

CHANGES IN BODY MASS INDEX IN CHILDREN WITH CENTRAL PRECOCIOUS PUBERTY UNDER GONADOTROPIN-RELEASING HORMONE ANALOGUE TREATMENT: A MULTICENTRIC STUDY

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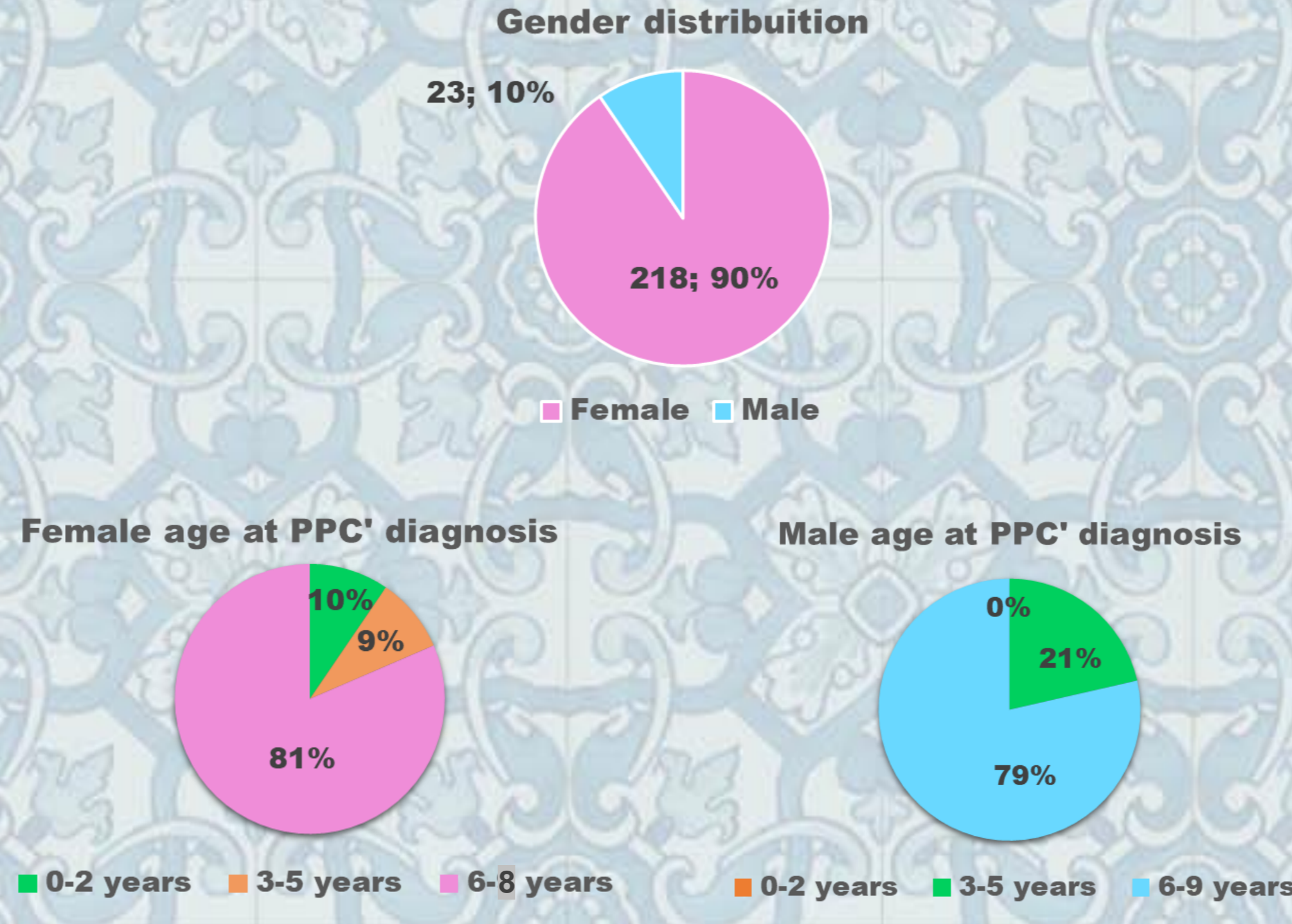
Gonadotropin-releasing hormone analogues (Gn-RH analogues) are the main treatment option for Central Precocious Puberty (CPP), but sometimes it may be controversial. Whether the treatment influences children's body mass index (BMI) and different BMI progression is still unclear.

