

Prospective investigation of the the influence of triptorelin treatment on body weight and body mass index of girls who were diagnosed with idiopathic precocious puberty or early puberty.

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Background

Gonadotropin-releasing hormone agonists (GnRHa) have been widely used to treat patients with central precocious puberty (CPP). Several studies have investigated changes in body composition in patients with CPP following GnRHa treatment. But the results are inconsistent. This study aimed to investigate the influence of GnRHa treatment on the weight and body mass index (BMI) of girls who were diagnosed with idiopathic CPP or early puberty (EP).

Methods

Patients who were younger than 8 years of age at diagnosis were classified as CPP and patients aged between 8 and 9 years at diagnosis were classified as EP. Of 89 patients 22 were diagnosed with CPP and 67 were diagnosed with EP. The patients were treated with triptorelin for 1 year. Changes in weight and body mass index were monitored prospectively. The patients were grouped according to pretreatment weight status into normal weight, overweight, and obesity

Results

Table 1. Comparative clinical characteristics of girls with idiopathic central precocious puberty or early puberty

| Characteristics | Total(n=89) | CPP(n=22) | EP(n=67) | P-value |
|-------------------|----------------|----------------|----------------|---------|
| Birth weight | 3.03 ± 0.43 | 2.99 ± 0.37 | 3.04 ± 0.45 | 0.619 |
| Age at diagnosis | 8.39 ± 0.56 | 7.79 ± 0.73 | 8.59 ± 0.29 | <0.001 |
| BA at diagnosis | 10.28 ± 0.66 | 9.71 ± 0.86 | 10.47 ± 0.46 | <0.001 |
| BA-CA | 1.89 ± 0.59 | 1.92 ± 0.78 | 1.87 ± 0.53 | 0.745 |
| Height SDS | 0.87 ± 0.79 | 0.93 ± 0.71 | 0.87 ± 0.83 | 0.889 |
| Weight SDS | 0.63 ± 0.83 | 0.71 ± 0.80 | 0.65 ± 0.81 | 0.976 |
| BMI SDS | 0.32 ± 0.95 | 0.34 ± 0.91 | 0.38 ± 0.9 | 0.64 |
| MPH | 158.87 ± 3.67 | 159.67 ± 3.86 | 158.61 ± 3.56 | 0.174 |
| Peak LH | 9.23 ± 4.18 | 9.23 ± 4.80 | 9.37 ± 4.03 | 0.71 |
| Peak FSH | 9.88 ± 3.85 | 9.3 ± 5.13 | 9.98 ± 3.43 | 0.504 |
| Peak LH/FSH ratio | 1.06 ± 0.55 | 1.19 ± 0.6 | 1.04 ± 0.53 | 0.342 |
| IGF-I | 235.06 ± 100.8 | 231.02 ± 102.6 | 239.3 ± 101.5 | 0.207 |
| Estradiol | 48.94 ± 21.26 | 46.44 ± 21.98 | 50.8 ± 21.23 | 0.299 |
| Leptin | 8.83 ± 7.97 | 7.14 ± 6.99 * | 9.61 ± 8.25 ** | 0.165 |

Table 2. Changes in the weight SDS and BMI SDS following GnRHa treatment in girls with idiopathic central precocious puberty or early puberty

| Variable | Before Tx | After 6 months | after 1 yr |
|-------------------------|---------------|----------------|------------------|
| Chronological age | 8.39 ± 0.56 | 8.82 ± 1.03 | 9.39 ± 0.59 |
| Bone age | 10.28 ± 0.66 | | |
| Height SDS | 0.87 ± 0.79 | 1.09 ± 2.12 | 0.81 ± 0.75 |
| Weight SDS | 0.63 ± 0.83 | 0.73 ± 0.8 * | 0.78 ± 0.8 ** |
| BMI SDS | 0.32 ± 0.95 | 0.45 ± 0.88 * | 0.57 ± 0.87 ** |
| Obesity prevalence %(n) | 25.3 (23) | 30.8 (28) | 31.9 (29) |
| Overweight | 15.4 (14) | 23.1 (21) | 19.8 (18) |
| Obesity | 9.9 (9) | 7.7 (7) | 12.1 (11) |
| LH | 9.23 ± 4.18 | 0.93 ± 0.36* | 0.89 ± 0.31 ** |
| Estradiol | 48.94 ± 21.26 | 39.99 ± 19.98* | 41.21 ± 18.89 ** |
| Leptin | 8.83 ± 7.97 | 13.05 ± 10.53 | 18.1 ± 14.36 |

* P<0.05, before treatment vs. after treatment for 6 months

** P<0.05, before treatment vs. after treatment for 1 years

Conclusion

Weight SDS and BMI SDS increased in triptorelin acetate treated patients significantly as a whole group. BMI SDS increased significantly in the normal weight group after 6 months and 1 year of triptorelin treatment