid pubertal tempo, or growth hormone deficiency and treated with an aromatase inhibitor, either alone or in conjunction with growth hormone therapy. Out of the 166 charts reviewed by the study team, 21 charts met our inclusion criteria and were included in the analysis.

Analysis of these preliminary data revealed that patients who completed AI treatment alone and those who completed AI treatment in conjunction with growth hormone therapy had mean decreases in final adult height compared with predicted adult height of 1.3 ± 5.0 cm and 2.5 ± 5.0 cm, respectively. However, these differences were not statistically significant ($P = .35$ and $P = .24$, respectively), which may be related to the small sample size in this preliminary analysis. The knowledge gained from continuing this study may provide a better understanding of the medical conditions studied as well as the efficacy of this drug as a treatment option, ultimately impacting future clinical care and possibly benefiting future patients with similar conditions.