Aims: to evaluate the effect of Gn-RH analogues in the BMI of children (boys and girls) with CPP at the end and one year after treatment

Methods: Cross-sectional and multicentric study from a National Standardized Digital Database, enrolled from eleven Pediatric Endocrine Departments in Portugal. Five years data collection was analyzed (January 2013 to December 2017). Statistical analysis was performed using SPSS TM 23.0 version ($p < 0.05$)

RESULTS: n = 241

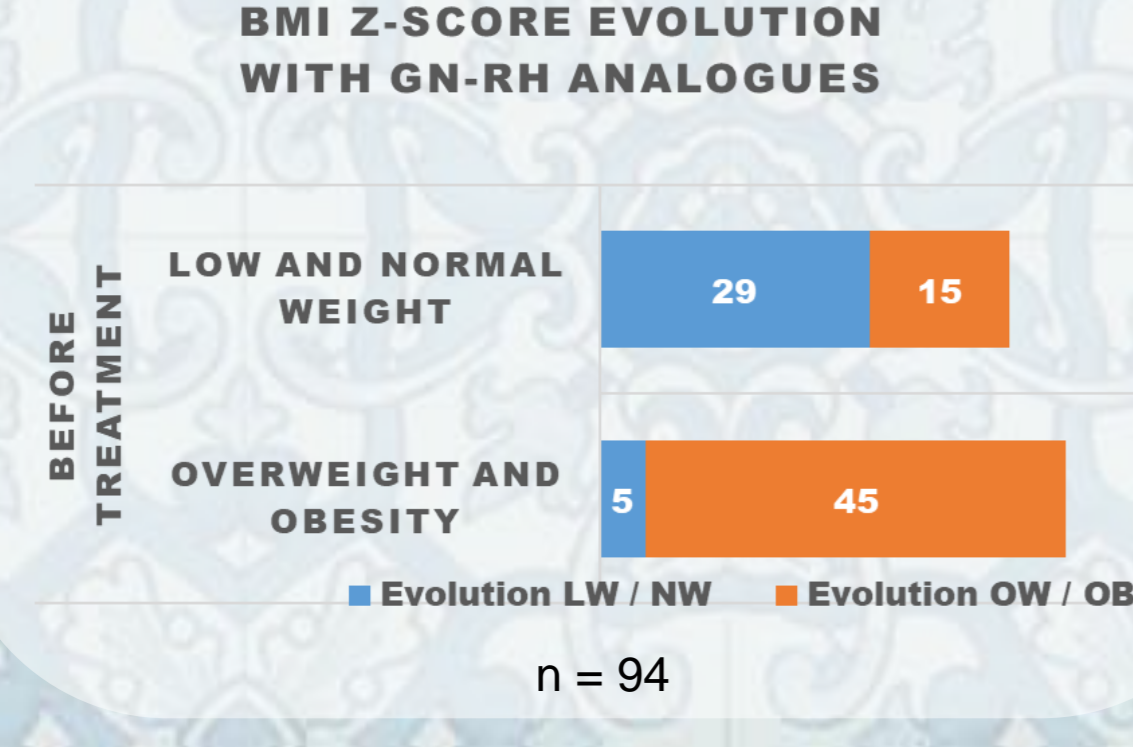
- Undergone treatment with Gn-RH analogues: 202 (84%)
- Concluded the treatment when normal puberty was attained: 94 (47%)
 - depot triptorelin: 65 (69,2%)
 - monthly triptorelin: 26 (27,6%)
 - leuprolide: 3 (3,2%)
- Continued to be followed one year after: 65 (32%)



