Comparison of triptorelin versus leuprolide in treatment of girls with central precocious puberty

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Background

Gonadotropin releasing hormone analogues are used for the treatment of central precocious puberty (CPP). The recommended dose of GnRHa is 75-100 µg/kg/4 weeks in Europe. In practice, this corresponds to a 3.75 mg leuprolide acetate (LA) or triptorelin acetate (TA) administered intramuscularly or subcutaneously every 28 days. Drug choice depends on physician and patient preference. A comparative data on the effectiveness of these two drugs for CPP treatment is very scarce. The aim of this study was to compare the efficacies of TA and LA treatments in girls with idiopathic CPP.

Patients and Methods

We retrospectively analyzed the medical records of the girls with CPP that was treated with both LA and TA, between 2005 and 2015. Treatment criteria is as shown in Figure 1 and the criteria to increase the dose is shown in Figure 2. Initial dose of both drugs was 3.75 mg/28 days. One-year follow-up data of two groups were compared.

Inclusion Criteria
- Breast development before 8 years
- Pubertal LH level (basal>0.3 IU/L or peak> 5 IU/L)
- Accelerated bone age (BA> +2SD)
- Predicted adult height (PAH) <155 cm
- Progressive compromise of PAH (at least 3 cm in 6 months)

Exclusion Criteria
- Incomplete data
- Lost of follow up
- Organic lesion
- Less than one year of treatment

Figure 1: Inclusion and exclusion criteria

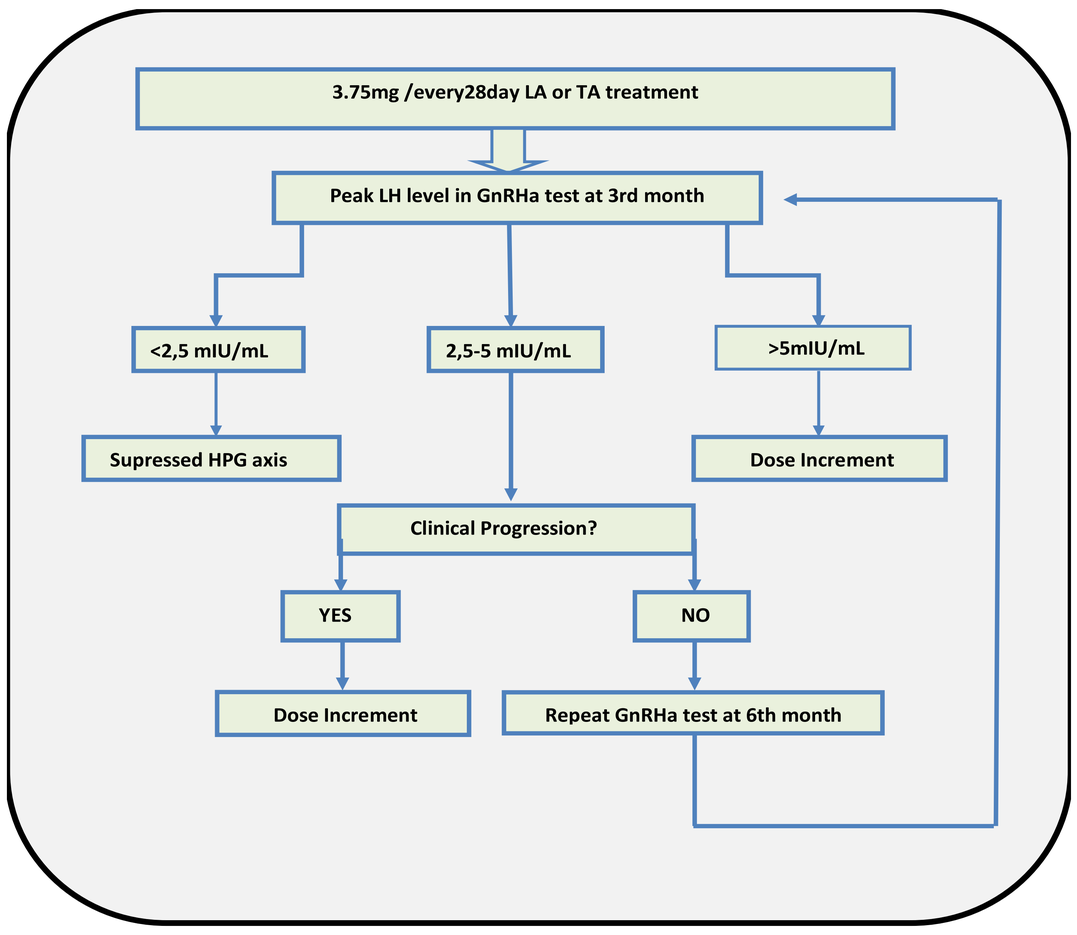

Figure 2: The flowchart used in dose increment

Results

Baseline characteristics including age, pubertal stages, PAH, basal and peak gonadotropin levels and drug doses per kg of body weight were comparable in two groups (Table 1). However, GnRHa-stimulated LH levels at the third month of treatment were significantly higher in LA group than in TA group. While an increment in LA dose was required in 7 patients (23%), no patient needed an increase (p=0.011) in TA group. Nevertheless, at the end of one year, clinical progression (Tanner stages, growth velocity, skeletal maturity, etc.) of two groups were not different, with similar doses of LA and TA (Table 2).

Table 1: Clinical features of patients before treatment

Parameters	LA (n=30)	TA (n=30)	p
Age, years	7,84 ±0,70	7,57 ±0,99	0,230
Tanner stage, n,% Breast 2 3 4	 12(%40) 17(%57) 1 (%3)	 19(%63) 9(%30) 2 (%7)	0,112
Height SDS	1,09 ± 0,88	0,69 ± 0,92	0,092
BMI SDS	0,89 ± 0,81	0,84 ± 0,91	0,823
BA SDS	2,86 ± 0,86	2,38 ± 0,86	0,036
PAH	153,3±6,34	152,8±6,90	0,780
Target Height	157,0±4,81	157,7±4,48	0,584
FSH	3,75±2,10	3,27±1,55	0,318
LH	0,79±1,03	0,89±1,42	0,747
E2	29,7±26,2	25,0±18,5	0,420
Peak FSH	12,07±4,23	12,1±4,55	0,983
Peak LH	10,99±9,88	6,66±3,98	0,113

BMI: Body Mass Index; BA: Bone Age; PAH: Predicted adult height

Table 2: Clinical features of the groups at 3rd month and first year of the treatment

Parameters	LA (n=30)	TA (n=30)	p
3rd month			
FSH	1,28±1,16	0,93±0,49	0,129
LH	0,23±0,16	0,34±0,20	0,030
Peak FSH	5,92±5,90	2,04±2,57	0,003
Peak LH	3,10±2,36	1,44±0,90	0,001
Dose increment yes no	 7(%23) 23(%77)	 0(%0) 30(%100)	0,011
First year			
Initial dose(µg/kg)	116,9±29,06	130,4±25,2	0,059
First year dose(µg/kg)	125,9±66,46	118,9±25,75	0,593
Peak FSH	3,57±1,76	1,86±0,76	0,001
Peak LH	2,42±1,82	0,84±0,40	0,002

Ht: Height; BA: Bone Age; PAH:Predicted Adult Height;
GV: Growth Velocity

Conclusion

LA and TA showed similar clinical effectiveness at the end of one-year treatment. However, while this effect was provided with 3.75 mg in all TA group, it has required to dose increment in 23% of patients in the LA group. So triptorelin may be preferred in patients and this may be more cost effective.

References
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