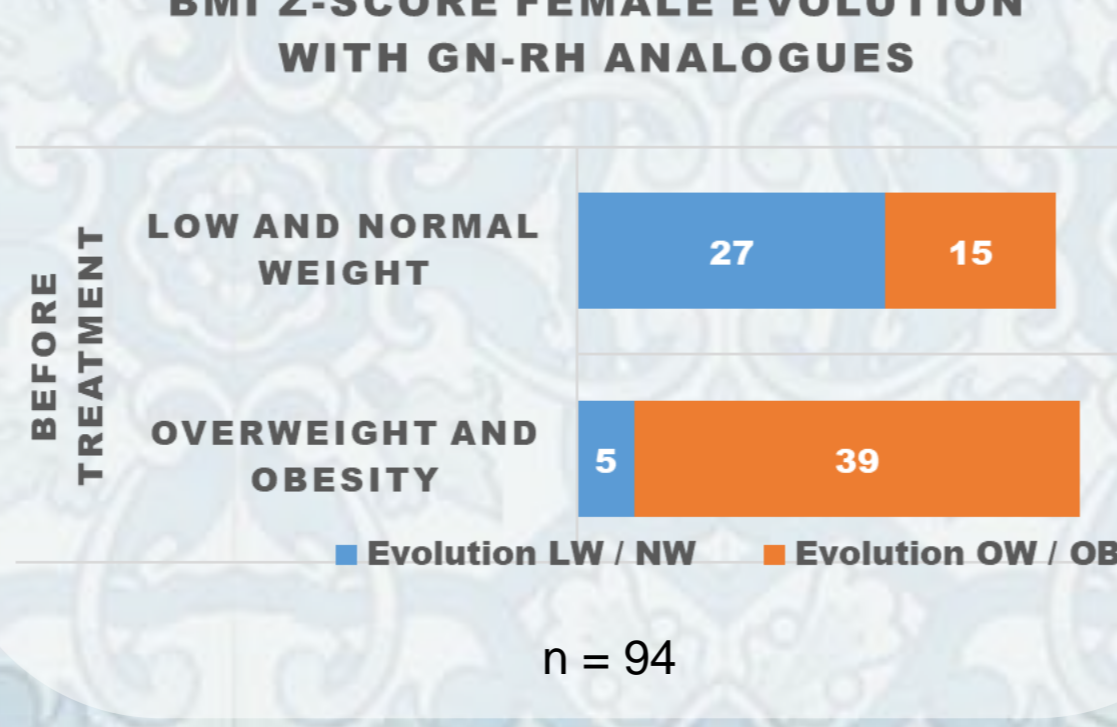
Patients were evaluated before, at the end and one year after Gn-RH analogues treatment and divided into four groups according to their BMI z-score.

Low Weight (z-score ≤ -2.0)	LW
Normal Weight ($-2.0 < z\text{-score} < 2.0$)	NW
Overweight ($2.0 \leq z\text{-score} < 3.0$)	OW
Obesity (z-score ≥ 3.0)	OB

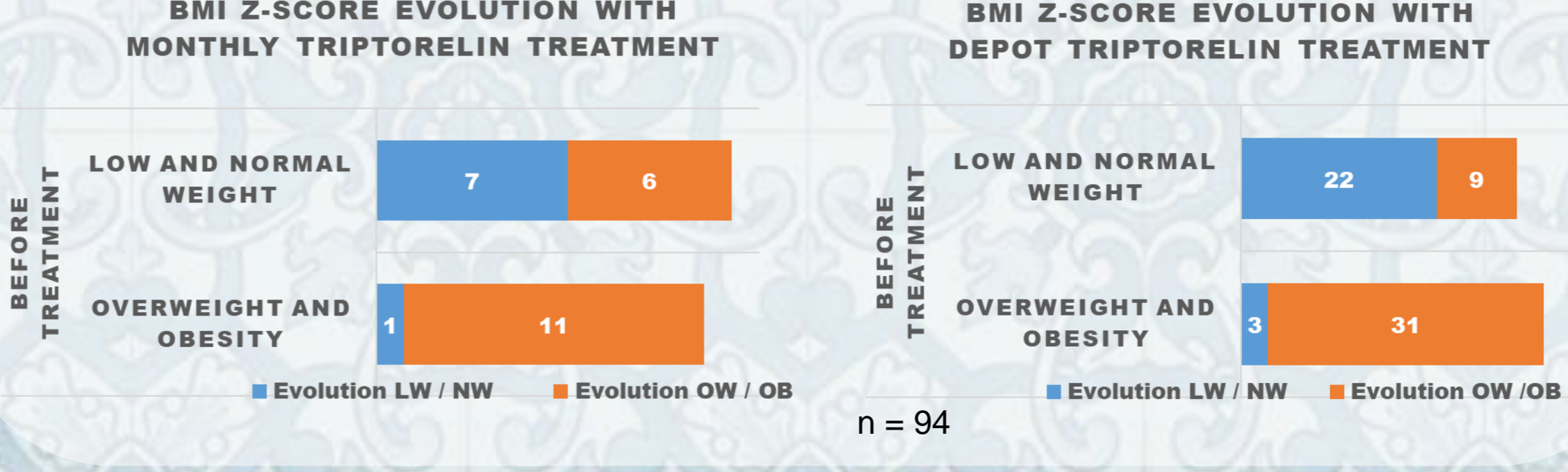
At diagnosis of CPP, 44,7% of the patients were NW. From these, 33,4% became OW/OB after treatment with Gn-RH analogues.



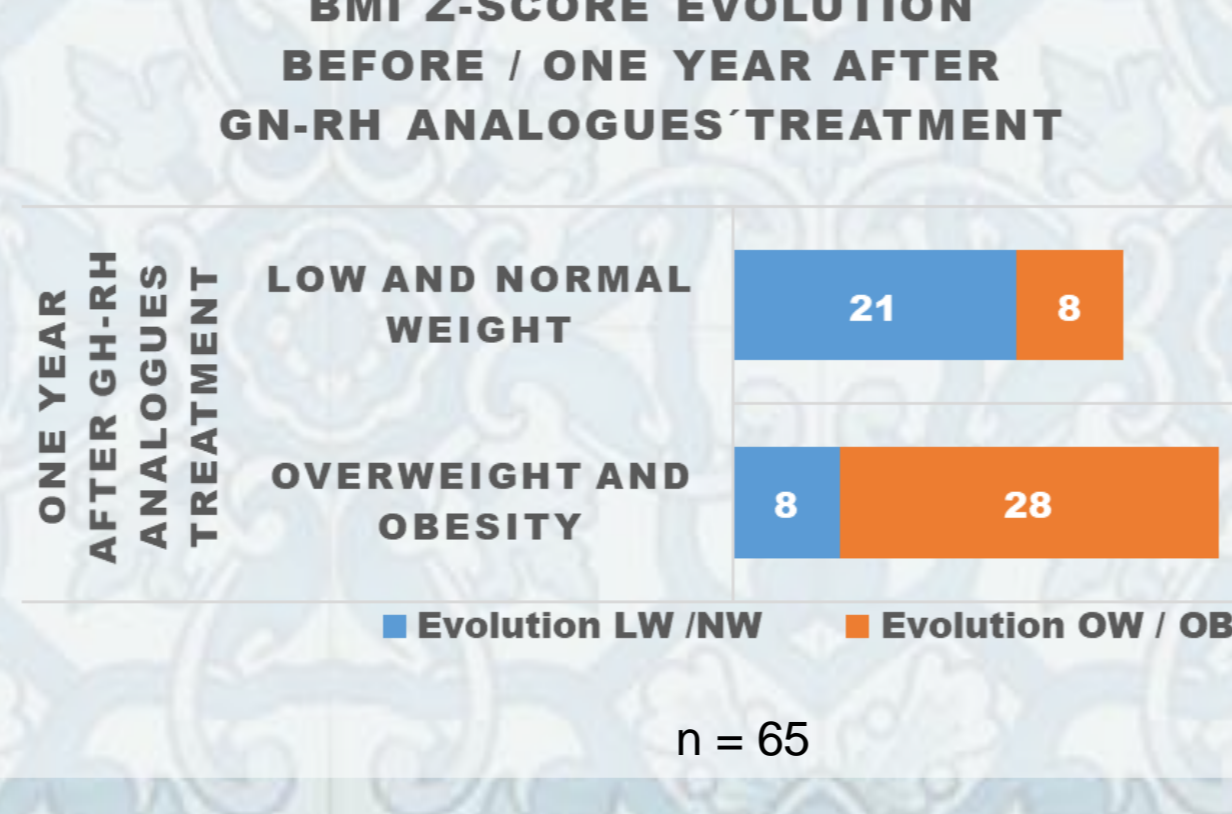
35% ($p < 0,001$) of the NW girls became OW/OB, but this association was not significant for boys.



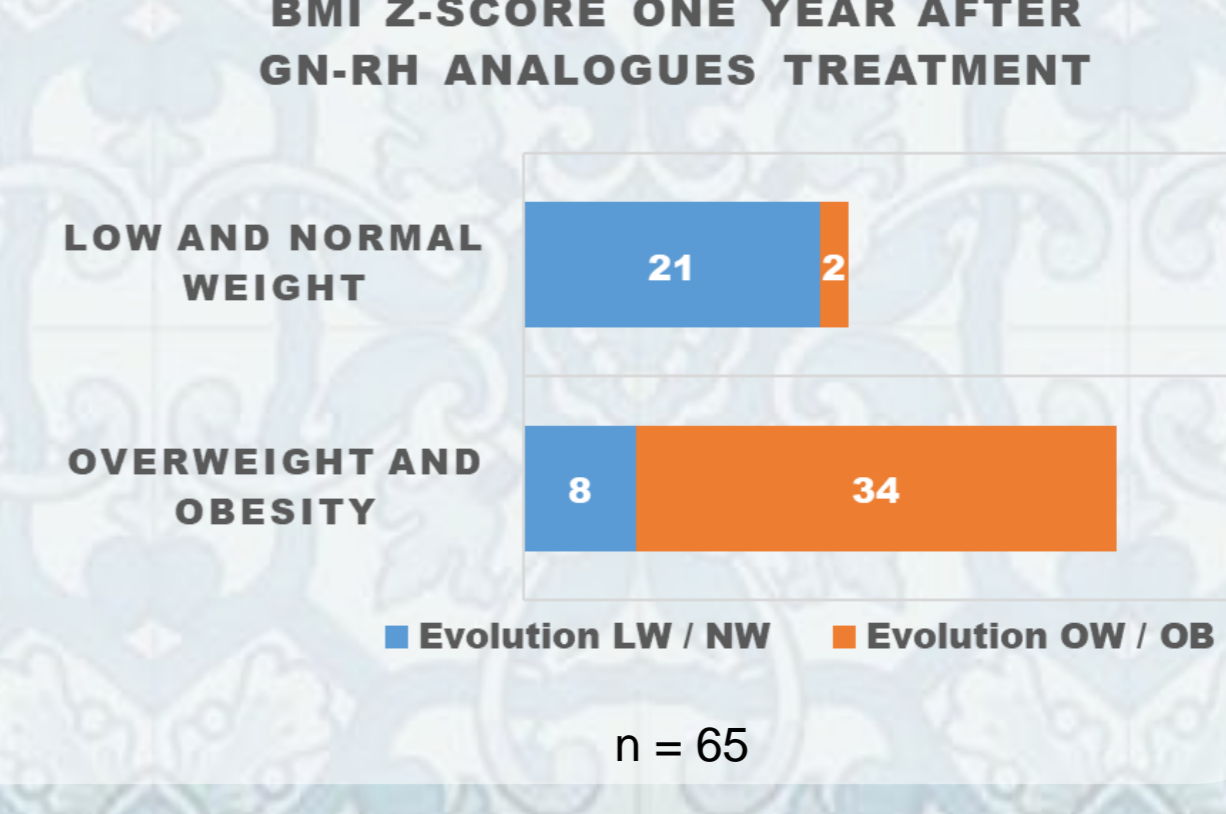
A positive association between Gn-RH analogues and the prevalence of OW and OB ($p < 0,01$) was found. Patients treated with monthly triptorelin were significantly more OW/OB compared to those on depot triptorelin (45,5% versus 29%, $p < 0,001$).



Comparing the beginning of treatment versus one year after Gn-RH analogues treatment, 27,5% of patients with initial LW/NW changed to obesity ($p < 0,001$).



One year after treatment, 19% of patients that became OW/OB with Gn-RH analogues, returned to NW again ($p < 0,001$).



CONCLUSIONS

- This multicentric study suggests that treatment of PPC with Gn-RH analogues, in particular monthly triptorelin, increases BMI in girls but not in boys.
- A significant percentage of patients, however, returns to a normal weight status one year after treatment.
- The authors suggest that PPC treatment modality should be individualized according to BMI progression.

References: 1. Guaraldi F and all. Management of Endocrine Disease: Long-term outcomes of the treatment of central precocious puberty. Eur J Endocrinol 2016 Mar;174(3):R79-87. doi: 10.1530/EJE-15-0590. Epub 2015 Oct 14. 2. Kim HR and all. Treatment outcomes of gonadotropin-releasing hormone agonist in obese girls with central precocious puberty. Ann Pediatr Endocrinol Metab. 2017 Dec;22(4):259-265. doi: 10.6065/apem.2017.22.4.259. Epub 2017 Dec 31. 3. Kim SW and all. The influence of gonadotropin releasing hormone agonist treatment on the body weight and body mass index in girls with idiopathic precocious puberty and early puberty. Ann Pediatr Endocrinol Metab. 2017 Jun;22(2):95-101. doi: 10.6065/apem.2017.22.2.95. Epub 2017 Jun 28. 4. Park J and all. Change in body mass index and insulin resistance after 1-year treatment with gonadotropin-releasing hormone agonists in girls with central precocious puberty. Ann Pediatr Endocrinol Metab. 2017 Mar;22(1):27-35. doi: 10.6065/apem.2017.22.1.27. Epub 2017 Mar 31. 5. Corripio R and all. Changes in Body Mass Index in Girls with Idiopathic Central Precocious Puberty under Gonadotropin-Releasing Hormone Analogue Therapy: The Spanish Registry. Horm Res Paediatr. 2016;86(3):154-160. Epub 2016 Aug 13. 6. Arcari AJ and all. Body mass index in girls with idiopathic central precocious puberty during and after treatment with GnRH analogues. Int J Pediatr Endocrinol. 2016;2016:15. doi: 10.1186/s13633-016-0033-7. Epub 2016 Aug 5.